



McGill Bird Observatory  
Ten-Year Report:  
2005 – 2014

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**Cover photo:**

Yellow-rumped Warbler banded at McGill Bird Observatory (photo by Marcel Gahbauer)

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## 1.1 Executive Summary

McGill Bird Observatory (MBO) was established as a pilot migration monitoring project in 2004 at McGill University's Stoneycroft Wildlife Area in Ste-Anne-de-Bellevue, Quebec. Following a successful trial in fall 2004, plans were made over winter to commit to standardized migration monitoring during both spring and fall, starting in 2005. MBO's primary objective is to collect data that can be used to contribute to the understanding of bird movements and population trends, in collaboration with the Canadian Migration Monitoring Network. MBO also delivers a variety of educational programs, ranging from training in field techniques to public presentations and development of identification resources. This report summarizes results from the first ten years of standardized operation at MBO, 2005-2014.

Winter at MBO is defined as October 31 to March 27. The winter program does not have a fixed protocol, and results are highly variable in relation to weather and volunteer availability. Between 35 and 63 species have been observed annually, with a cumulative total of 93. No banding occurred in winter 2008; over the other nine years 2815 birds of 32 species were banded, with the annual total ranging from 32 to 800 individuals of 6 to 19 species. Several species are banded at MBO overwhelmingly during winter, including Mourning Dove, House Finch, and Common Redpoll.

The Spring Migration Monitoring Program (SMMP) covers the ten-week period from March 28 to June 5. Between 133 and 148 species have been observed annually, with a cumulative total of 191. Over ten years, 8410 birds of 97 species have been banded in spring, with the annual total ranging from 627 to 1356 individuals of 59 to 69 species. In descending order, the top species banded in spring overall are Red-winged Blackbird, Cedar Waxwing, Ruby-crowned Kinglet, Tennessee Warbler, and American Goldfinch. Both species richness and abundance tend to peak just past mid-May.

Summer at MBO is defined as the eight-week period from June 6 to July 31. From 2005 to 2008, summer operations were opportunistic and did not follow a fixed protocol; beginning in 2009 the internationally recognized Monitoring Avian Productivity and Survivorship (MAPS) program was adopted as the basis for summer activities. Between 50 and 78 species have been observed annually, with a cumulative total of 100. Over ten years, 1012 birds of 45 species have been banded, including 153 through nest monitoring efforts.

The Fall Migration Monitoring Program (FMMP) covers the thirteen-week period from August 1 to October 30. Between 134 and 151 species have been observed annually, with a cumulative total of 193. Over ten years, 38697 birds of 103 species have been banded in fall, with the annual total ranging between 2792 and 6808. In descending order, the top species banded in fall overall are Yellow-rumped Warbler, White-throated Sparrow, Ruby-crowned Kinglet, American Robin, and Song Sparrow. Species richness usually fluctuates slightly from early August to early mid-October before tapering off to the end of the season, whereas abundance builds to a peak from late September to mid-October and then drops off sharply again.

Owl migration has been actively monitored at MBO during eight fall seasons. Over this period, 1008 Northern Saw-whet Owls have been banded, along with 17 individuals of 4 other owl species. Another 36 foreign-banded owls have been recovered, while 33 of the owls banded at MBO have subsequently been recaptured elsewhere. This success rate is much higher than for other species, which to date have collectively yielded only 51 foreign recoveries of birds banded at MBO, and 9 captures of individuals banded elsewhere.

Appendices to this report provide detailed statistics on the SMMP and FMMP, as well as the seasonal distribution of the 210 species observed and 51959 individuals banded at MBO during the 2005-2014 period, plus an overview of weather conditions, and listings of all foreign recoveries and volunteers at MBO.

Much of the research at MBO is oriented toward long-term monitoring of spring and fall migration trends, but species-specific research in collaboration with McGill University students and faculty are pursued, as are larger-

scale partnerships with researchers across Canada and beyond. Education is largely a by-product of core research activities, but efforts are made to make the most of opportunities provided. Banding activities allow for training of students and other volunteers in research and bird-handling techniques. All results of MBO programs are publicly available on the MBO website ([www.oommbo.org](http://www.oommbo.org)), and considerable effort has been invested in developing a photo-based resource to assist with advanced identification challenges, now housed at Environment Canada's *Piranga* website. Results of MBO research are also shared through research seminars and public presentations, including visits to schools.

The first ten years of research at MBO have already yielded a number of noteworthy results, most of them apparent through preliminary analysis of spring and fall migration monitoring data. For example, Tree Swallows (and most other swallows) have declined steadily over the past decade, but other species have shown steady increases, including Northern Waterthrush and Northern Cardinal. Tennessee and Cape May Warblers have also increased in recent years, presumably reflecting a response to the growing spruce budworm population in central Quebec. Some species are showing a predictable two-year cycle to their numbers on migration (e.g., Blue Jay), while others have had unexpectedly large but unpredictable movements (e.g., Black-capped Chickadee, Cedar Waxwing, Yellow-rumped Warbler). Meanwhile other species have shown a substantial shift in timing over just ten years (e.g., American Redstart and Magnolia Warbler).

For the next five years, 2015-2019, the primary goals for MBO are to maintain consistent operation of existing research programs and to continue build organizational capacity for a stable future in terms of both personnel and funding. Specifically, a broader base of stable funding needs to be cultivated, and ongoing effort is required to train and retain a sufficient number of banders-in-charge to allow for stable and consistent operation of all programs. The data summaries presented in this report should be seen as the starting point for much deeper exploration of the MBO database. Already from ten years of migration monitoring data it is apparent that there are opportunities to investigate changes in seasonal and inter-annual patterns of occurrence, and the data collected from repeats and returns are likely to yield interesting insights upon further analysis. Greater focus now needs to be put on analysis and publication, including greater collaboration with McGill University faculty and students as well as with partner stations in the Canadian Migration Monitoring Network. Both students and MBO researchers will be strongly encouraged to present results of their work at ornithological conferences and publish them in peer-reviewed journals. New initiatives complementary to MBO's core activities will also be pursued, such as participation in the Motus wildlife tracking system, which would allow for insights into the movements of migrants in the area around Montreal, including discovery of key habitat corridors. Concurrently, MBO's education efforts should continue to be expanded, including further banding workshops, development of a bilingual public education program focusing on owls, and ongoing growth of online resources, including the bilingual MBO website and further expansion of advanced bird identification reference material on *Piranga*.



*White-throated Sparrow (left) and Magnolia Warbler (right), two of the most common migrants at MBO*  
(Photos by Simon Duval)



## 1.2 Sommaire exécutif

En 2004, l'Observatoire d'Oiseaux de McGill (OOM) est né sous la forme d'un projet pilote de suivi de la migration sur le site Stoneycroft Wildlife Area de l'Université McGill à Sainte-Anne-de-Bellevue, Québec. Suite à de bons résultats à l'automne 2004, des plans furent mis en place durant l'hiver pour assurer un suivi standardisé de la migration au printemps et à l'automne à partir de 2005. L'objectif principal de l'OOM est d'amasser des données pouvant contribuer à mieux connaître les déplacements et les tendances de populations des oiseaux en collaboration avec le Réseau Canadien de Surveillance des Migrations. L'OOM possède aussi un volet éducatif qui comprend de la formation spécifique sur le terrain, des présentations publiques et le développement de ressources d'identification. Ce rapport résume les résultats des dix premières années (2005-2014) de suivi standardisé à l'OOM.

L'hiver à l'OOM couvre la période du 31 octobre au 27 mars. Le programme d'hiver ne possède pas de protocole fixe, ce qui fait que les résultats sont variables en fonction de la météo et de la disponibilité des bénévoles. Entre 35 et 63 espèces ont été observées annuellement, avec un cumulatif total de 93. Aucun baguage n'a été effectué à l'hiver 2007, alors que durant les neuf autres années 2815 oiseaux de 32 espèces ont été bagués, avec un total annuel allant de 32 à 800 individus de 6 à 19 espèces. Certaines espèces, tel que la Tourterelle triste, le Roselin familial et le Sizerin flammé, sont baguées à l'OOM majoritairement durant l'hiver.



Le programme de suivi de la migration printanière couvre la période de dix semaines allant du 28 mars au 5 juin. Entre 133 et 148 espèces ont été observées annuellement, avec un cumulatif de 191. Durant les dix années, 8410 oiseaux de 97 espèces ont été bagués au printemps, avec un total annuel allant de 627 à 1356 individus de 59 à 69 espèces. En ordre décroissant, les cinq espèces les plus baguées sont le Carouge à épaulettes, le Jaseur d'Amérique, le Roitelet à couronne rubis, la Paruline obscure et le Chardonneret jaune. La diversité et l'abondance des espèces ont tendance à atteindre leur apogée tout juste après la mi-mai.

L'été à l'OOM couvre la période de huit semaines allant du 6 juin au 31 juillet. De 2005 à 2008, les activités furent opportunistes et sans protocole fixe. En 2009, le programme international MAPS (Monitoring Avian Productivity and Survivorship) fût adopté comme base des activités d'été. Entre 50 et 78 espèces ont été observées annuellement, avec un cumulatif de 100. Durant les dix années, 1012 oiseaux de 45 espèces ont été bagués, incluant 153 individus à travers le suivi des nids.

Le suivi de la migration automnale couvre la période de treize semaines allant du 1er août au 30 octobre. Entre 134 et 151 espèces ont été observées annuellement, avec un cumulatif de 193. Durant les dix années, 38697 oiseaux de 103 espèces ont été bagués à l'automne, avec un total annuel allant de 2792 à 6808. En ordre décroissant, les cinq espèces les plus baguées sont la Paruline à croupion jaune, le Bruant à gorge blanche, le Roitelet à couronne rubis, le Merle d'Amérique et le Bruant chanteur. La diversité des espèces fluctue légèrement du début août jusqu'à la mi-octobre avant de diminuer graduellement jusqu'à la fin de la saison. L'abondance de son côté augmente jusqu'à son apogée de la fin septembre à la mi-octobre avant de diminuer nettement encore jusqu'à la fin de la saison.

Le suivi de la migration de la Petite nyctale fût effectué durant huit saisons automnales. Durant cette période, 1008 Petites nyctales ont été baguées ainsi que 17 individus de quatre autres espèces de strigidés. De plus, 36 Petites nyctales ayant été baguées ailleurs ont été recapturées et 33 Petites nyctales baguées à l'OOM furent recapturées par d'autres observatoires. Ce taux de recapture est nettement plus élevé que chez les autres espèces. Seulement 51 oiseaux bagués à l'OOM ont été retrouvés ailleurs et neuf individus provenant d'autres observatoires ont été capturés.



Les annexes de ce rapport contiennent des statistiques détaillées sur le programme de suivi de la migration printanière et automnale ainsi que sur la distribution saisonnière des 210 espèces observées et des 51959 individus bagués à l'OOM durant la période de 2005 à 2014. Les annexes contiennent aussi un aperçu des conditions météorologiques, un sommaire des recaptures extérieures et la liste des bénévoles de l'OOM.

La recherche à l'OOM est orientée autour du suivi, à long terme, des tendances pour la migration printanière et automnale, mais des projets de recherche sur des espèces précises sont aussi entrepris en collaboration avec des étudiants et des départements de l'Université McGill, en plus de partenariat de plus grande envergure avec des chercheurs à travers le Canada et plus. Le volet éducatif s'articule principalement autour des activités de recherche, mais des efforts sont faits pour utiliser chaque opportunité qui se présente pour éduquer. Les activités de baguage permettent d'offrir de la formation aux étudiants et bénévoles sur des sujets comme la recherche aviaire et les techniques de manipulations des oiseaux. Tous les résultats des programmes de l'OOM sont disponibles sur notre site internet ([www.oommbo.org](http://www.oommbo.org)). De plus, des efforts considérables ont été investis dans le développement d'une photothèque pour aider à l'identification avancée. Cette ressource est maintenant hébergée par le site internet Piranga d'Environnement Canada. Les résultats des recherches de l'OOM sont aussi partagés lors de colloques ou de conférences publiques incluant des visites dans des écoles.

Les premières dix années de recherche à l'OOM ont déjà mis en lumière quelques résultats intéressants au travers d'analyses préliminaires des données de suivi de la migration printanière et automnale. Par exemple, l'Hirondelle bicolore (et la plupart des autres hirondelles) est en déclin constant durant la dernière décennie, mais d'autres espèces démontrent une augmentation, tels que la Paruline des ruisseaux et le Cardinal rouge. La Paruline obscure et la Paruline tigrée sont aussi en augmentation depuis quelques années, possiblement en réponse à une nouvelle épidémie de la tordeuse du bourgeon de l'épinette dans le centre du Québec. Quelques espèces démontrent un cycle biennuel prévisible dans leurs nombres en migration (ex. : Geai bleu) alors que d'autres ont eu de très forts mouvements imprévisibles (ex. : Mésange à tête noire, Jaseur d'Amérique, Paruline à croupion jaune). D'autres espèces quant à elles démontrent un changement significatif dans la phénologie de leur migration sur une période de seulement dix ans (ex. : Paruline flamboyante et Paruline à tête cendrée).

Durant les cinq prochaines années, 2015-2019, les principaux objectifs pour l'OOM sont de maintenir l'opération constante des programmes de recherche existants et de continuer d'accroître la capacité de l'organisme pour assurer un futur stable autant au niveau du personnel que du financement. Plus précisément, une plus grande base de financement stable doit être développée et des efforts constants doivent être mis dans la formation et la rétention d'un nombre suffisant de bagueurs-en-charge pour assurer l'opération stable et constante de tous les programmes de recherche. Les sommaires des données présentées dans ce rapport doivent être vus comme un point de départ pour l'exploration beaucoup plus poussée de la base de données de l'OOM. En analysant les premières dix années de données de suivi de la migration, il est apparent que des opportunités sont disponibles pour explorer des changements dans les patrons d'occurrence saisonniers et interannuels et les données des recaptures, autant les répétitions que les retours, pourraient produire des résultats intéressants après analyse. Le focus doit maintenant être tourné vers l'analyse et la publication, incluant une plus grande collaboration avec les facultés et les étudiants de l'Université McGill ainsi qu'avec nos partenaires dans le Réseau Canadien de Surveillance des Migrations. Autant les étudiants que les chercheurs de l'OOM seront fortement encouragés à présenter les résultats de leurs travaux à des conférences ornithologiques et publier leurs résultats dans des journaux scientifiques. Dans le futur, de nouvelles initiatives complémentaires aux travaux de l'OOM seront aussi entrepris, comme une participation dans le système de suivi de la faune MOTUS, qui nous permettrait de mieux comprendre les mouvements des oiseaux migrants dans la région de Montréal, incluant la découverte de corridors d'habitats clés. Parallèlement, les efforts éducatifs de l'OOM doivent continuer à prendre de l'expansion, incluant d'autres ateliers de baguage, le développement d'un programme éducatif public sur les hiboux ainsi que le développement continu de ressources en ligne comme notre site internet bilingue ainsi que l'ajout de matériel d'identification avancé sur *Piranga*.

## **2 Introduction**

This report summarizes the first ten full years of operation of McGill Bird Observatory (MBO). Established in 2004, MBO is located in Ste-Anne-de-Bellevue, Quebec, adjacent to the Morgan Arboretum, in the 22 hectare Stoneycroft Wildlife Area (Figure 2-1). Designated as a McGill University research site, access to the property is restricted to researchers and authorized visitors. Comprising a mix of mature deciduous forest, remnants of an apple orchard, sumac and hawthorn stands, and wetlands, the site supports a wide diversity of flora and fauna (Bardo et al. 2003).

### **2.1 History**

MBO was established in May 2004 as a pilot project to explore the potential for migration monitoring at McGill University's Stoneycroft Pond wildlife area. In part, the idea was motivated by the results of banding demonstrations held in September and October for McGill's ornithology class. Between 1995 and 2003, 247 birds comprising 34 species were banded, generally using fewer than half a dozen nets for just a couple of days each fall. Additionally, several graduate students in the Natural Resource Sciences program at McGill had taken part in Northern Saw-whet Owl banding at Innis Point Bird Observatory in Ottawa, and wanted to try setting up a monitoring site closer to home. In spring 2004, three of these students (Shawn Craik, Marcel Gahbauer, and Marie-Anne Hudson) developed the organizational framework for MBO, including its adoption as a project of the Migration Research Foundation, and development of an operational protocol consistent with the standards of the Canadian Migration Monitoring Network.

Only one brief attempt at banding was made in May 2004 while testing out a potential net lane adjacent to Stoneycroft Pond. Efforts were instead concentrated on surveying the site for the best locations to target for other nets, and preparing for a more extensive fall season. Most significantly, this involved extensive restorations to an old cabin on the property which had been used as a base for mammal research in the 1970s and early 1980s. It had been abandoned for nearly 20 years and was in rough condition inside, but still structurally sound, and through the efforts of an enthusiastic team of volunteers was transformed into the MBO banding station.

Beginning in late August 2004, one or more observers walked a standard route around the property at least twice per week, the precursor of what would become the MBO census trail. This provided further guidance as to where concentrations of birds occurred regularly, and influenced the placement of the ten mist nets used for the fall 2004 pilot season. Beginning in mid-September and continuing until the end of October, banding took place on average four mornings per week. By the end of the season, 715 birds of 45 species had been banded in just 923 net hours, and 111 species had been observed. These numbers greatly exceeded expectations, and as a result, plans were initiated to operate a full migration monitoring program beginning in 2005. MBO's first official year of operation is considered to have begun in November 2004, following the completion of the fall pilot season.

### **2.2 Objectives**

The principal objective for MBO is research, in particular contributing to the understanding of bird movements and population trends through the consistent operation of standardized migration monitoring programs. As the only member of the Canadian Migration Monitoring Network between Innis Point Bird Observatory (175 km to the west) and l'Observatoire d'Oiseaux de Tadoussac (450 km to the northeast) and the only banding station in Quebec to operate full spring and fall seasons, MBO fills in an important geographic gap for monitoring Canada's boreal bird populations. Operating the spring and fall migration monitoring programs, as well as a MAPS (Monitoring Avian Productivity and Survivorship) site in summer also provides other opportunities to pursue research on a more local or species-specific scale.

Secondary objectives at MBO include training and education. Many of the volunteers at MBO are McGill students, most of them in wildlife biology or environmental biology programs. Helping out at MBO provides them an opportunity to gain practical experience in their chosen field of study, complementing classroom learning. Those who are particularly interested have an opportunity to pursue more advanced training, up to



and including qualifying for banding subpermits to pursue their own research. These opportunities are also equally available to all other volunteers. In a broader sense, education also extends to sharing MBO techniques and results with the public. This has been done through presentations to naturalists clubs, visits to elementary schools, displays at community events, banding demonstrations, and perhaps most significantly, regular updates to a detailed website that serves as an archive of all MBO activities.

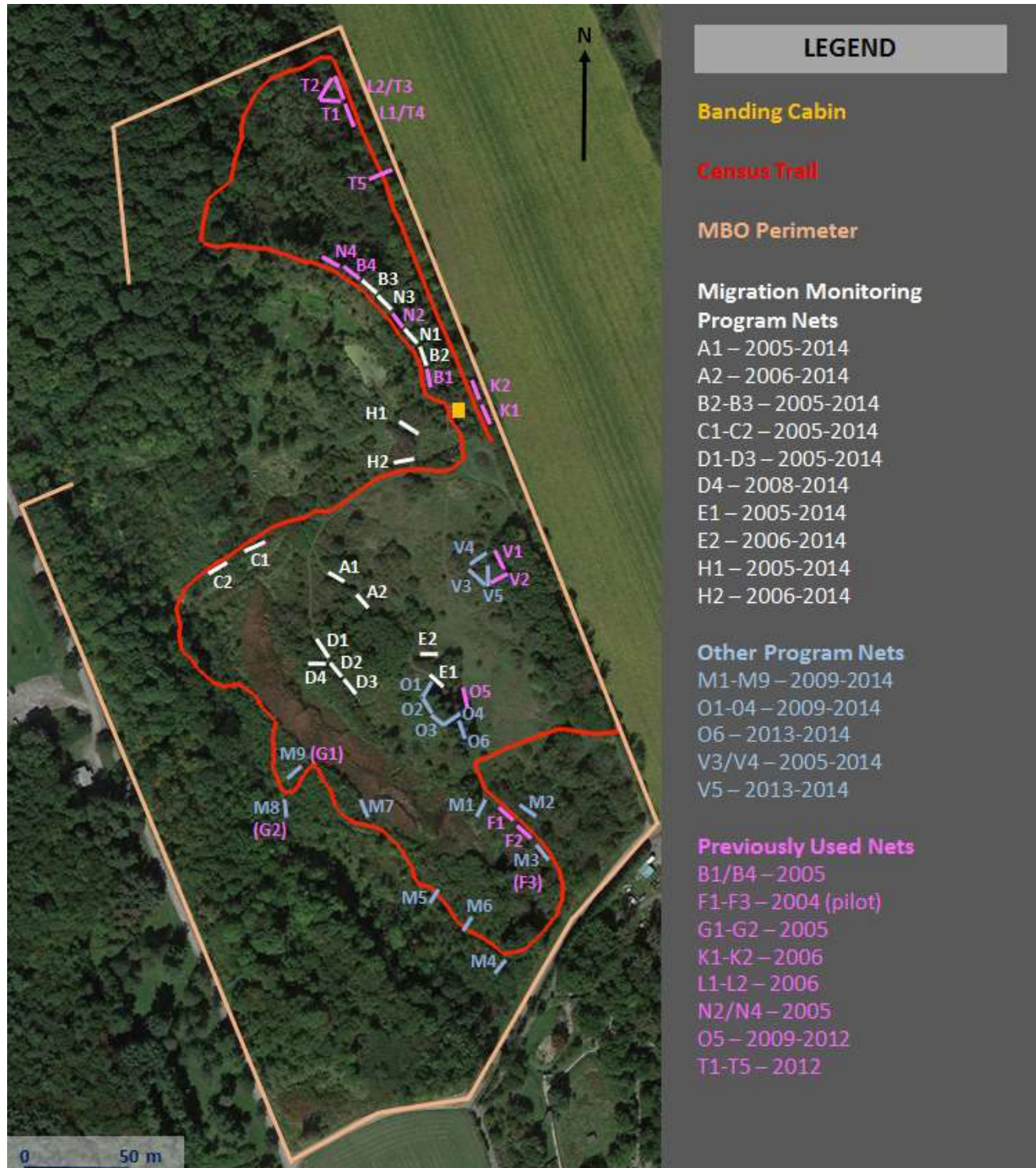


Figure 2.1: Map of McGill Bird Observatory

### **3 Management and operations**

#### **3.1 Management**

MBO is administrated by the Migration Research Foundation (MRF), but in practice a core of local volunteers is responsible for managing MBO according to guidelines established by MRF in partnership with the founders of MBO. Since 2013, funding has permitted for a full-time paid coordinator to oversee program coordination and execution, fundraising, and public outreach efforts.

##### **3.1.1 Board of Directors**

The MRF Board of Directors is ultimately responsible for the management of MBO, including funding, operations, and policies. Until 2006, the board comprised a President, Treasurer, and Project Director; since then a fourth position of MBO Director has been added, recognizing that MBO has become MRF's largest undertaking, and demands a greater amount of attention. All board members serve as volunteers.

##### **3.1.2 Funding**

Expenses at MBO are primarily related to equipment for operating the banding program, providing a modest daily stipend for the banders-in-charge, and covering the costs associated with publication of research. The MRF Board, with the assistance of other volunteers, is responsible for raising sufficient funds annually to at a minimum maintain the standardized operation of MBO's core migration monitoring programs, but preferably to cover all ongoing programs, allow for continued funding of the coordinator position, and provide support for new initiatives. Primary sources of funding are the Great Canadian (formerly Baillie) Birdathon; grants from Environment Canada, Bird Protection Quebec, and TD Friends of the Environment Foundation; corporate sponsorships; and donations from individuals (see section 8.3 for further details).

#### **3.2 Personnel**

There are many roles at MBO, both at an organizational level and on a daily basis on site. All perform critically important roles to the effective operation of MBO programs.

##### **3.2.1 Roles and duties**

The Executive Director is a member of the MRF board, and has a broad range of administrative responsibilities. With respect to MBO specifically, the Executive Director is responsible for providing guidance regarding objectives and operations, and overseeing financial matters in conjunction with the MRF Treasurer.

The MBO Director is also a member of the MRF board, but is primarily focused on matters related to the operation of MBO. Among the MBO Director's key responsibilities are planning to ensure adequate funding and staffing, overseeing program execution, and seeking opportunities for growth.

The MBO Site Coordinator is responsible for overseeing day-to-day operations at MBO, including research, data management, site maintenance, publicity, education, and outreach.

The banders-in-charge (BICs) all hold federal banding permits, and are responsible for all activities occurring at MBO, following the general guidance of the MBO Director and the MRF board (members of which commonly also serve as BICs). Typically the BICs coordinate all volunteers on site and undertake or supervise the banding of all birds; until the Site Coordinator role was established, they were also responsible for data entry at the end of the day. Some BICs are more specialized, and take on the role only for owl banding.

Banders-in-training (BITs) are volunteers who have already acquired experience with the basics of banding at MBO or elsewhere, and are eager to gain the experience required to qualify for a banding permit. They typically commit to participating at least twice per week during migration and under the direct supervision of the BIC, they are given opportunities to practice all the tasks that a bander needs to master.



To date there have been five interns at MBO. Four were present for the Spring Migration Monitoring Program, and for the first time in 2014 one was present for the full duration of the Fall Migration Monitoring Program. Interns follow a loose curriculum that is adjusted by the BICs depending on the background and aptitudes of the intern, but which generally progresses from practice with identification and an introduction to research methods, to hands-on practice with extraction and banding.

Extractors are responsible for the safe and efficient removal of birds from nets. While all BICs are experienced extractors, they may get busy with other responsibilities, therefore an effort is made to ensure there are always at least one or two other extractors on site each day.

Net assistants are volunteers who do not have the experience required to extract birds, but may be closely observing extractors at work or even practicing extraction under their supervision. Their primary role is to assist the extractors by carrying bird bags, scouting out any priorities in the nets, and assisting with lowering and raising nets as required.

Scribes help inside the banding station by recording data for the bander, under his/her direct supervision. This role is well-suited to beginners, but is also a great opportunity for BITs to practice ageing and sexing of birds in collaboration with the BIC.

Maintenance assistants perform a vital role with keeping the trails at MBO in good condition and helping manage habitat to minimize changes from year to year. Many of these volunteers do not otherwise participate in MBO programs, but their contributions are every bit as important.

Censusers are experienced birders who are confident with identifying species by sound as well as by sight. They are responsible for walking the one-hour census trail beginning an hour after dawn, and counting all birds observed. The census serves as an important complement to the data collected through banding.

Last but not least, all participants at MBO are expected to fill the role of observers, keeping track of all birds observed on site and reporting these during the compilation of the daily totals.

### 3.2.2 Key personnel

While all roles described in section 3.2.1 are important, there are some which involve a greater degree of responsibility and commitment. Table 3.1 summarizes the personnel filling these roles since MBO's inception.

Table 3.1: Key personnel at MBO, 2004-2014

|                             | 2004                              | 2005                                                 | 2006                                                                     | 2007                                                 | 2008                                                                | 2009                                                                              |
|-----------------------------|-----------------------------------|------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>Executive Director</b>   | Marcel Gahbauer                   | Marcel Gahbauer                                      | Marcel Gahbauer                                                          | Marcel Gahbauer                                      | Marcel Gahbauer                                                     | Marcel Gahbauer                                                                   |
| <b>MBO Director</b>         | n/a                               | n/a                                                  | n/a                                                                      | Marie-Anne Hudson                                    | Marie-Anne Hudson                                                   | Marie-Anne Hudson                                                                 |
| <b>BICs</b>                 | Marcel Gahbauer                   | Barbara Frei<br>Marcel Gahbauer<br>Marie-Anne Hudson | Barbara Frei<br>Marcel Gahbauer<br>Marie-Anne Hudson<br>Seabrooke Leckie | Barbara Frei<br>Marcel Gahbauer<br>Marie-Anne Hudson | Barbara Frei<br>Marcel Gahbauer<br>Marie-Anne Hudson<br>James Junda | Simon Duval<br>Barbara Frei<br>Marcel Gahbauer<br>Gay Gruner<br>Marie-Anne Hudson |
| <b>Saw-whet Owl banders</b> | Joanna Coleman<br>Marcel Gahbauer | Shawn Craik<br>Marcel Gahbauer                       | n/a                                                                      | Shawn Craik<br>Marcel Gahbauer                       | n/a                                                                 | Simon Duval<br>Marcel Gahbauer<br>Kristen Keyes                                   |
| <b>Intern</b>               | n/a                               | n/a                                                  | n/a                                                                      | n/a                                                  | Simon Duval                                                         | Benoit Duthu                                                                      |
| <b>Seasonal reports</b>     | Marcel Gahbauer                   | Marcel Gahbauer                                      | Marcel Gahbauer<br>Marie-Anne Hudson                                     | Barbara Frei<br>Marcel Gahbauer<br>Marie-Anne Hudson | Barbara Frei<br>Marie-Anne Hudson                                   | Marcel Gahbauer<br>Marie-Anne Hudson                                              |

|                                | 2010                                                                               | 2011                                                          | 2012                                                          | 2013                                                                         | 2014                                                                         |
|--------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <b>Executive Director</b>      | Marcel Gahbauer                                                                    | Marcel Gahbauer                                               | Marcel Gahbauer                                               | Marcel Gahbauer                                                              | Marcel Gahbauer                                                              |
| <b>MBO Director</b>            | Gay Gruner                                                                         | Gay Gruner                                                    | Gay Gruner                                                    | Gay Gruner                                                                   | Barbara Frei                                                                 |
| <b>BICs</b>                    | Simon Duval<br>Gay Gruner<br>Barbara Frei<br>Marie-Anne Hudson<br>Lance Laviolette | Simon Duval<br>Gay Gruner<br>Barbara Frei<br>Lance Laviolette | Simon Duval<br>Gay Gruner<br>Barbara Frei<br>Lance Laviolette | Simon Duval<br>Gay Gruner<br>Barbara Frei<br>Lisa Keelty<br>Lance Laviolette | Simon Duval<br>Gay Gruner<br>Barbara Frei<br>Lisa Keelty<br>Lance Laviolette |
| <b>Saw-whet Owl banders</b>    | Kristen Keyes<br>Simon Duval                                                       | Bob Barnhurst<br>Simon Duval                                  | Bob Barnhurst<br>Simon Duval                                  | Nicolas Bernier<br>Simon Duval                                               | Nicolas Bernier                                                              |
| <b>Interns</b>                 | n/a                                                                                | Matthew von Bornhoft                                          | n/a                                                           | n/a                                                                          | Luke Currin (spring)<br>Ana Morales (fall)                                   |
| <b>Seasonal/annual reports</b> | Marcel Gahbauer<br>Marie-Anne Hudson<br>Gay Gruner                                 | Marcel Gahbauer                                               | Marcel Gahbauer                                               | Marcel Gahbauer                                                              | Marcel Gahbauer<br>Simon Duval<br>David Davey                                |

### 3.2.3 Volunteers

Except for the BICs, who are provided a modest stipend as compensation for their expertise and extra responsibilities, and the site coordinator (starting in 2014), all other roles at MBO are performed on a volunteer basis. In total, 614 volunteers contributed 39,400 at MBO during just the spring and fall migration monitoring programs over the first ten years (see Appendix G for a full list of names). Table 3.2 below summarizes the effort across migration monitoring seasons; many additional hours have been contributed in summer and winter.



Table 3.2: Volunteer effort at MBO during migration monitoring programs, 2005-2014

|                          | 2005   |      | 2006   |      | 2007   |      | 2008   |      | 2009   |      |
|--------------------------|--------|------|--------|------|--------|------|--------|------|--------|------|
|                          | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall |
| <b># volunteers</b>      | 31     | 78   | 54     | 73   | 40     | 73   | 61     | 86   | 69     | 73   |
| <b># volunteer hours</b> | 1040   | 2160 | 1500   | 2180 | 1200   | 2400 | 1620   | 2700 | 1400   | 2200 |
|                          | 2010   |      | 2011   |      | 2012   |      | 2013   |      | 2014   |      |
|                          | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall |
| <b># volunteers</b>      | 51     | 127  | 78     | 108  | 82     | 109  | 64     | 85   | 58     | 72   |
| <b># volunteer hours</b> | 1420   | 2880 | 1500   | 2700 | 1900   | 2300 | 1450   | 2750 | 1430   | 2670 |

### 3.3 Operations

For the most part, the operation of MBO is intended to be consistent from year to year, regardless of the personnel involved; this is achieved through adherence to fixed protocols and attempting to maintain a relatively constant state of vegetative succession.

#### 3.3.1 Protocols

The spring and fall seasons have since 2004 been operated according to the *McGill Bird Observatory Field Protocol for Migration Monitoring Program* (Gahbauer and Hudson 2014 and previous versions), adapted from the protocol in use at Innis Point Bird Observatory, and consistent with approaches recommended by the Canadian Migration Monitoring Network. This document covers protocols for seasonal guidelines, daily operations, data conventions, volunteer management, and more.

Starting In 2009, the summer program was operated according to the MAPS protocol (DeSante et al. 2010), to be consistent with all other MAPS sites in North America. In previous years, summer operations were informal, with census taking place periodically along the usual route, and banding occurring opportunistically. Similarly, no formal protocol has been used for winter, with activities taking place when weather is suitable and volunteers are available.



At a higher level, all activities are guided by the *McGill Bird Observatory Operations Manual* (Gahbauer and Hudson 2007). This document provides guidance to the MBO Director and Banders-in-charge with respect to

organizational structure, data management, safety, finances, equipment, and communications, to ensure consistency is maintained even if there is turnover in personnel. Activities are reviewed annually by the McGill University Animal Care Committee, and approved under AUP #5446.

### 3.3.2 Data conventions

As noted above, data conventions and other approaches are explained in detail in the *McGill Bird Observatory Field Protocol for Migration Monitoring Program* (Gahbauer and Hudson 2014 and previous versions). For the purpose of this report, some key definitions are provided here:

- Daily estimated total – refers to the estimate generated at the end of each day of the total number of individuals of each species believed to be present, taking into account numbers banded or recaptured, counted on census, and incidentally observed. For seasonal and species summaries (Section 5.3, Appendix C, Appendix D, and Appendix H), unidentified species are excluded, and species groups are merged (i.e., Alder Flycatcher and Willow Flycatcher and Alder Flycatcher are reported as Traill's Flycatcher, and Greater and Lesser Snow Goose are reported simply as Snow Goose). In daily species counts (e.g., Figures 4.1-4.3 and 4.5-4.7) and seasonal summaries (Tables 4.1-4.6, 5.3, and Appendices A and B), 'superspecies' (e.g., Traill's Flycatcher) are counted only if none of the component species (e.g., Willow and Alder Flycatcher) have also been recorded.
- Full coverage (full net coverage) – refers to days with a number of net hours  $\geq (\# \text{ regular nets} - 1) * 5$ . Full coverage can therefore be achieved even if one net is temporarily unavailable (e.g., due to flooding or repair), but not on mornings when operation of all nets has been reduced by > 15 minutes due to rain or other limitations.

Data from all MBO programs are now maintained in a central database that was developed over the course of 2013 and 2014 to compile the various separate records used previously. Through development of this database, all records were reviewed, and some errors previously reported in seasonal/annual reports and in the five-year report (Gahbauer 2010) were corrected. Thus while there are some minor discrepancies between this report and previously published results, the current version is in all cases considered correct.

### 3.3.3 Site management

Site management includes taking care of the banding cabin, equipment, nest boxes, and trails, as well as attempting to maintain habitat at a relatively stable state of succession so as not to compromise the value of data for population monitoring. Guidelines for site management are provided in the *Operations Manual* and the MBO Director and Banders-in-charge are responsible for adhering to them. In practice, several aspects of site management are quite labour-intensive, especially trail maintenance and limiting encroachment of invasive vegetation in the ponds, and substantial volunteer involvement is required.



Volunteers distributing gravel on the MBO trail network (Photo by Simon Duval)

## 4 Research

Research is the primary objective of MBO, and as such is the focal point of all field programs. This section summarizes each of the five main seasonal programs at MBO, as well as other research and publications.

### 4.1 Winter Population Monitoring Program (WPMP)

Winter at MBO covers the 21-week period between the end of fall migration and the beginning of spring migration, i.e. October 31 to March 27. Although relatively few species overwinter regularly at MBO, several of them are uncommon to absent in other seasons, thus winter provides the best opportunity to monitor them.

#### 4.1.1 Objectives and protocol

As in other seasons, a key objective of the winter program is to collect data on bird populations that can be assessed over time. However, MBO can experience extended periods of severe winter weather, and conditions vary considerably from one winter to the next, therefore it is impossible to maintain a strict protocol with respect to temporal sampling. Nonetheless, scheduling site visits as weather permits has produced some interesting data, and the winter program also has educational value for volunteers who have become interested during the fall, but may have been overwhelmed by the diversity of species and volume of birds. The standard census trail is walked in winter when possible (sometimes by snowshoe), but effort is primarily focused on banding, which is generally limited to a maximum of three hours at a time, and rarely occurs more than twice per week except near the beginning and end of the season when temperatures tend to be milder. Nets are set up adjacent to feeders that are stocked throughout the winter with sunflower, nyjer, and millet, as well as corn and peanuts in some years. In general, banding follows the MBO migration monitoring protocols, but net checks are much more frequent due to the colder temperatures.

#### 4.1.2 Results

Winter results from 2005 to 2014 are summarized in Table 4.1 (note that winter is defined as starting in the preceding year, e.g., winter 2005 refers to October 31, 2004 through March 27, 2005). Because of differences in weather conditions and bander availability over the years, effort and results are quite variable. Extent of banding effort has varied considerably among winters, from none in 2008 to over 300 net hours in 2010 and 2012; to a large degree, effort is related to weather, with the least amount of banding in the winters of 2008, 2009, and 2014, including the snowiest (2008) and coldest (2014) years. Regardless of conditions, observations were made each winter, with at least 35 species observed per season. The cumulative list of birds observed during winter is 93 species, but this includes a number of late fall or early spring migrants. Several species are banded in particularly high numbers in winter, including Mourning Dove, House Finch, American Goldfinch, and in some winters Common Redpoll.



*Winter landscape at MBO (Photo by Simon Duval)*

Table 4.1: Winter summary statistics, 2005-2014

|                                | 2005     | 2006     | 2007     | 2008 | 2009   |
|--------------------------------|----------|----------|----------|------|--------|
| # individuals (species) banded | 256 (14) | 316 (19) | 103 (11) | n/a  | 32 (6) |
| # individuals (species) return | 12 (4)   | 27 (5)   | 7 (3)    | n/a  | 5 (4)  |
| # individuals (species) repeat | 102 (8)  | 185 (7)  | 32 (7)   | n/a  | 1 (1)  |
| # species observed             | 35       | 50       | 49       | 40   | 51     |
| # net hours                    | 117.5    | 163.5    | 103.0    | n/a  | 24.0   |
| # birds banded / 100 net hours | 217.9    | 193.3    | 100.0    | n/a  | 133.3  |
| # days operating               | 14       | 64       | 45       | 24   | 37     |
| # days banding                 | 13       | 18       | 11       | 0    | 3      |

|                                | 2010     | 2011     | 2012     | 2013     | 2014     | Average  | Total     |
|--------------------------------|----------|----------|----------|----------|----------|----------|-----------|
| # individuals (species) banded | 317 (18) | 449 (19) | 380 (18) | 800 (19) | 162 (13) | 313 (15) | 2815 (32) |
| # individuals (species) return | 17 (5)   | 36 (4)   | 47 (8)   | 54 (11)  | 17 (5)   | 25 (5)   | 222 (15)  |
| # individuals (species) repeat | 136 (11) | 75 (8)   | 158 (9)  | 212 (14) | 64 (6)   | 107 (8)  | 965 (19)  |
| # species observed             | 58       | 52       | 63       | 44       | 35       | 48       | 93        |
| # net hours                    | 328.0    | 132.0    | 315.7    | 197.4    | 47.5     | 158.7    | 1428.6    |
| # birds banded / 100 net hours | 96.6     | 340.2    | 120.4    | 405.3    | 341.1    | 216.5    | 197.0     |
| # days operating               | 63       | 37       | 25       | 48       | 29       | 38.6     | 386       |
| # days banding                 | 16       | 10       | 17       | 17       | 6        | 11.1     | 111       |

The winter season is heavily dominated by a few species, with the top five accounting for 82% of all individuals banded: American Goldfinch (804; 29%), Common Redpoll (456; 16%), Dark-eyed Junco (451; 16%), House Finch (372; 13%), and Black-capped Chickadee (230; 8%). In terms of observations, Canada Goose has accounted for 39% of individuals recorded, largely due to giant flocks lingering from late fall in some years. The three next most abundant winter species are American Crow (9% of observations), European Starling (6%) and Black-capped Chickadee (6%); another five species each account for 3.5% to 4% of winter sightings: American Robin, Dark-eyed Junco, Red-winged Blackbird, Common Redpoll, and American Goldfinch.

Winter 2005 had below average snowfall in all months, although rainfall was well above average in November and December. Temperatures were below average each month except February. There were fewer days of operation than in any subsequent winter, but that is largely due to no observations being recorded on days when the feeders were filled but no banding was undertaken. The number of species and individuals banded were just below the ten-year means. American Goldfinch accounted for 44% of individuals banded, while House Finch and Black-capped Chickadee rounded out the top three for the season.

Winter 2006 was the rainiest ever at MBO, and also somewhat warmer than average. There were more days of operation and banding than in any other winter, but the number of birds banded and species observed were only slightly above average for the season. American Goldfinch was again the most frequently banded species, comprising 35% of the winter total; Dark-eyed Junco and Black-capped Chickadee were also in the top three for the season.

Winter 2007 had relatively average weather throughout the season, aside from being the only winter with zero snowfall in November and zero rainfall in February. However, effort was somewhat lower due to reduced bander availability, and even when banding did take place, the rate of capture was well below average. Dark-eyed Junco, House Finch, and American Goldfinch each accounted for 20% of birds banded this winter.

Winter 2008 was by far the snowiest in MBO's history, with 362 cm of snow – 129 cm (58%) more snowfall than the next nearest year. Correspondingly, temperatures were somewhat below average throughout the season, and rainfall was near a record low. Due to the deep snow, no banding took place and frequency of observations was also reduced; not surprisingly the number of species observed was well below average.

Winter 2009 also had far more snowfall than average over the first three months of the season, but then less than half as much as usual in February and March. Rainfall through the season was overall close to average, although it was the only winter with none in January. Temperatures were overall a bit below average, including a record cold January. Taking into consideration all of the weather limitations, banding efforts were minimal. Common Redpoll accounted for two-thirds of individuals banded; no more than 3 individuals were banded of any other species.

Winter 2010 was fairly average with respect to both snowfall and rainfall, but daily high temperatures were on average nearly 2°C above the ten-year mean. This allowed for the highest number of days of operation and banding since 2006, and more net hours than in any other winter, in part because the milder temperatures allowed for extended sessions on some days. The number of species observed was higher than in any previous winter. American Goldfinch returned to being the most frequently banded bird of the season, with 25% of the total, followed by Black-capped Chickadee and Dark-eyed Junco.

Winter 2011 was back to having higher than average levels of precipitation, most notably with more than three times the average amount of rainfall in March, as well as a near record amount of rain in November and the second highest amount of snowfall in February. Temperatures were slightly below average throughout the season. Given the conditions, effort was somewhat lower again, but despite that more birds were banded than in any previous winter, thanks to a particularly productive November. For the first time, more Dark-eyed Juncos were banded in winter than any other species, accounting for one-third of the total; American Goldfinch and House Finches rounded out the top three.

Winter 2012 was by far the warmest, with mean monthly temperatures ranging from 1.7 to 6.0°C above the ten-year means, and record high mean temperatures for December, February, and March. Not surprisingly, snowfall was lower than in any other winter, while rainfall was somewhat above average, although mostly in December. While the weather was largely pleasant, it also reduced the dependence of birds on feeders, and as a result effort was somewhat scaled back for most of the winter. However, number of species and individuals banded were still above average overall, and more species were observed than in any other winter, largely due to very early spring arrivals during the sustained warm spell mid-month. Dark-eyed Junco was the most frequently banded species for a second straight winter (24% of all individuals), but with only 3 more banded than American Goldfinch; House Finch again ranked third.

Winter 2013 had less rainfall than any other year including a record low amount in November, but snowfall was well above average in December, February, and March. Temperatures were fairly close to average throughout the winter. Effort was a bit above average this winter, but results were exceptional, with nearly twice as many birds banded as in the next best year, and the highest capture rate of any winter. Common Redpoll dominated with 340 individuals banded (43% of the total), even though both American Goldfinch (228 individuals) and House Finch (95) set new winter records. After using a square of nets (V1-V4) in all previous winters, the layout was adjusted to a triangle (V3-V5) this winter, more concentrated around the feeders.

Winter 2014 was noteworthy for being by far the coldest on record at MBO, with monthly mean high temperatures from 1.9 to 4.6°C below the ten-year means, and at record low levels in November, December, and March; it was the only year with a mean high temperature in March below freezing. Before the cold fully set in, there was a record amount of rainfall in November. Snowfall over the season was close to average. Observation and banding effort were considerably curtailed due to the severe weather, but when banding was possible, capture rates were well above average. The number of species observed was lower than in any other winter, in large part because the prolonged cold largely prevented spring migrants from starting to arrive before the end of winter. American Goldfinch was back on top this winter with 43% of birds banded, followed by Dark-eyed Junco and House Finch.



## 4.2 Spring Migration Monitoring Program (SMMP)

The Spring Migration Monitoring Program has been operated at MBO annually since 2005. It covers the ten-week period from March 28 to June 5; the start date represents the average arrival of early migrants, while the end date reflects the average departure of the latest migrants.

### 4.2.1 Objectives and protocol

The SMMP is designed as a standardized study to be used as the basis for long-term trend analysis of bird populations. It is operated according to the MBO migration monitoring protocol (Gahbauer and Hudson 2014), which was developed to be compatible with the aims and methods of the Canadian Migration Monitoring Network. The program involves a standardized census daily throughout the season, supplemented by banding and additional observations during the core of the season, which since 2007 has been defined as April 18 to June 1. In 2005 and 2006, banding took place throughout the season, but few birds were caught until after mid-April, and cold weather often limited net hours, causing the start of banding to be delayed until week 4 in subsequent years. By early June, migrants become a small minority of the birds captured, so to avoid excessive capture of local breeders, banding has ended at June 1 since 2007, with census on the remaining four days of the season, to document the passage of late migrants. The 2005 season also differed by starting one week later than in other years, and due to staffing limitations, banding took place on average every second day.

### 4.2.2 Results

SMMP results from 2005 to 2014 are summarized in Table 4.2, with additional detail provided in Appendix A. Despite the evolution of the protocol over the first three years, the results have been relatively consistent across all years, with the number of species observed always between 133 and 149, the number of species banded between 59 and 69, and the number of individuals banded between 627 and 991, aside from an exceptional total of 1356 in 2014. The number of birds banded per 100 net hours ranged between 26 and 37 in most years, but was unusually low (20) in 2010, and particularly high in 2005 (41) and 2014 (45). The number of returns has shown an increasing trend, reflecting the ever greater proportion of local residents that have been banded in previous years. In total, 191 of the 210 species observed at MBO and 97 of the 121 species banded have at least one spring record.

Table 4.2: SMMP summary statistics, 2005-2014

|                                | 2005     | 2006     | 2007     | 2008     | 2009     |
|--------------------------------|----------|----------|----------|----------|----------|
| # individuals (species) banded | 650 (62) | 754 (63) | 695 (61) | 826 (64) | 815 (66) |
| # individuals (species) return | 20 (6)   | 70 (17)  | 82 (21)  | 90 (16)  | 99 (22)  |
| # individuals (species) repeat | 211 (21) | 144 (23) | 103 (20) | 194 (25) | 246 (29) |
| # species observed             | 133      | 148      | 134      | 139      | 146      |
| # net hours                    | 1575.6   | 2912.1   | 2460.0   | 2912.2   | 2956.5   |
| # birds banded / 100 net hours | 41.3     | 25.9     | 28.3     | 28.4     | 27.6     |
| # days operating               | 59       | 69       | 70       | 70       | 69       |
| # days banding                 | 28       | 57       | 35       | 41       | 42       |
| # days with full net coverage  | 17       | 28       | 26       | 28       | 30       |

|                                | 2010     | 2011     | 2012     | 2013     | 2014      | Average  | Total     |
|--------------------------------|----------|----------|----------|----------|-----------|----------|-----------|
| # individuals (species) banded | 627 (59) | 906 (64) | 991 (66) | 790 (68) | 1356 (69) | 841 (64) | 8410 (97) |
| # individuals (species) return | 112 (24) | 63 (17)  | 103 (17) | 105 (23) | 127 (25)  | 87 (19)  | 871 (41)  |
| # individuals (species) repeat | 160 (25) | 129 (25) | 298 (30) | 225 (32) | 295 (34)  | 200 (26) | 2005 (52) |
| # species observed             | 138      | 140      | 143      | 145      | 141       | 141      | 191       |
| # net hours                    | 3115.4   | 2436.0   | 2818.0   | 2923.8   | 3004.6    | 2711.4   | 27114.2   |
| # birds banded / 100 net hours | 20.1     | 37.2     | 35.2     | 27.0     | 45.1      | 31.6     | 31.0      |
| # days operating               | 70       | 70       | 70       | 70       | 68        | 68.5     | 685       |
| # days banding                 | 42       | 38       | 41       | 43       | 43        | 41       | 410       |
| # days with full net coverage  | 36       | 27       | 31       | 30       | 29        | 28.2     | 282       |



Over the full spring season, Red-winged Blackbird has been the most consistently common species banded, appearing among the top three every year except 2014, when it ranked fifth. The only other two species among the top ten banded each spring are Ruby-crowned Kinglet and Yellow-rumped Warbler; Yellow Warbler and White-throated Sparrow have each only missed it once out of ten years. Red-winged Blackbird has been the top species banded in six springs (2006-2008, 2010, 2012-2013), while four other species have each had the lead in one spring (American Goldfinch in 2005, Tennessee Warbler in 2009, Yellow-rumped Warbler in 2011, and Cedar Waxwing in 2014). Combined, the aforementioned 8 species account for almost exactly half of the birds in spring and have higher cumulative totals than any others: 978 Red-winged Blackbirds, 574 Cedar Waxwings, 538 Ruby-crowned Kinglets, 473 Tennessee Warblers, 464 American Goldfinches, 420 Yellow-rumped Warblers, 407 White-throated Sparrows, and 348 Yellow Warblers. Among observations, Canada Goose had the highest daily every spring, and in five years was followed by Snow Goose in second place; in the other five years it was Red-winged Blackbird. Species in the top ten annually are Canada Goose (average 163 individuals observed daily), Red-winged Blackbird (44), Ring-billed Gull (24), and American Crow (18).

The 2005 SMMP was a pilot season, largely consistent with the protocol used in subsequent years, but with somewhat less complete coverage, and a bit of experimentation with dates and net locations. The season was initially defined as 60 days, and only April 23 was skipped due to poor weather. Census was done on all but four days when high volume of birds in the nets precluded any volunteers from being available, while banding took place on 27 of the 59 days of operation. Thirteen mist nets were used throughout the season. Weather was somewhat erratic in spring 2005, with much higher amounts of rainfall in weeks 1 and 5 than any other years, but much lower than average rainfall amounts in six of the eight other weeks; in terms of temperature, the beginning and end of the season were both warmer than usual, but most of May was colder than normal. The peak day of banding this spring was May 16, with 57 birds of 22 species banded; diversity of birds observed on site peaked later, with 64 species on May 27. This was the only spring season in which American Goldfinch topped the list of birds banded, with 111 individuals, almost twice as many as in any other spring. The non-random selection of suitable banding days this spring accounts for the considerably above average capture rate.

In 2006, the spring season was expanded to 70 days, with the first 8 days and final 2 days of the season reserved for census only. Banding took place on all but three of the remaining 60 days, but weather was often poor, with more rain than in any other spring, and resulted in some limitation of banding effort on all but 26 days. The frequency of poor conditions early in the season contributed strongly to the decision to extend the initial census only period from 8 to 21 days in subsequent years. Fifteen nets were used this spring, including four (K1, K2, L1, L2) along the back lane on a trial basis that yielded poor results and were not used again, while net H1 could not be used due to flooding. The peak day for banding this spring was May 22, with only 37 birds banded. Species diversity peaked on the same date, with 76 species observed, tied with May 20, 2014 for the highest daily total at MBO in any season. Red-winged Blackbird was the most frequently banded species by far, with 169 individuals, far ahead of Common Grackle in second place with 59, and Ruby-crowned Kinglet with 58.

Beginning in 2007, the spring season remained 70 days long, but the first 21 days and final 4 days of the season were reserved for census only, with banding scheduled for the core 45 days in between. The switch was particularly timely, as the 62 cm of snow that fell during weeks 2 and 3 of the season were more than the total for all other spring seasons combined. However, rainfall was the lowest of any spring. After record low temperatures accompanying the snow in weeks 2 and 3, the rest of the season fluctuated both above and below average. Effort was somewhat lower this spring due to four days lost to rain and unavailability of a bander on six days between mid-April and early May, the only such gap in either spring or fall after 2005. However, net usage settled on the core of 15 nets used in all subsequent years (A1, A2; B2, N1, N3, B3; C1, C2; D1, D2, D3; E1, E2; H1, H2). The busiest day of banding this spring on May 10, with 45 individuals banded. The ten most abundant species accounted for 60% of individuals banded this spring, with Red-winged Blackbird again atop the list by a large margin with 154 individuals, compared to Ruby-crowned Kinglet in second place with 52. The peak of diversity was earlier than in previous years, with 65 species observed on May 18.

The 2008 season followed the standard schedule established in 2007. Coverage was somewhat better, with only four banding days lost entirely to rain, and weather limiting efforts on another ten days although overall it was a second consecutive drier than average spring. Effort expanded to using 16 nets, with the addition of D4; this same array has continued to be used in all subsequent years. The number of individuals banded (826) was higher than any previous year, perhaps partly reflecting expanded coverage, but perhaps also influenced by persistent northwest winds in May that could have slowed down the progress of some migrants – this is the only year to date with below average mean temperatures for all three final weeks of the season. The delay in migration was seen in the banding peak of 57 individuals not occurring until May 26, and the peak of diversity (71 species) occurring surprisingly late on May 30. Again this year the top ten species banded accounted for 60% of all individuals, and Red-winged Blackbird remained in first place for a third year in a row with 114 individuals, but this time not that far ahead of Ruby-crowned Kinglet with 92.

In 2009, weather was again generally favourable, with slightly below average rainfall, and relatively normal temperatures, aside from a record warm week 5. Coverage was similar to 2008, with one fewer day lost entirely to rain, and 30 days of full coverage, a new high for spring. The highlight was an unprecedented abundance of Tennessee Warblers. Beginning in the third-last week of the season, 82 individuals were banded, nearly three times as many as had been banded in all four previous spring seasons combined. After being the top species banded in spring for the previous three years, Red-winged Blackbirds were unusually scarce, with 50 individuals placing them third, behind Ruby-crowned Kinglet with 73. A new single-day record for spring was set on May 20, with 67 birds banded; the peak of diversity occurred two days earlier on May 18, with 75 species observed. The ten most abundant species accounted for 58% of individuals banded this spring, and this year included seven warbler species, more than in any other year.

Spring 2010 was fairly average with respect to precipitation, but more notable for being the warmest spring on record at MBO. Mean daily high temperatures were more than 1°C in half of the weeks, including record levels in weeks 2 and 9, with the latter being the warmest ever for spring at 28.9°C. Although not the driest spring, rain interfered with operations less than usual, and both net hours and coverage ended up at higher levels than any other year. Unfortunately, migration was weak this year, and despite the high level of effort, fewer birds were banded than in any other spring, and the number of species observed was lower than in any year except 2005. Red-winged Blackbird returned to being the top species banded this spring, followed by Cedar Waxwing and American Goldfinch; overall the top ten species banded comprised 63% of individuals this spring. The busiest day of banding was May 15 with 34 individuals; diversity peaked on May 18 with 65 species observed.

Spring 2011 contrasted sharply with 2010, as it was at the opposite temperature extreme, the coldest spring on record at MBO; both weeks 4 and 6 had record low mean daily high temperatures. Precipitation was also particularly heavy, with small amounts of snow for each of the first four weeks, and record high levels of rainfall in three weeks (3, 6, and 7). As such, both net hours and coverage were lower than in any spring except for 2005. Despite that, more birds were banded than in any previous spring. For only the second time, Red-winged Blackbird was pushed down to the third-most banded species of spring, behind Yellow-rumped Warbler and Tennessee Warbler. The top ten species banded this spring accounted for 60% of individuals banded. The busiest day of banding was May 22 with 102 individuals, the highest to date in spring; diversity peaked on May 21 with 69 species observed.

Spring 2012 had the warmest week 3 and 8 on record, and coldest week 5, but otherwise weather was close to average. Correspondingly, both net hours and coverage were slightly above average. For a second year in a row, a new high was set for number of birds banded, this time falling just short of 1000. Red-winged Blackbird again returned to being the top species banded for the season, with the highest number since 2007. Despite new spring record counts, Tennessee Warbler and Cedar Waxwing were second and third among birds banded this spring. This spring the top ten species banded accounted for only 58% of individuals, slightly less than usual. The banding peak this spring was 62 individuals on May 17, while the highest diversity was 70 species on May 12.

Spring 2013 had below average rainfall in all but two weeks, but the 66 mm of rain that fell in week 9 was more than triple the average for that period. The 13 cm of snow in week 3 was also the second highest in a single week in any spring. Four weeks were warmer than usual, including an exceptional week 6 with a mean daily high temperature 8.6°C above the ten-year mean, a greater discrepancy between observed and mean than in any other period of the year. However, the mean daily high temperature in week 9 was 4.3°C colder than the ten-year mean, and the overall temperature for spring was just barely above average. Effort was comparable to 2012, but the number of birds was down by 20%. On the other hand, more species were banded than in any previous spring, and the number of species observed was also well above average. Again Red-winged Blackbird was the most commonly banded species, followed this spring by Magnolia and Tennessee Warblers; only 55% of individuals banded were among the top ten for the season. The peak of banding was on May 22 with 94 individuals, while diversity was highest on May 17 and May 19 with 63 species observed.

Spring 2014 was another relatively rainy season, with rainfall above average in four of ten weeks, including a record amount in week 2. The first six weeks of the season were mostly colder than average, most notably week 1; conversely week 7 was warmer than in any other spring. Effort was slightly above average, but the results this spring were exceptional, with over 35% more birds banded than in any previous year, and a record high capture rate. The result was driven in part by a major influx of Cedar Waxwings, with more of them banded than any species in any other spring; rounding out the top three were record numbers of Tennessee and Magnolia Warblers. The top ten species this spring were a driving force in the overall total, accounting for an unusually high 65% of all individuals banded. The busiest day of banding was April 25 with 145 individuals, the highest ever in spring; diversity peaked on May 20 with 76 species observed.



*Canada Warbler, the most frequently banded species at risk at MBO in both spring and fall  
(Photo by Simon Duval)*

Figure 4.1 summarizes the results of the daily census throughout spring. The mean count of species begins around 15 species per day in late March and increases steadily to a peak just below 40 for nearly two weeks in mid-May before dropping off to the low 30s at the end of May.

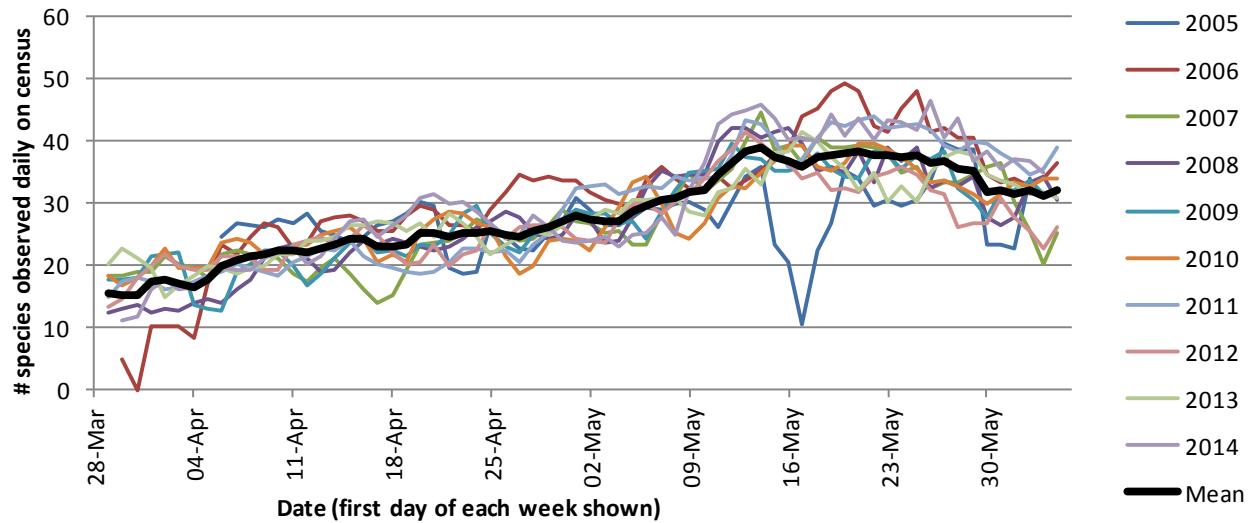


Figure 4.1: Running three-day mean of the daily species count on census throughout spring.

Figure 4.2 shows that the daily estimated total largely mirrors the pattern shown by census, but the counts are higher, especially during the peak of the season. Counts typically begin just under 20 species in late March and increase fairly steadily until a spike in mid-April. To some degree this may reflect a real overlap between the early migrants that start to taper off in late April, and the arrival of later migrants that begin to arrive as May approaches, but it likely is also an artefact of banding beginning around that date in most years, resulting in more thorough daily coverage of the site. The count remains in the mid-high 30s until early May, when it starts to steadily climb again, reaching a peak just below 60 in the third week of May. After that, numbers taper to around 50 by end of May, and then drop off sharply over the first few days of June. In individual years, three-day means have hovered in the 60s in mid-late May.

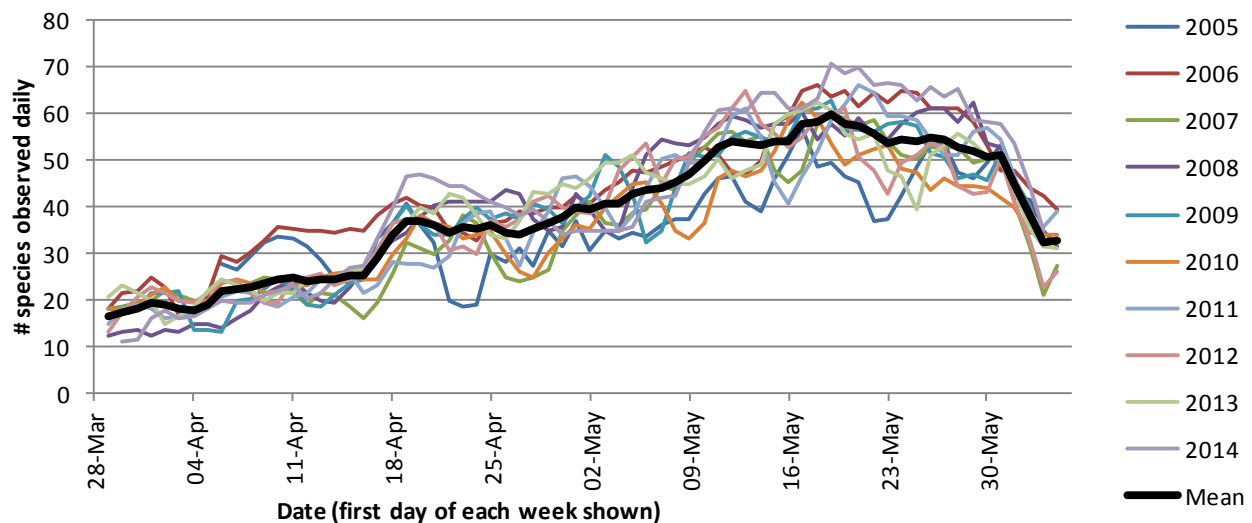


Figure 4.2: Running three-day mean of the number of species observed daily throughout spring.

Figure 4.3 summarizes the number of species banded daily throughout spring. Data were collected prior to April 18 only in the first two years, and the mean count was below 10 species throughout this period. The mean remains between 5 and 7 species until early May, when it begins steadily increasing to a peak of 15 in the third week of May, after which it declines again quite rapidly. There is considerable variability in data from year to year, especially in mid-late May.

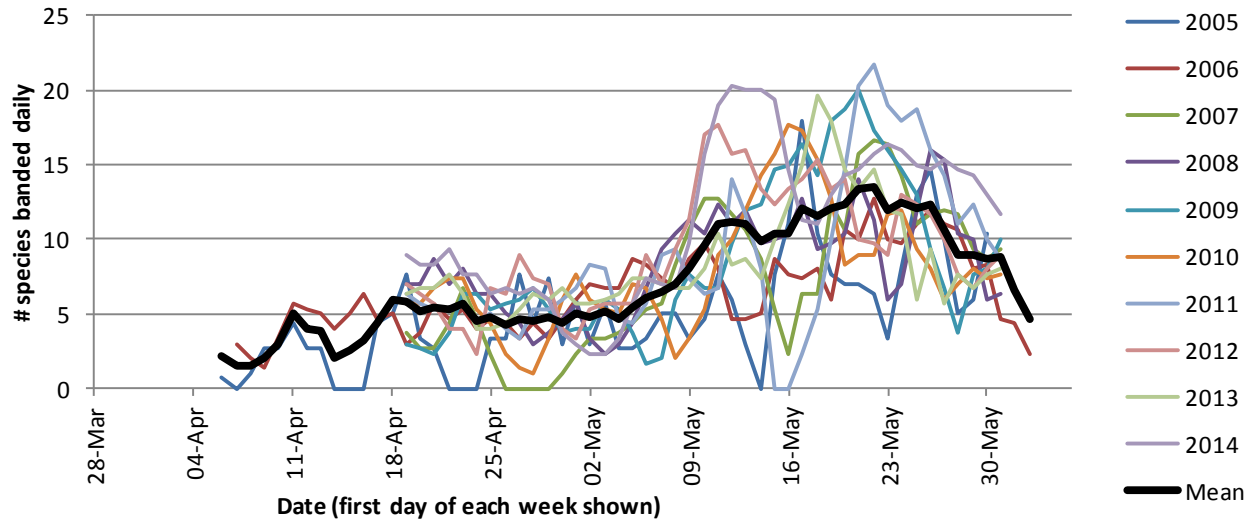


Figure 4.3: Running three-day mean of the number of species banded daily throughout spring.

Figure 4.4 summarizes the number of individuals banded daily throughout spring. Data were collected prior to April 18 only in the first two years, and the mean count was below 15 individuals throughout this period, which strongly influenced the decision to delay the start of banding until the fourth week of the season. Although there is considerable variability from year to year, numbers on average remain below 20 per day until an increase begins late in the first week of May, culminating in a peak of over 30 per day from roughly May 19 to May 24; after that there is a steep and steady decline to the end of the season. As with the number of species banded, there is considerable variation among years, and it is even more widespread throughout the season for number of individuals banded.

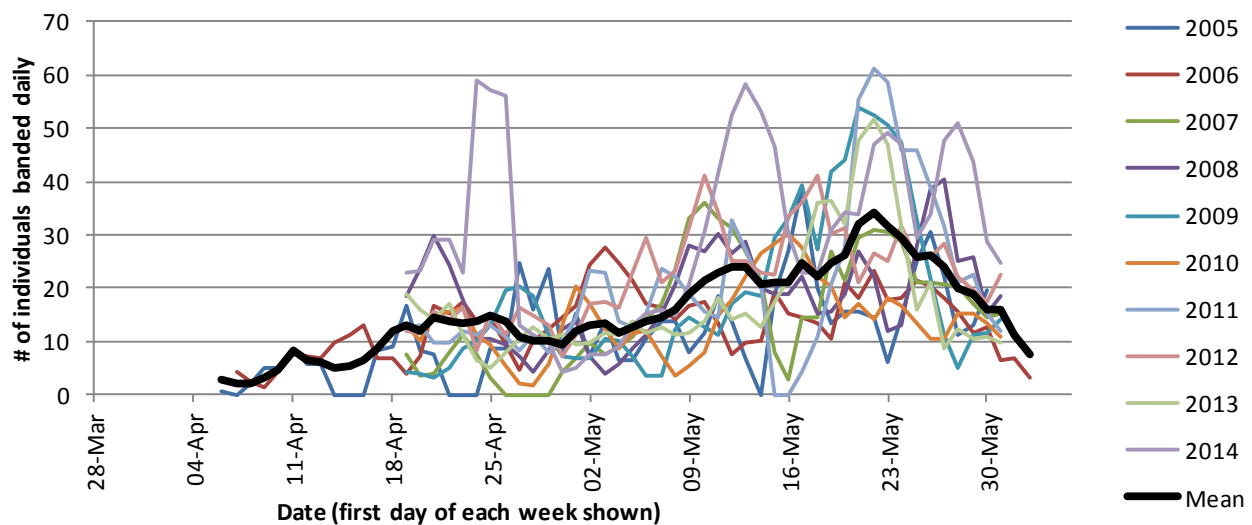


Figure 4.4: Running three-day mean of the number of individuals banded daily throughout spring.

### 4.3 Monitoring Avian Productivity and Survivorship (MAPS)

At MBO, there is an 8-week period between spring and fall migration monitoring seasons, spanning from June 6 through July 31. In most years, informal monitoring of the breeding bird population was conducted to some extent during this period. Beginning in 2009, this was standardized, by starting up a MAPS site as the focal point for summer monitoring.

#### 4.3.1 Objectives and protocol

Originally, the aims of summer monitoring were simply to document the use of MBO by breeding birds to better understand how they contribute to migration monitoring numbers, and to opportunistically band juveniles to increase the potential for documenting returns (or dispersal) in subsequent years. In an effort to standardize the summer program, a MAPS station was established in 2009 as a pilot project, mostly on the opposite side of Stoneycroft Pond from the migration monitoring nets. It is operated according to guidelines provided by the Institute for Bird Populations (DeSante et al. 2010), which coordinates a network of over 500 monitoring stations across North America, all following the same protocol.

#### 4.3.2 Results

Summer results from 2005 to 2014 are summarized in Tables 4.3 and 4.4. The lack of a standardized protocol from 2005 to 2008 is reflected in the variability of results. In particular, banding efforts and results have been much higher since implementation of the MAPS protocol in 2009, as it requires seven banding sessions over the course of the season. Conversely, the number of species observed was highest in the first few years, which had far more days of observation, although banding effort was limited. Banding at nests (primarily targeting juveniles in nest boxes, but also including a few other nests and adults), as reported in Table 4.4, has mostly been opportunistic, and variability in results reflects effort more than numbers nesting on site. Note also that Table 4.4 includes all birds banded at nests, even though a few of these have been in late spring or early fall, but were not part of the standardized Migration Monitoring Programs.

Table 4.3: Summer summary statistics, 2005-2014

|                                | 2005   | 2006    | 2007  | 2008 | 2009     |
|--------------------------------|--------|---------|-------|------|----------|
| # individuals (species) banded | 22 (8) | 27 (11) | 5 (3) | n/a  | 105 (25) |
| # individuals (species) return | 0 (0)  | 2 (1)   | 0 (0) | n/a  | 12 (7)   |
| # individuals (species) repeat | 3 (3)  | 2 (2)   | 0 (0) | n/a  | 29 (9)   |
| # species observed             | 78     | 66      | 65    | 57   | 51       |
| # net hours                    | 34.0   | 78.4    | 2.8   | n/a  | 378.0    |
| # birds banded / 100 net hours | 64.7   | 34.4    | 178.6 | n/a  | 27.8     |
| # days operating               | 33     | 22      | 13    | 10   | 7        |
| # days banding                 | 3      | 4       | 1     | 0    | 7        |

|                                | 2010     | 2011     | 2012     | 2013     | 2014     | Average | Total    |
|--------------------------------|----------|----------|----------|----------|----------|---------|----------|
| # individuals (species) banded | 125 (25) | 111 (21) | 184 (31) | 137 (30) | 143 (33) | 95 (21) | 859 (45) |
| # individuals (species) return | 9 (5)    | 9 (6)    | 10 (5)   | 17 (10)  | 13 (9)   | 8 (5)   | 72 (17)  |
| # individuals (species) repeat | 23 (11)  | 17 (7)   | 26 (8)   | 34 (9)   | 44 (13)  | 20 (7)  | 178 (18) |
| # species observed             | 50       | 60       | 55       | 56       | 59       | 60      | 100      |
| # net hours                    | 378.0    | 378.0    | 378.0    | 378.0    | 392.0    | 266.4   | 2397.2   |
| # birds banded / 100 net hours | 33.1     | 29.4     | 48.7     | 36.2     | 36.5     | 54.4    | 35.8     |
| # days operating               | 9        | 7        | 8        | 7        | 7        | 12.3    | 123      |
| # days banding                 | 7        | 7        | 7        | 7        | 7        | 5       | 50       |

Table 4.4: Nest banding summary statistics, 2005-2014

|                                | 2005  | 2006   | 2007   | 2008   | 2009   |
|--------------------------------|-------|--------|--------|--------|--------|
| # individuals (species) banded | 2 (2) | 11 (2) | 44 (3) | 21 (2) | 52 (2) |

|                                | 2010  | 2011  | 2012   | 2013  | 2014  | Average | Total   |
|--------------------------------|-------|-------|--------|-------|-------|---------|---------|
| # individuals (species) banded | 0 (0) | 4 (1) | 15 (2) | 4 (1) | 0 (0) | 15 (2)  | 153 (6) |



Far fewer birds have been banded in summer than in any other season, but there is considerable diversity, with 45 species banded to date, out of 101 observed. The top four species banded in summer account for 41% of all individuals banded: Song Sparrow (127; 13%), Yellow Warbler (109; 11%), American Robin (89; 9%), and Tree Swallow (77; 8%). Another three species each comprise 5% of birds banded in summer: Red-winged Blackbird (54), Gray Catbird (51), and Black-capped Chickadee (50). In terms of observations, Red-winged Blackbird is by far the most dominant species in summer, comprising 13% of all sightings; the next most abundant are American Goldfinch (8%) and Song Sparrow (7%).

Summer 2005 was the rainiest on record at MBO, with well above average rainfall in both June and July. It was also unusually warm, with the highest mean June temperatures of any year. There was more observer effort in summer 2005 than any other year, due to contributions of a graduate student working on site regularly throughout the season; this resulted in by far the highest count of species for the season. However, banding was limited to just three days and yielded only modest results. Four species each accounted for 18% of the birds banded: Veery, Yellow Warbler, Song Sparrow, and Rose-breasted Grosbeak. Red-winged Blackbird, Song Sparrow, and Yellow Warbler were by far the most frequently observed species.

Summer 2006 was again unusually wet, including the rainiest July in MBO's history. Temperatures were slightly below seasonal in June, and a bit above average in July. The number of days of observation dropped by one-third from 2005 but remained well above the ten-year mean, as did the count of species observed. Again banding effort was quite limited; Song Sparrow (10) and Tree Swallow (6) accounted for over half of the birds banded. Red-winged Blackbird and American Goldfinch were the most frequently observed species, followed by Cliff Swallow and American Robin.

Summer 2007 was unusually dry, largely thanks to a record low amount of rainfall in June. June was also warmer than usual, but July was the second coolest in MBO's ten years of operation. Observation effort declined again but the number of species observed remained above average. There was only one partial morning of banding at the nets, with Song Sparrow dominating, but this was the busiest year for banding of nestlings, most of which were Tree Swallows. Red-winged Blackbirds were more numerous than any other summer, with almost three times as many observed as American Goldfinch and Song Sparrow.

Weather in summer 2008 was quite similar to the previous year, with a dry June and slightly above average rainfall in July, and with June slightly warmer than average and July a bit cooler. The number of days of observation and count of species recorded both declined for the third year in a row, and for the first and only time there was no banding in summer except for nestlings (again mostly Tree Swallows). Red-winged Blackbird numbers dropped sharply from their high in 2007, but remained higher than any other species; the next three most abundant birds this summer were American Crow, European Starling, and American Goldfinch.

Summer 2009 was notable for being the coldest ever at MBO, with an overall mean daily high temperature 2°C below the ten-year mean, and a record low mean for July. However, rainfall was close to average. This was the first year of operation for the MAPS program, which has continued ever since with a consistent 7 days of banding each summer. With effort this summer limited to the MAPS days, the number of species observed dropped to the lowest to date. However, more species and individuals were banded than in any previous summer, including a record volume from the nestbox program. Overall, Red-winged Blackbird (19%) and Tree Swallow (15%) topped the list of species banded, followed by American Robin (8%). With effort focused more on banding than observation this summer, most species were tallied in relatively low numbers. Red-winged Blackbird was still the most numerous, followed by Tree Swallow, American Crow, and Yellow Warbler.

Summer 2010 was the first time since 2005 that there was more rain in June than July, and overall there was roughly 10% more than average. It was the second-coolest June on record, but warmer than usual in July. The number of species observed dropped to a new low for summer, even though there were two days of observation





in addition to the MAPS banding sessions. The number of individuals banded through MAPS was higher than during the inaugural year, but this was one of only two summers without any banding of nestlings. Song Sparrow was banded more than any other species (20; 16%), while Black-capped Chickadee (14; 11%) and American Robin (13; 10%) rounded out the top three. For the first time, Red-winged Blackbird was not the most frequently observed species over the course of summer; it dropped to fourth place behind Cedar Waxwing, American Goldfinch, and Indigo Bunting.

Summer 2011 featured both the hottest and driest July in MBO's history, though June weather conditions were close to average. The number of species observed was the highest during the six years of the MAPS program, but the count of species banded was the lowest for that period, and the number of birds banded and captured as repeats were also below average. Song Sparrow was again banded in the highest numbers (18; 16%), followed by American Robin (14; 13%) and Yellow Warbler (11; 10%). Red-winged Blackbird returned to being the most abundant species observed, followed by a second-place tie between Black-capped Chickadee and Cedar Waxwing.

Summer 2012 was overall the warmest ever at MBO, although neither June nor July set a new monthly high. It was also the driest summer at MBO, with June rainfall just above the record low set in 2007, and July levels also below average. The number of species observed was average for the MAPS years, but more birds were banded this summer than any other, and the number of species banded was also higher than in any previous year. This was largely influenced by an unusually early influx of migrant Yellow Warblers in late July, accounting for 31% of birds banded this summer, and 56% of all Yellow Warblers banded in summer over ten years. However, the top three was rounded out with new record highs for Song Sparrow (26; 13%) and American Robin (18; 9%). Yellow Warbler also dominated the overall observations this summer by a wide margin over Black-capped Chickadee and Red-winged Blackbird.

Summer 2013 was both wetter and cooler than average, most notably the lowest mean daily high temperature for June in MBO's ten years of operation. However, aside from the Yellow Warbler migration of 2012 not repeating, overall results were quite similar to last year. Song Sparrow set another new record high with 29 individuals banded (20%), followed by Gray Catbird (14; 10%) and American Robin (11; 8%). Red-winged Blackbird again returned to being the most frequently observed species of the summer, although there were barely more than a record count of Cedar Waxwings; both were more than twice as numerous as American Goldfinch in third place for the season.

Summer 2014 began with the rainiest June on record, but rainfall tapered off to below average levels in July; overall temperatures were slightly below average. More species were banded this summer than any other year, even though it was only the second time that no nestbox banding took place. The number of species observed was also above average for the MAPS years, and the number of individuals banded the second highest among all summers. The top three species banded this summer were all in record numbers: American Robin (20; 14%), Gray Catbird (18; 13%), and American Goldfinch (13; 9%). Red-winged Blackbird was again the dominant species observed, with more than twice as many records as Common Grackle and American Goldfinch, which rounded out the top three for the summer.



*Wood Thrush, a species at risk with summer numbers at MBO increasing over time  
(Photo by Simon Duval)*

#### 4.4 Fall Migration Monitoring Program (FMMP)

The Fall Migration Monitoring Program has been operated at MBO annually since 2004, but the first year was a pilot season involving considerable experimentation and limited coverage. The program covers the thirteen-week period from August 1 to October 30; the start date represents the average arrival of early migrants, while the end date reflects the typical end of the migration period for most of the late migrants.

##### 4.4.1 Objectives and protocol

Like the spring program, FMMP follows the MBO migration monitoring protocol (Gahbauer and Hudson 2014), with the intention of generating data that can be used for long-term trend analysis. The dates of the fall season have remained unchanged over the years, but in 2005 banding was limited to roughly every other day in August, while since 2006 banding has taken place daily throughout the season, weather permitting. In some years, banding continued into early November following the same protocol, to explore whether late migrants were being missed; results suggest that migration has been getting later for some species, and extending the season to 14 weeks beginning in 2015 is warranted. Also as in spring, banding data are supplemented by a daily census and incidental observations to generate the daily estimated totals for all species.

##### 4.4.2 Results

FMMP results from 2005 to 2014 are summarized in Table 4.5, with additional detail provided in Appendix B. The number of species observed during the fall season has ranged from a low of 134 in 2006 to a high of 151 in 2005, but in most years is close to the ten-year mean of 145. The number of species banded has been even more stable, ranging only from 74 to 78, except for an exceptional total of 86 in 2012. Overall, 191 of the 210 species observed at MBO and 107 of the 121 species banded have at least one fall record (including the owling program). The rate of birds banded per 100 net hours was particularly high in 2005, 2006, 2008, and 2010, but has been in the 51-60 range in five years out of ten. 2008 and 2010 also had by far the greatest number of birds banded, both due to exceptional counts of Yellow-rumped Warbler.

Table 4.5: FMMP summary statistics, 2005-2014

|                                | 2005      | 2006      | 2007      | 2008      | 2009      |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|
| # individuals (species) banded | 3226 (78) | 3280 (76) | 2877 (77) | 5100 (77) | 3391 (75) |
| # individuals (species) return | 43 (13)   | 31 (9)    | 46 (12)   | 32 (14)   | 43 (18)   |
| # individuals (species) repeat | 480 (42)  | 413 (38)  | 561 (43)  | 933 (48)  | 605 (39)  |
| # species observed             | 151       | 134       | 144       | 141       | 144       |
| # net hours                    | 3808.1    | 4423.1    | 5422.9    | 5607.1    | 5837.4    |
| # birds banded / 100 net hours | 84.7      | 74.2      | 53.1      | 91.0      | 58.1      |
| # days operating               | 88        | 91        | 91        | 91        | 91        |
| # days banding                 | 66        | 84        | 86        | 85        | 87        |
| # days with full net coverage  | 30        | 27        | 51        | 45        | 53        |

|                                | 2010      | 2011      | 2012      | 2013      | 2014      | Average   | Total       |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|
| # individuals (species) banded | 6808 (74) | 2792 (78) | 4064 (86) | 3341 (77) | 3818 (77) | 3870 (78) | 38697 (103) |
| # individuals (species) return | 44 (20)   | 40 (15)   | 87 (24)   | 53 (18)   | 61 (20)   | 48 (16)   | 480 (35)    |
| # individuals (species) repeat | 876 (44)  | 604 (45)  | 1089 (52) | 759 (46)  | 848 (49)  | 717 (45)  | 7168 (71)   |
| # species observed             | 140       | 146       | 148       | 147       | 150       | 144       | 193         |
| # net hours                    | 6041.5    | 6393.1    | 6788.3    | 6489.3    | 6422.7    | 5723.4    | 57233.5     |
| # birds banded / 100 net hours | 112.7     | 43.7      | 59.9      | 51.5      | 59.4      | 68.8      | 67.6        |
| # days operating               | 91        | 91        | 91        | 91        | 91        | 90.7      | 907         |
| # days banding                 | 87        | 85        | 91        | 87        | 88        | 84.6      | 846         |
| # days with full net coverage  | 59        | 69        | 71        | 69        | 64        | 53.8      | 538         |

Over the full fall season, four species have taken top spot for the most individuals banded in a year: White-throated Sparrow in 2005, 2009, 2012, and 2014; Yellow-rumped Warbler in 2006, 2008 and 2010; Ruby-crowned Kinglet in 2007 and 2013; and Magnolia Warbler in 2011. The only other species among the top ten in every year are American Robin and Song Sparrow. These six species also have the highest cumulative totals for fall, with 5616 Yellow-rumped Warblers, 3424 White-throated Sparrows, 3119 Ruby-crowned Kinglets, 2268 American Robins, 2245 Song Sparrows, and 2068 Magnolia Warblers over ten years. Among observations, Canada Goose had the highest daily average each fall except 2006, when migrant flocks were unusually scarce and American Crow took top spot instead. Species that have been in the top ten annually are Canada Goose (average 241 individuals observed daily), American Robin (87), and American Crow (69).

Station effort and capacity increased steadily over the first six years of the Fall Migration Monitoring Program, but have been largely stable since 2011. The number of days banding has been fairly consistent between 84 and 91 since 2006, with variability driven only by the number of rain days that prevented safe operation of the nets. The number of days with full coverage is also influenced considerably by weather, since closing nets for part of the morning due to rain or wind results in only partial coverage. However, over the first several years there were fewer experienced extractors, and thus for the sake of bird safety, some nets had to be closed on busy days, as reflected in the net hour totals for the season. Hours of observation by experienced birders also increased over time, having some influence on the consistency of incidental observations, but this has largely stabilized since around 2010-2011 and is expected to remain consistent into the future.

2005 marked the first full year of FMMP, and based on the previous year's pilot season, the plan was to conduct census daily from the beginning of August, but to only begin daily banding at the start of the fifth week, on August 29. However, due to the high number of birds detected right from the start of the season, an effort was made to achieve at least partial banding coverage during the first four weeks as well. In all, full coverage was achieved on 66 days, fewer than in any subsequent year. Fourteen mist nets were used for most of the season (A1; B1, B2, B3, B4; C1, C2; D1, D2, D3; E1; G1, G2; H1); the two F nets that had been used in spring 2005 were omitted due to low capture rates and distance from the banding cabin. Temperatures were above average in the first half of August and from mid-September to early October; the mean daily highs for weeks 2, 7, and 10 were higher than in any other year. However, the final three weeks of fall were all much cooler than usual, on average more than 2°C below the ten-year mean. Fall 2005 was the wettest on record for MBO, with total rainfall almost 50% above the ten-year mean, and four weeks (5, 6, 10, and 11) with record high amounts of rain; three weeks had over 70 mm of rain, out of just 7 such weeks throughout all of fall from 2005 to 2014. The daily banding total exceeded 100 individuals on 6 days, with the highest count of 132 occurring on October 2. The 28 species banded on September 15, 21, and 22 marked a high that would stand for three years. The season total of 153 species observed remains the highest for any season at MBO, and includes a peak of 62 species on September 11 and 18, the highest of any fall day until 2013. In terms of banding, sparrows were dominant, taking three of the top six places among species banded (as in 2009 and 2012). Hatch-year birds accounted for 75% of the total.

In 2006, as in all subsequent years, there was banding throughout the season, aside from weather restrictions. However, days defined as having full coverage remained relatively few given that the volunteer base was still developing, and observer effort was often relatively limited compared to later years. It was again an unusually wet season, with August the fourth rainiest in the past 65 years, and October the third rainiest over the same period; this reduced full coverage to 72 of 91 days. It was also the coolest fall season over the ten year period, with the lowest mean daily high temperatures for the period in 5 of 13 weeks (2, 4, 5, 6, and 8), and temperatures at least 1°C below the ten-year mean in four other weeks. Fifteen primary nets were used this fall, with several changes from 2005: G1 and G2 were retired due to distance from the banding cabin; A2, E2, and H2 were added to existing productive locations within the core net area; and N1 and N3 replaced B1 and B4 due to assessment of relative capture rates among the 8 B/N nets. In addition, there was experimentation for part of the season with nets K1/K2 and L1/L2, but these had limited success and were discontinued. Over 100 individuals were banded on four days this fall, with a peak of 157 on September 30. The total number of species observed in fall

2006 was only 134, substantially lower than in 2005, and the lowest of any fall season; diversity peaked at 57 on two dates. Yellow-rumped Warbler vaulted into top spot among species banded with 522 individuals, more than triple the previous year's total, but there were also more Ruby-crowned Kinglets banded than in any other fall. Although Song Sparrow numbers increased, sparrows overall were less dominant than in 2005, and this was one of just three years (also 2011 and 2013) with only two sparrows among the top ten banded for fall. Hatch-year birds accounted for 84% of all individuals banded this fall.

In contrast to 2006, the fall of 2007 was the warmest over the ten-year period, with record high temperatures in weeks 8 and 12, and weekly mean high temperatures more than 1°C above average in five other weeks. Fall 2007 also was very different from the two previous years in that it was the first of three in a row with rainfall well below the long-term average. This allowed for more extensive coverage, but also caused the ponds on site to largely dry up, reducing the attractiveness of the habitat to wetland birds. All the same, the total number of species observed rebounded to 144, but the highest single day count was again 57. There were only three days with over 100 birds banded, with a relatively late peak of 138 on October 10. The number of Yellow-rumped Warblers banded plummeted to 68, just over 10% of the 2006 total, and warblers in general were scarce, with just two species squeaking into the bottom of the list of top ten species banded, fewer than in any other fall. However, sparrows were more prominent again, with four species in the top ten, and American Goldfinch in seventh place marked the only appearance by a finch in the top ten in fall in any year. Nets used were the same core group of 15 as in fall 2006, with the only change being that the only remaining 18 m long nets at A1 and D1 were permanently switched to 12 m long nets. Hatch-year birds represented 78% of the total banded this fall.

Weather was again favourable in 2008, with rainfall more than 25% below the ten-year mean overall, and in 8 of 13 weeks. While the first two weeks of the season were much cooler than usual, temperatures largely oscillated around ten-year means for the rest of fall. Sixteen nets were used this fall, including the addition of D4 to the previous core set of 15 nets; this array has been used consistently in all years since. The defining element of this season was the remarkable influx of Yellow-rumped Warblers, with 1732 individuals banded, more than triple the previous high count for any species in fall. However, many other species were also unusually abundant, with 30 species setting new fall records, including 13 other warblers. The daily banding total exceeded 100 birds on 14 occasions, including five 200+ bird dates between September 29 and October 5, peaking at 240 on October 2. Totals could have been even higher, but on several days nets had to be shut down temporarily to control volume as there had been no reason to anticipate needing so many qualified extractors on site. Meanwhile, a couple of weeks before the peak in migrant abundance, a new single-day record for diversity was set with 30 species banded on September 7. However, the daily estimated total peaked at 54 on September 10, the lowest for any fall season to date. For the first time, warblers accounted for half the species among the ten most frequently banded during the season. Hatch-year birds were 84% of the total banded this fall.

In 2009 there was more rain than usual in weeks 8 and 10, affecting effort in a couple of the core weeks of the season. It was also an unusually cold fall, most notably with record low temperatures for four weeks in a row (9-12). Coverage this fall was the highest to date, due to a combination of decent weather for much of the season, increased volunteer capacity, and fewer days with a large number of birds triggering reduced operations. As occurred in 2007 following the peak of Yellow-rumped Warblers in 2006, there was a dramatic decline in the number banded, from 1732 in 2008 to 106 in 2009. This alone nearly accounts for the difference in season totals between the two years. The number of days with over 100 individuals banded dropped back down to 6, peaking at 166 birds on October 8. This year the biggest surprise was the abundance of Hermit Thrushes, with 86 individuals banded (all of them hatch-year birds), more than double the total from any previous fall season. As in 2007, warblers were relatively scarce, with only three species barely cracking the 100-birds banded mark. In contrast, sparrows took all three top places for the first and only time, with White-throated Sparrow (428) outnumbering Dark-eyed Junco (361) and Song Sparrow (322). Species diversity peaked unusually early, on August 21, at 56 species. Again this fall, 84% of birds banded were hatch-year individuals.

Fall 2010 was overall a bit cooler than normal, with six weeks at least 1°C below the ten-year mean, but contrasting with this was the mean daily high of 29.8°C in week 5, the highest at MBO for any week between 2005 and 2014, and almost 5°C above the mean for that period. Rainfall was 80% higher than the previous two years, including two of the five rainiest weeks in MBO's history, in weeks 1 and 9. Despite losing some effort to rain at the peak of the season, the number of days and hours banding reached new record highs, and fall 2010 shattered previous records with 6808 birds banded, strongly driven by record numbers of Yellow-rumped Warbler (2359), Dark-eyed Junco (509), Black-capped Chickadee (440), and American Robin (394). There were an unprecedented 25 days with over 100 individuals banded, including 7 days with more than 200, peaking at 315 on September 25, which remains the single-day record for MBO. Species diversity peaked on October 3, at 55 species. The percentage of hatch-year birds banded this fall was particularly high, at 89%.

Temperatures in 2011 fluctuated around normal levels, but it was the second wettest fall on record, with record high rainfall levels from weeks 2 through 4, and again in week 7. Again though effort reached new highs in terms of both net hours and days with full coverage, reflecting the growth in number of experienced volunteers, which allowed full operations except when constrained by weather; this has largely remained true across subsequent years. However, banding results were incredibly meager, with the total of 2792 banded nearly 60% fewer birds than in the previous fall. There was only one day with more than 100 individuals banded, 112 on August 26. Banding totals were at or near record lows for five of the six species that have dominated the fall program overall; among them, only Magnolia Warbler was present in slightly above-average numbers. This was the only fall in which six warbler species were among the top ten banded. Species diversity peaked on September 18, at 62 species. Hatch-year birds again accounted for 89% of all individuals banded this fall.

2012 was nearly as warm as 2007, with record high mean weekly temperatures in weeks 1, 4, and 13, and temperatures more than 1°C above the ten-year mean in another four weeks. After two unusually wet years, rainfall also dropped off sharply again, to below average levels, with August particularly dry, and there were more days with full coverage than in any other fall. White-throated Sparrow, Ruby-crowned Kinglet, and Yellow-rumped Warbler all rebounded significantly from last year's low counts, driving the 2012 banding total to above average levels, aided also by another Black-capped Chickadee migration and an influx of Swainson's Thrushes that more than quadrupled the previous fall record for the species. There were 5 days with more than 100 individuals banded, including one day with over 200 (a peak of 241 birds on October 4). Species diversity peaked at 60 on three dates: August 14, August 25, and September 24. Hatch-year birds dropped to 80% of all individuals banded this fall.

2013 was the driest fall season yet, especially the final five weeks of the season, during which rainfall overall was only 41% of the ten-year mean. For most of that period temperatures were also well above average, including record highs in weeks 9 and 11, but the first half of the season was largely cooler than usual. It was largely an average year with respect to birds banded, although there were modest new records for a number of species including Magnolia Warbler, Tennessee Warbler, and Golden-crowned Kinglet. Although Song and White-throated Sparrow numbers were close to average, many other sparrows were scarcer than usual, and this was one of just two fall seasons with only two sparrow species among the top ten banded. There were two days with more than 100 individuals banded, peaking at 150 birds on October 3. Species diversity peaked on September 25, at 65 species, the highest ever count in fall. Hatch-year birds were 82% of the total banded this fall.

2014 was another dry fall, edging out 2013 for the record by 1 mm; there were only two weeks throughout the season with more than 25 mm of rain, compared to eight with 15 mm or less. Temperatures were at a record low in week 7, but three of the final five weeks of fall had above average highs. The overall count of birds banded was close to the ten-year mean. There were four days with more than 100 individuals banded, peaking at 121 birds on September 29. Species diversity peaked at 62 species on August 19 and September 27. The top ten species banded this fall included three sparrows and fall warblers, but the only species on that list with a record count was Red-eyed Vireo. Hatch-year birds accounted for 79% of all individuals banded this fall.



Figure 4.5 summarizes the results of the daily census throughout fall. Variability is high for most of the season, and the overall mean remains between 23 and 28 species from the beginning of the season until almost mid-October, after which it drops slightly to between 19 and 22 for the remainder of the season.

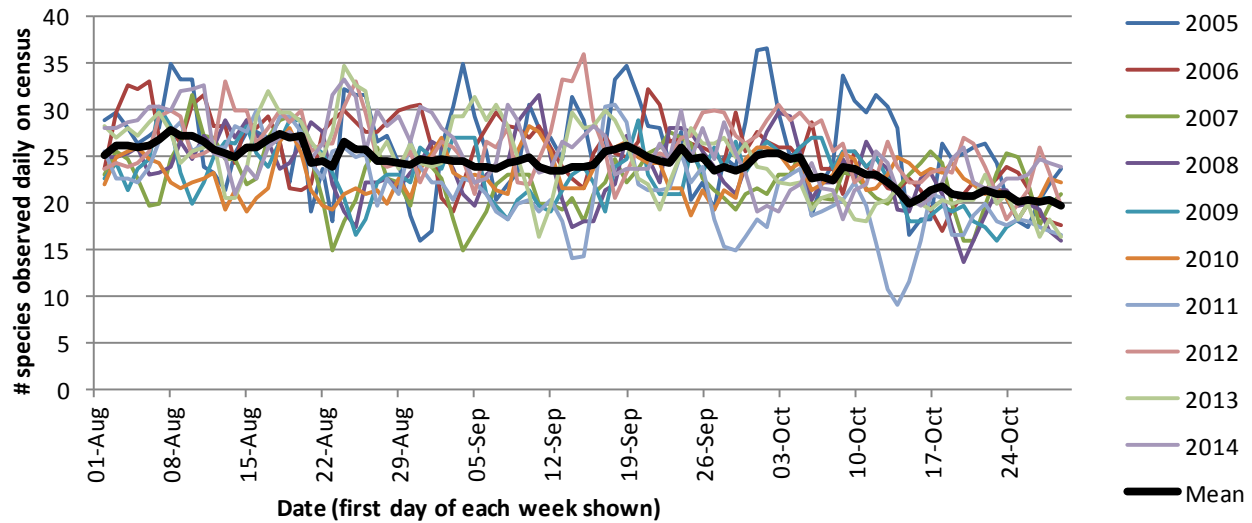


Figure 4.5: Running three-day mean of the daily species count on census throughout fall.

Figure 4.6 summarizes the daily estimated total of species throughout fall. The overall pattern is similar to that shown by census, but the counts are higher, there is somewhat less variability, and the drop in numbers begins earlier in October. From early August to early October, the mean daily count of species fluctuates in the low 40s, with two peaks over 45 in mid- and late September. Starting late in the first week of October, the count declines rapidly to a mean of around 30 over the final two weeks of the season. The actual peak of diversity has varied widely, from as early as August 14 in 2012 to as late as October 3 in 2010. On several occasions, the three-day running mean of daily estimated totals remained above 50 species, but has never yet quite reached 60 species.

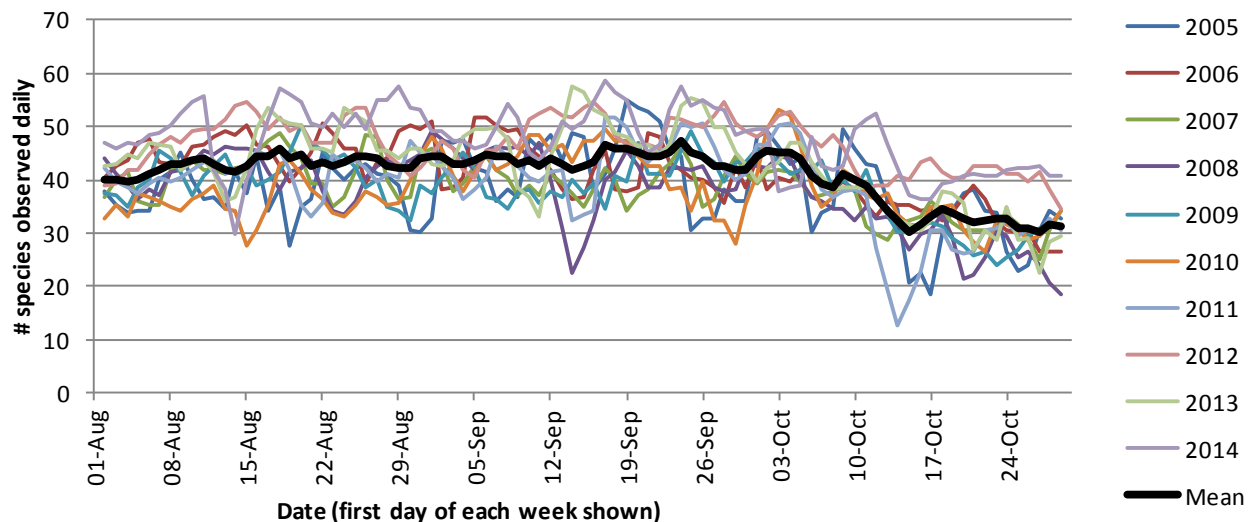


Figure 4.6: Running three-day mean of the number of species observed daily throughout fall.



Figure 4.7 summarizes the number of species banded daily throughout fall. There is considerable variability from year to year, especially in August and September. The average count ranges from 13 to 15 species throughout August and early September, then peaks between 15 and 18 until early October, after which it drops off sharply, declining to below 10 species by the final week of October. The peak of diversity varies among years, but overall is in mid-September.

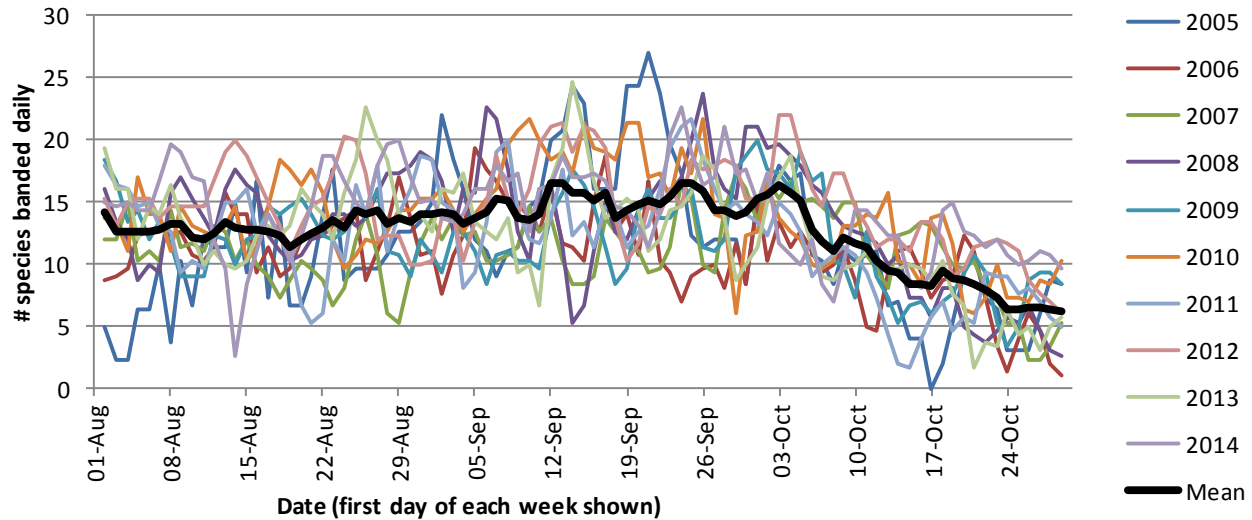


Figure 4.7: Running three-day mean of the number of species banded daily throughout fall.

Figure 4.8 summarizes the number of individuals banded daily throughout fall. There is a distinct peak from late September to almost mid-October, highlighted especially by the 2008 and 2010 lines, which are far greater than any other year due largely to the unprecedented number of Yellow-rumped Warblers banded during those two years. Generally the mean number of individuals banded daily remains between 20 and 35 for most of the first half of the season, then begins to increase around mid-September. The busiest days are in the first week of October, with a mean peaking at just over 100 individuals banded daily. After the peak of migration subsides around mid-October, numbers return to around 30 to 45 individuals per day on average, though there is more variability than early in the season.

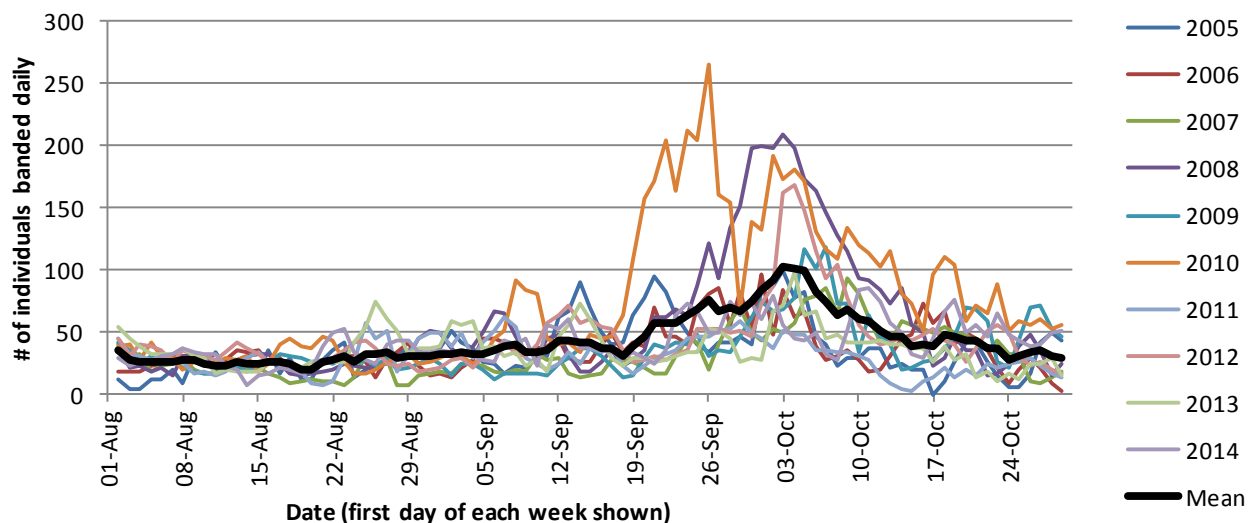


Figure 4.8: Running three-day mean of the number of individuals banded daily throughout fall.



#### 4.5 Northern Saw-whet Owl Migration Monitoring Program

Monitoring the fall migration of Northern Saw-whet Owls was the original inspiration behind establishing MBO, but during the initial pilot season in 2004 results were disappointing, whereas passerine numbers exceeded expectations. The owl program therefore became a secondary priority, and was skipped in 2006 and 2008 when resources were too limited to operate both studies effectively. However, it has been undertaken annually since 2009, and has received nightly coverage (weather permitting) over a standard six-week period (September 26 – November 6) since 2010, with additional effort outside those dates in some years.

##### 4.5.1 Objectives and protocol

The primary objective of this program is to contribute to knowledge of the population dynamics and movements of the Northern Saw-whet Owl. Due to the large number of saw-whet banders in eastern North America, most of them members of Project OwlNet ([www.projectowl.net](http://www.projectowl.net)), the recovery rate for these owls is much higher than for any passerines, and therefore even non-standardized programs can make significant contributions. Although basic principles have been followed consistently since the start of owling at MBO (i.e., beginning 30 minutes after sunset, using an audiolure as per Whalen and Watts (1999), checking nets every 30-45 minutes, avoiding operation in rain or high winds, and collecting standard data on all owls), it was not until 2010 that effort was standardized to nightly operation (weather permitting) over the six-week period from September 26 to November 6. In contrast, owling over the first five years was considerably constrained by limitations on volunteer availability, while in 2011 and 2012 there was experimentation with extended dates and hours. There has also been change in net locations over time, from the ridge along the back ponds (2005 and 2007) to a dedicated array of owl nets in and around the spruce/fir stand in the middle of the meadow (2009 to present).

##### 4.5.2 Results

Owl program results from 2005 to 2014 are summarized in Table 4.6. The number of owls banded per fall has ranged from 15 to 259, but much of this variability is driven by differences in effort; the rate of owls banded per 100 net hours has only varied from 4.9 to 11.4. In most years only one or two species have been banded, but in 2012 all five owl species banded to date occurred in one season. Even considering effort, results were below average at the old site used in 2005 and 2007. While the number of owls banded was highest in 2011 and 2012, this was largely due to record levels of effort; the capture rate was actually higher in 2013 and 2014.

Unlike all other species banded at MBO, Northern Saw-whet Owls have a fairly high recapture rate. Of the 1015 individuals banded at MBO between 2005 and 2014 (including 7 as part of the FMMP), 33 (3%) have been subsequently reported from elsewhere; similarly 38 owls banded at other sites have been captured at MBO (including 2 in the 2004 pilot season, not included in Table 4-6). Details are provided in Appendix F.

Table 4.6: Owl banding summary statistics, 2005-2014

|                                 | 2005   | 2006 | 2007   | 2008 | 2009   |  |  |
|---------------------------------|--------|------|--------|------|--------|--|--|
| # individuals (species) banded  | 17 (1) | n/a  | 15 (1) | n/a  | 78 (2) |  |  |
| # individuals (species) repeat  | 0 (0)  | n/a  | 0 (0)  | n/a  | 6 (1)  |  |  |
| # individuals (species) foreign | 0 (0)  | n/a  | 0 (0)  | n/a  | 2 (1)  |  |  |
| # net hours                     | 230.6  | n/a  | 308.3  | n/a  | 698.0  |  |  |
| # birds banded / 100 net hours  | 7.4    | n/a  | 4.9    | n/a  | 11.2   |  |  |
| # nights banding                | 8      | 0    | 11     | 0    | 28     |  |  |

|                                 | 2010    | 2011    | 2012    | 2013    | 2014    | Average   | Total    |
|---------------------------------|---------|---------|---------|---------|---------|-----------|----------|
| # individuals (species) banded  | 125 (2) | 197 (1) | 259 (5) | 176 (3) | 158 (2) | 128 (2.1) | 1025 (5) |
| # individuals (species) repeat  | 3 (1)   | 7 (1)   | 19 (2)  | 21 (1)  | 29 (2)  | 11 (1.0)  | 85 (2)   |
| # individuals (species) foreign | 2 (1)   | 9 (1)   | 2 (1)   | 17 (1)  | 4 (1)   | 4 (0.8)   | 36 (1)   |
| # net hours                     | 1290.9  | 2588.5  | 4652.4  | 1818.6  | 1382.5  | 1621.2    | 12969.8  |
| # birds banded / 100 net hours  | 9.7     | 7.6     | 5.6     | 9.7     | 11.4    | 8.4       | 7.9      |
| # nights banding                | 35      | 44      | 51      | 31      | 32      | 24        | 240      |

Owl banding in 2005 occurred on 8 nights between September 24 and October 29, using 8 nets (B1-B4 and N1-N4) connected end-to-end on the ridge along the back ponds. The audiolure was placed between nets B2 and N1, i.e., one-quarter of the way along the array, and nets were typically opened for 3.5 to 4 hours per night. Only 17 Northern Saw-whet Owls were banded, with a peak of 6 on October 20. 53% of owls banded were hatch-year individuals.

Owl banding was skipped in 2006 due to lack of availability of a qualified bander-in-charge.

In 2007, effort expanded to 11 nights but shifted somewhat later, from September 30 to November 9. The nets and audiolure were placed as in 2005, and were on average operated for close to 3.5 hours per night. Results were the poorest of any year, with just 15 Northern Saw-whet Owls banded, and a capture rate of only 4.9 per 100 net hours. The peak of 4 owls was on October 7. As in 2005, 53% of owls banded were hatch-year individuals.

Owl banding was again omitted in 2008, in part due to the limited value demonstrated by the trial seasons in 2005 and 2007 (as well as a previous pilot effort in 2004 that yielded similar numbers).

A decision was made to resume owl banding in fall 2009, but to try a different location within MBO in an attempt to improve capture rates. Five new nets (O1-O5) were installed around and through the mixed spruce-fir grove on the south side of the meadow; combined with existing songbird nets E1 and E2, these formed a roughly circular array around the audiolure, placed near the south end of E1; this set of nets continued to be used in all subsequent years. Effort was also expanded this fall, with 28 nights of coverage between September 24 and November 17, and nets operated for 4-5 hours on most nights. The capture rate nearly doubled the average rate at the old location, and the total of 78 owls banded (including 2 Eastern Screech-Owls) was more than in all previous years combined, including the 2004 pilot season. The difference in sites was highlighted by the peak of 17 owls banded on October 13 – as many in one night as in any complete previous season. 75% of owls banded were hatch-year individuals.

2010 marked the first year in which an effort was made to operate nightly over a six-week period corresponding to the final five weeks of the Fall Migration Monitoring Program, plus an additional week beyond (i.e., September 26 to November 6); this core period has been maintained ever since, though from 2010 through 2012 additional dates beyond November 6 were also included. In 2010, owling extended from September 25 to November 14, and nightly effort was stretched out to an average of 5 to 5.5 hours. After using standard songbird mist nets (30 mm mesh) for owling in all previous years, the five core owl nets (O1-O5) were switched to 60 mm mesh this fall, which is better suited for capturing small owls; these nets were maintained in all future years. Although hourly capture rate dropped slightly from 2009, another new record was set for number of owls banded at 125, again including 2 Eastern Screech-Owls. The peak of 18 owls banded was on October 11. 70% of owls banded were hatch-year individuals.

Effort doubled in 2011, although only 9 extra nights were added to the schedule. This reflected an attempt to explore late night migration, with an average of over 8 hours per night. It was also another long banding season, extending from September 26 to November 15. Again a new record high was set for the number of owls banded, at 197, but the hourly capture rate was lower than in the previous two years, and only Northern Saw-whet Owls were banded this fall. The number of foreign banded birds captured this fall (9) was more than double the previous four years of owling combined. A new single-night record of 30 owls banded was set on October 22. The frequency of hatch-year owls banded dropped to 48%.

Owling effort peaked in 2012, with a record 51 nights of operation from September 26 to November 22, again averaging over 8 hours nightly. An additional four nets (T1-T4) were operated this fall at the northeast corner of MBO, with an audiolure targeting Boreal Owls. In early November 4 Boreal Owls were banded; also banded this fall at MBO for the first time were Barred Owl (1) and Long-eared Owl (2), plus there were record numbers of



Eastern Screech-Owl (3) and Northern Saw-whet Owl (249). However, the number of foreign recaptures dropped back down to just 2 this fall, and the number of owls banded per 100 net hours was actually the second lowest in the history of the owling program; this was likely influenced considerably by the low capture rate at the four new nets. For the second year in a row, 30 owls were banded on the busiest night of the season, which this fall was on October 16. The record number of Northern Saw-whet Owls was driven by a very productive breeding season, with hatch-year individuals accounting for 80% of individuals banded, more than any other year.

In 2013, effort was scaled back to a core 6-week season running from September 26 to November 6, and focus returned to just the basic set of 7 O and E nets surrounding the Northern Saw-whet Owl audiolure (although net O5 on the exterior of the spruce-fir grove was replaced with O6 among the trees). Nightly effort remained around 8 hours on average, and capture rate rebounded, although the number of owls banded was lower than in the previous two years with greater effort. As usual, almost all birds banded were Northern Saw-whet Owls, but one Long-eared Owl and one Eastern Screech-Owl were also banded. However, this season was most noteworthy for the record number of foreign recaptures – the 17 individuals this fall account for almost half of all individuals across 8 years of operation. The peak night of the season was October 8, with 20 owls banded. The percentage of hatch-year owls dropped to 18%, by far the lowest in any of the years of owling at MBO.

Owling in 2014 covered the same dates as in 2013, September 26 to November 6, and mean nightly effort remained around 8 hours. However, there was again some experimentation with nets. On half of the nights the standard array of 7 nets (O and E) was used at MBO; on alternating nights, a new set of 4 nets (Z1-Z4) was used within the adjacent Morgan Arboretum. The intent was to explore whether there was potential for banding in the Arboretum, to more easily facilitate future education programs focused on the owls. While overall capture rates were quite similar between the two sites, the number of owls banded at the Arboretum was considerably lower due to the smaller number of nets, and given the more limited potential for expansion there, it was concluded that maintaining operations at the standard owl nets at MBO in future years would be best. Overall capture rate was higher than in previous year, but perhaps in part a function of reduced net hours due to the use of the alternate site. The number of repeat captures was also higher than in any other year, but foreign recaptures dropped considerably from the record high in 2013. The busiest night of 2014 was October 10, with 15 owls banded. The frequency of hatch-year owls rebounded to 78% of individuals banded.



*The five owl species banded at MBO, in order of decreasing size from left to right:  
Barred, Long-eared, Boreal, Eastern Screech, and Northern Saw-whet Owls.  
(Photos by Gay Gruner and Simon Duval)*



## 4.6 Special projects

The standard research programs at MBO provide an opportunity to collect data for a variety of supplemental research questions, ranging from local and species-specific to international collaborations.

### 4.6.1 Collaborative research

As a member of the Canadian Migration Monitoring Network, MBO has the opportunity to participate in research projects of a national scope. The most significant collaborative venture to date has been a stable isotope study involving feather samples collected from MBO and other member stations across Canada, in an effort to identify how the source populations for fall migrants compare throughout the network. MBO contributed more than 300 samples from over 60 species; the analysis and reporting is being conducted by Environment Canada and Bird Studies Canada, and was just published in 2015. MBO has also collaborated on an international study aiming to document the movement of bird-borne ticks.

### 4.6.2 Student projects

Many fourth-year wildlife students at McGill University prepare a research-based report as part of their curriculum, and since 2005 several have chosen to do so using data from MBO. These projects generally involve hands-on participation by the student, with supervision and guidance from the banders-in-charge. Topics explored have included:

- Assessment of flank colour on American Redstarts (Christine Barrie and Meaghan McDermott) – flank colour on HY individuals differs significantly between males and females, with females generally having buff to yellow markings, compared to males that mostly have orange-yellow flanks, though a small percentage have yellow similar to that of females.
- Temporal correlations among fall migrants and influence of observer effort on abundance estimates (Kristen Keyes and Demetrios Kolibiris) – a review of five common fall migrants at MBO (Ruby-crowned Kinglet, Nashville Warbler, American Redstart, Magnolia Warbler, and White-throated Sparrow) from 2006-2008 found that daily estimate totals were correlated with observer effort, and that the early season neotropical migrants (American Redstart and Magnolia Warbler) varied less in timing than the other later season migrants, which seemed to shift migration more in response to weather conditions.
- Influence of weather on the efficiency and accuracy of passerine migration banding studies (Katleen Robert) – a review of fall weather and bird data from 2005-2007 showed that average temperature of the previous night was the strongest predictor of bird abundance the following morning, with a drop in temperature compared to previous nights resulting in an increase in migration.
- Net avoidance in passerine birds (Michael Mayerhofer) – observation of three nets at MBO from blinds revealed that sparrows had lower evasion rates in sun than in shade, while the reverse was the case for orioles; overall swallows were most successful at avoiding nets, while warblers had the lowest success.
- Refining techniques for ageing and sexing Black-capped Chickadees (Limoilou-Amélie Renaud) – study of the roof lining of chickadees found that in over 70% of hatch-year/second-year individuals it was plain white, while in over 70% of older individuals there was a dark chevron on a white background. However, there were sufficient exceptions to the pattern to preclude it from being reliable for ageing. Similarly, discriminant function analysis using wing length, weight, and tail length successfully classified 79% of individuals to the correct sex, but is not reliable enough alone, and further study is required.
- Using plumage characteristics to sex hatch-year Magnolia Warblers (analysis underway, with preliminary results indicating that flank streaking, colour of uppertail coverts, and size of white spots on the rectrices can all be used to separate males and females, although there are some unidentifiable intermediates).
- Using plumage characteristics to sex hatch-year House Finches (analysis underway, with preliminary results indicating that by November, some males do not yet have any red plumage, although the extent is quite variable among individuals).

## 4.7 Publications

MBO has published a number of internal reports, specifically 7 Fall Migration Monitoring Program reports (2004-2010), 6 Spring Migration Monitoring Program reports (2005-2010), 4 Annual Program Reports (2011-2014), and a Five-Year Report summarizing 2005 through 2009; all of these are listed below and are available at <http://www.oommbo.org/results/reports/>.

Frei, B. and M-A. Hudson. 2008. McGill Bird Observatory Fall Migration Monitoring Program 2008 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 42 pp.

Gahbauer, M.A. 2004. McGill Bird Observatory Fall Migration Monitoring Program 2004 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 10 pp.

Gahbauer, M.A. 2005. McGill Bird Observatory Fall Migration Monitoring Program 2005 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 42 pp.

Gahbauer, M.A. 2005. McGill Bird Observatory Spring Migration Monitoring Program 2005 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 10 pp.

Gahbauer, M.A. 2010. McGill Bird Observatory Five-Year Report #1: 2005-2009. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 146 pp.

Gahbauer, M.A. 2011. McGill Bird Observatory Annual Program Report 2011. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 71 pp.

Gahbauer, M.A. 2012. McGill Bird Observatory Annual Program Report 2012. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 75 pp.

Gahbauer, M.A. 2013. McGill Bird Observatory Annual Program Report 2013. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 75 pp.

Gahbauer, M.A., S. Duval, and D Davey. 2015. McGill Bird Observatory Annual Program Report 2014. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 77 pp.

Gahbauer, M.A. and G. Gruner. 2011. McGill Bird Observatory Fall Migration Monitoring Program 2010 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 44 pp.

Gahbauer, M.A. and M-A. Hudson. 2006. McGill Bird Observatory Spring Migration Monitoring Program 2006 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 42 pp.

Gahbauer, M.A. and M-A. Hudson. 2009. McGill Bird Observatory Fall Migration Monitoring Program 2009 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 42 pp.

Gahbauer, M.A. and M-A. Hudson. 2010. McGill Bird Observatory Spring Migration Monitoring Program 2010 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 37 pp.

Hudson, M-A. 2008. McGill Bird Observatory Spring Migration Monitoring Program 2008 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 45 pp.

Hudson, M-A. and B. Frei. 2007. McGill Bird Observatory Spring Migration Monitoring Program 2007 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 44 pp.

Hudson, M-A. and M.A. Gahbauer. 2006. McGill Bird Observatory Fall Migration Monitoring Program 2006 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 42 pp.

Hudson, M-A. and M.A. Gahbauer. 2007. McGill Bird Observatory Fall Migration Monitoring Program 2007 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 42 pp.

Hudson, M-A. and M.A. Gahbauer. 2009. McGill Bird Observatory Spring Migration Monitoring Program 2009 Report. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 43 pp.

In addition, MBO research has been featured in a number of peer-reviewed publications, arising from collaboration with the Canadian Migration Monitoring Network, researchers studying the movement of bird-borne ticks, and moult studies. Articles published to date are listed below:

Confer, J.L., L.L. Kanda, and I. Li. 2014. Northern Saw-whet Owl: regional patterns for fall migration and demographics revealed by banding data. *Wilson Journal of Ornithology* 126: 305-320.

Crewe, T.L., J.D. McCracken, P.D. Taylor, D. Lepage, and A.E. Heagy. 2008. The Canadian Migration Monitoring Network-Réseau canadien de surveillance des migrations: Ten-year Report on Monitoring Landbird Population Change. CMMN-RCSM Scientific Technical Report #1. Bird Studies Canada, Port Rowan ON. 69 pp.

Flinn, T., J. Hudon, and D. Derbyshire. 2007. When Baltimore Orioles stop being orange. *Birding* 39: 62-68.

Hobson, K.A., S.L. Van Wilgenburg, E.H. Dunn, D.J.T. Hussell, P.D. Taylor, and D.M. Collister. 2015. Predicting origins of passerines migrating through Canadian migration monitoring stations using stable-hydrogen isotope analyses of feathers: a new tool for bird conservation. *Avian Conservation and Ecology* 10(1): 3.

Hudon, J., D. Derbyshire, S. Leckie, and T. Flinn. 2013. Diet-induced plumage erythrism in Baltimore Orioles as a result of the spread of introduced shrubs. *Wilson Journal of Ornithology* 125: 88-96.

Hudson, M-A., M. Gahbauer, S. Leckie, and B. Frei. 2008. Unusually extensive preformative molt in hatching-year Song Sparrows. *North American Bird Bander* 33: 1-6.

Mackenzie, S.A. and M.A. Gahbauer. 2014. Guidelines for prioritizing bird safety during high capture events. *North American Bird Bander* 39: 61-65.

Ogden, N.H., L.R. Lindsay, K. Hanincova, I.K. Barker, M. Bigras-Poulin, D.F. Charron, A. Heagy, C.M. Francis, C.J. O'Callaghan, I. Schwartz, and R.A. Thompson. 2008. Role of migratory birds in introduction and range expansion of *Ixodes scapularis* ticks and of *Borrelia burgdorferi* and *Anaplasma phagocytophilum* in Canada. *Applied and Environmental Microbiology* 74: 1780-1790.

Scott, J.D., J.F. Anderson, and L.A. Durden. 2012. Widespread dispersal of *Borrelia burgdorferi*-infected ticks collected from songbirds across Canada. *Journal of Parasitology* 98: 49-59.

Scott, J.D. and L.A. Durden. 2015. New records of the Lyme disease bacterium in ticks collected from songbirds in central and eastern Canada. *International Journal of Acarology* 41: 241-249.

Wolfe, J., and P. Pyle. 2011. First evidence for eccentric prealternate molt in the Indigo Bunting: possible implications for adaptive molt strategies. *Western Birds* 42: 257-262.



*Unusually red plumage on a hatch-year Baltimore Oriole, August 2006 (Photo by Seabrooke Leckie)*



## 5 Birds of MBO

This section provides summaries of the occurrence of birds at MBO; more detailed weekly/monthly records are compiled by species in Appendix D.

### 5.1 Species observed at MBO

From November 2004 through October 2014, 210 bird species were observed at MBO, 127 (61%) of them annually. 121 of these species were banded, 61 (50%) of them at least once each year. During this ten-year period, 51959 individuals were banded, 2815 (5.4%) of them in winter, 8410 (16.2%) in spring, 1012 (1.9%) in summer, and 39722 (76.5%) in fall. Summaries are presented below by taxonomic group.

#### 5.1.1 Waterfowl (geese, swans, and ducks)

**Observed:** 24 species, 7 of them annually and 4 on just one occasion.

**Banded:** 1 species (Wood Duck); 3 individuals banded, all in summer

**Seasonal occurrence:** Generally seen at MBO from early spring through late fall, with some Canada Geese lingering well into December, and even throughout winter in warm years.

**Nesting:** 3 species (Canada Goose, Wood Duck, Mallard)

**Notes:** Canada Goose is by far the most abundant of all birds observed at MBO, always ranking as the top species in spring (with a mean daily count for the season ranging from 77 to 401), and also in fall in every year but 2006 (with a mean daily count ranging from 91 to 396). In several years, Snow Goose has been the second most numerous species in spring, but it is relatively scarce in fall. Mallard and Wood Duck are by far the most numerous other waterfowl observed at MBO. Of the 23 species observed, 11 have only been seen flying overhead (Greater White-fronted Goose, Snow Goose, Ross's Goose, Brant, Cackling Goose, Tundra Swan, Greater Scaup, White-winged Scoter, Common Goldeneye, Common Merganser, and Red-breasted Merganser).

#### 5.1.2 Herons, rails, and cranes

**Observed:** 9 species, 4 of them annually

**Banded:** None

**Seasonal occurrence:** Late March to December for Great Blue Heron, but for most other species records are concentrated between May and September.

**Nesting:** Green Heron, Virginia Rail, and Sora have bred, but none of them annually.

**Notes:** All species are observed in relatively small numbers. Sandhill Crane has only been observed flying over MBO, but all others have been seen perching or wading on site.

#### 5.1.3 Shorebirds

**Observed:** 11 species observed, 3 of them annually and 3 on just one occasion

**Banded:** 2 species (American Woodcock and Solitary Sandpiper); 4 individuals banded

**Seasonal occurrence:** Observations range from April to October.

**Nesting:** Breeding evidence is limited to American Woodcock in 2014

**Notes:** Only Killdeer and Solitary Sandpiper are seen regularly, though Spotted Sandpiper also occurs annually. The three species observed just once were all seen flying overhead: Black-bellied Plover, Semipalmated Plover, and Dunlin.

#### 5.1.4 Gulls and terns

**Observed:** 7 species observed, 3 of them annually, and 2 on just one occasion

**Banded:** None

**Seasonal occurrence:** Mostly from early spring to late fall, although occasionally seen in winter.

**Nesting:** None

**Notes:** All sightings have been of individuals flying overhead, except for occasional Ring-billed Gulls and Herring Gulls on the ground in the farm field adjacent to MBO, especially after it has been ploughed in fall.

#### **5.1.5 Other waterbirds (loons, grebes, cormorants, gannet)**

**Observed:** 4 species observed, 2 of them annually and 1 on just one occasion

**Banded:** None

**Seasonal occurrence:** Observations range from April to October.

**Nesting:** Pied-billed Grebe nested on Stoneycroft Pond in 2005 but has not been seen in summer since then.

**Notes:** Aside from Pied-billed Grebe, all other species have only been observed flying over MBO.

#### **5.1.6 Diurnal raptors**

**Observed:** 15 species observed, 12 of them annually

**Banded:** 6 species banded, but 4 of them just once each; 84 individuals banded (0.1% and 0.2% of birds banded in spring and fall, respectively).

**Seasonal occurrence:** Raptors occur at MBO throughout the year, but diversity and abundance peak toward the middle of spring, and even more notably toward the middle of fall.

**Nesting:** Only Turkey Vulture is known to have nested on site (although unsuccessfully), but Sharp-shinned, Cooper's, Red-shouldered, and Red-tailed Hawks are regular from spring through fall and all have likely bred within or immediately adjacent to MBO.

**Notes:** Of the 15 species observed, 5 have only been seen flying overhead (Osprey, Bald Eagle, Northern Harrier, Rough-legged Hawk, and Golden Eagle).

#### **5.1.7 Owls**

**Observed:** 7 species observed, none of them annually

**Banded:** 5 species banded, all in fall; Northern Saw-whet Owl accounts for 98% of owls banded (1015 of 1032).

**Seasonal occurrence:** Eastern Screech, Great Horned, and Barred Owls are resident in the area; others are migrants or (in the case of Great Gray Owl) occasional winter visitors.

**Nesting:** The resident species noted above likely nest adjacent to MBO in the Morgan Arboretum.

**Notes:** Targeted nocturnal owl banding in eight of ten years (see Section 4.5) has been responsible for the majority of owl records, although all species except Barred, Long-eared, and Boreal Owl have also been observed during daylight hours.

#### **5.1.8 Woodpeckers**

**Observed:** 6 species observed, 5 of them annually

**Banded:** 6 species banded, 4 of them annually; 351 individuals banded (0.6%, 1.0%, 3.5%, and 0.5% of birds banded in winter, spring, summer, and fall, respectively).

**Seasonal occurrence:** Downy, Hairy, and Pileated Woodpeckers are present throughout the year, though generally observed less frequently in winter. Yellow-bellied Sapsucker and Northern (Yellow-shafted) Flicker are migrants, usually present from April through October. Red-bellied Woodpecker has recently expanded into the area and appears to be a year-round resident in the adjacent Morgan Arboretum, although observed less regularly at MBO.

**Nesting:** All six species have bred at or immediately adjacent to MBO.

**Notes:** Downy Woodpecker is consistently the most common woodpecker at MBO, and it accounts for 58% of woodpeckers banded at MBO.

#### **5.1.9 Other non-passerines**

**Observed:** 9 species observed, 5 of them annually.

**Banded:** 3 species banded, none of them annually; 58 individuals banded (1.6%, 0.04%, 0.1%, and 0.02% of birds banded in winter, spring, summer, and fall, respectively).

**Seasonal occurrence:** Rock Pigeon and Mourning Dove are observed throughout the year, Ruffed Grouse is likely present in the adjacent Morgan Arboretum year-round but has only been seen at MBO in late fall and winter, and the other species (Yellow-billed Cuckoo, Black-billed Cuckoo, Common Nighthawk, Chimney Swift, Ruby-throated Hummingbird, and Belted Kingfisher) have been observed only between April and October.

**Nesting:** Breeding has not been confirmed for any species, but Mourning Dove and Ruby-throated Hummingbird are regularly present through summer, and there is also potential for Black-billed Cuckoo to nest.

**Notes:** Mourning Dove accounts for 81% of individuals banded in this category, while Black-billed Cuckoo (17%) and Yellow-billed Cuckoo (2%) comprise the remainder. Although observed regularly, Rock Pigeon has only ever been seen flying over MBO.

#### 5.1.10 Flycatchers

**Observed:** 9 species observed, 7 of them annually

**Banded:** 9 species banded, 6 of them annually and Olive-sided Flycatcher just once; 854 individuals banded (3.4%, 3.4%, and 1.3% of birds banded in spring, summer, and fall, respectively).

**Seasonal occurrence:** Most species are observed only from May to September, while Eastern Phoebe records commonly extend from April to October. Most of the flycatchers are late spring and early fall migrants.

**Nesting:** 6 species have nested at MBO: Eastern Phoebe, Great Crested Flycatcher and Eastern Kingbird nest at MBO in most years, joined sometimes by Eastern Wood-Pewee, Least Flycatcher, and Alder Flycatcher.

**Notes:** Most flycatchers occur at MBO in relatively small numbers, and migrants move through quickly, with few records of stopovers.

#### 5.1.11 Vireos

**Observed:** 4 species observed, all of them annually

**Banded:** 4 species banded, all of them annually; 1255 individuals banded (7.0%, 6.4%, and 2.8% of birds banded in spring, summer, and fall, respectively).

**Seasonal occurrence:** Observations extend from April to October. All except Warbling Vireo are disproportionately more abundant in fall than spring.

**Nesting:** Warbling Vireo and Red-eyed Vireo regularly breed at MBO, and there is one record of a very young Blue-headed Vireo indicative of a successful nest at or immediately adjacent to MBO.

**Notes:** Red-eyed Vireo is the most numerous vireo species at MBO, accounting for 67% of vireos banded, followed by Blue-headed Vireo with 18%.

#### 5.1.12 Corvids

**Observed:** 4 species observed, 3 of them annually and the other just once

**Banded:** 1 species banded, annually; 352 individuals banded (0.6%, 0.2%, 0.4%, and 0.8% of birds banded in winter, spring, summer, and fall, respectively).

**Seasonal occurrence:** American Crow, Common Raven, and Blue Jay are all resident throughout the year, though migrant Blue Jays pass through in spring and fall, and American Crow numbers fluctuate seasonally, with large flocks being particularly evident in fall, when daily mean counts for the season range from 41 to 112.

**Nesting:** Blue Jay is known to nest at MBO, while American Crow and Common Raven both breed nearby.

**Notes:** Blue Jay and American Crow are among the most common and regularly observed birds at MBO.

#### 5.1.13 Swallows

**Observed:** 6 species observed, 4 of them annually

**Banded:** 3 species banded, 1 of them annually; 195 individuals banded (1.4% and 8.2% of birds banded in spring and summer, respectively).

**Seasonal occurrence:** Swallow records at MBO range from mid-April to early September.

**Nesting:** The Cliff Swallows observed at MBO are primarily associated with a breeding colony at the nearby McGill radar station, while Tree Swallows breed each year in the nest boxes maintained at MBO, although their numbers have steadily declined.

**Notes:** All of the swallow species regularly occurring in eastern North America have been seen at MBO, with only Purple Martin and Bank Swallow missed in some years. Tree and Cliff Swallows are the only species to regularly occur in large numbers. The banding of Tree Swallow nestlings accounted for a large proportion of summer banding records in early years.

#### 5.1.14 Chickadees, nuthatches, creeper, kinglets, and gnatcatcher

**Observed:** 9 species, 6 of which have occurred annually, and 1 just once (Boreal Chickadee)

**Banded:** 6 species banded, 4 of them annually; 6204 individuals banded (8.8%, 7.4%, 6.3%, and 13.3% of birds banded in winter, spring, summer, and fall, respectively).

**Seasonal occurrence:** Black-capped Chickadee and both White-breasted and Red-breasted Nuthatch are year-round residents; the other species are primarily migrants, although Brown Creeper occurs semi-regularly in winter, and Golden-crowned Kinglet occasionally does as well.

**Nesting:** Black-capped Chickadee and White-breasted Nuthatch breed at MBO annually, and Red-breasted Nuthatch has in at least some years. Rare observations of juvenile Brown Creepers and Golden-crowned Kinglets in early fall suggest that they may also nest within or adjacent to MBO in some years

**Notes:** Ruby-crowned Kinglet and Black-capped Chickadee are the third and ninth most frequently banded species at MBO. Peak migration of most species coincides in October.

#### 5.1.15 Wrens

**Observed:** 5 species observed, 3 of them annually

**Banded:** 4 species banded, 2 of them annually; 285 individuals banded (0.5%, 2.0%, and 0.6% of birds banded in spring, summer, and fall, respectively).

**Seasonal occurrence:** Records extend from April to October, with a few Winter Wren observations in winter. House Wren and Winter Wren are both disproportionately more abundant in fall than spring.

**Nesting:** House Wren breeds annually in the Tree Swallow boxes maintained at MBO; Sedge Wren and Carolina Wren have also been present in summer, but appear to not have bred successfully, although there were two territorial male Sedge Wrens in 2008.

**Notes:** House Wren is by far the most common of the wrens, accounting for 79% of wrens banded and 88% of wrens observed overall.

#### 5.1.16 Thrushes and mimids

**Observed:** 12 species observed, 9 of them annually, and 1 just once (Townsend's Solitaire)

**Banded:** 10 species banded, 7 of them annually; 4581 individuals banded (4.9%, 4.7%, 23.3%, and 10.0% of birds banded in winter, spring, summer, and fall, respectively).

**Seasonal occurrence:** Most records are from late March to November, though winter records are regular for American Robin.

**Nesting:** 4 species regularly breed at MBO: Veery, American Robin, Gray Catbird, and Brown Thrasher; Wood Thrush has also started breeding on site in recent years.

**Notes:** American Robin is the most abundant species of this group, with 2544 individuals banded, ranking sixth among all species, and accounting for 56% of thrushes and mimids.

#### 5.1.17 Warblers

**Observed:** 27 species observed, 23 of them annually

**Banded:** 26 species banded (all species observed except Connecticut Warbler), 21 of them annually; 18165 individuals banded (34.4%, 18.4%, and 38.0% of birds banded in spring, summer, and fall, respectively).

**Seasonal occurrence:** All warblers at MBO are migrants, with observations limited to between mid-April and late October, except for rare Yellow-rumped Warbler records in early November.

**Nesting:** 3 species breed at MBO annually (Ovenbird, Common Yellowthroat, Yellow Warbler), while another 5 species (Black-and-white Warbler, American Redstart, Blackburnian Warbler, Chestnut-sided Warbler and Black-throated Green Warbler) have nested in at least some years.

**Notes:** Yellow-rumped Warbler is by a wide margin the most frequently banded species at MBO, although 29% of all individuals were banded during fall 2008, and another 39% during fall 2010. Magnolia Warbler is ranked seventh among birds banded, while another five warblers are in the top 17 overall (Nashville Warbler, Tennessee Warbler, Common Yellowthroat, American Redstart, and Yellow Warbler).



### 5.1.18 Sparrows

**Observed:** 14 species observed, 10 of them annually

**Banded:** 12 species banded, 8 of them annually; 11630 individuals banded (23.4%, 16.6%, 11.8%, and 23.9% of birds banded in winter, spring, summer, and fall, respectively).

**Seasonal occurrence:** Sparrows are present throughout the year, but almost all species are limited to certain seasons. Only White-throated Sparrow occurs year-round, although relatively uncommon in both spring and winter. American Tree Sparrow and Dark-eyed Junco are the only other sparrows to regularly overwinter.

**Nesting:** Song, Swamp, and White-throated Sparrows breed at MBO annually, and Chipping Sparrow breeds occasionally.

**Notes:** Three sparrows are among the five most frequently banded birds at MBO: White-throated Sparrow (second), Slate-colored Junco (fourth), and Song Sparrow (fifth).

### 5.1.19 Finches

**Observed:** 14 species observed, 10 of them annually

**Banded:** 12 species banded, 6 of them annually. 3935 individuals banded (61.6%, 0.6%, 8.0%, and 3.9% of birds banded in winter, spring, summer, and fall, respectively).

**Seasonal occurrence:** As a group, finches are present year-round, but only Northern Cardinal, House Finch, and American Goldfinch routinely occur in all seasons (formerly also House Sparrow), and few are present in summer.

**Nesting:** Northern Cardinal, Rose-breasted Grosbeak, Indigo Bunting, and American Goldfinch nest at MBO annually. House Sparrow nested at MBO from 2005 to 2007, while Purple Finch and Pine Siskin have both done so at least once. Scarlet Tanager is suspected to have nested at or adjacent to MBO, but has not been confirmed.

**Notes:** American Goldfinch is the most common of the finches at MBO, accounting for 48% of individuals banded. Finches are particularly numerous and diverse in winter, comprising the majority (62%) of all birds banded at MBO in that season.

### 5.1.20 Blackbirds

**Observed:** 7 species observed, 6 of them annually.

**Banded:** 6 species banded, 4 of them annually; 2025 individuals banded (2.2%, 16.3%, 10.2%, and 1.2% of birds banded in winter, spring, summer, and fall, respectively).

**Seasonal occurrence:** Primarily present from late winter or early spring to late fall or early winter, although there are a few records of Rusty Blackbird and Red-winged Blackbird in mid-winter. Some species, such as Bobolink and Baltimore Oriole, are present only from mid-spring to early fall.

**Nesting:** Red-winged Blackbird is likely the most numerous breeding bird at MBO; other species that breed on site annually are Common Grackle, Brown-headed Cowbird, and Baltimore Oriole.

**Notes:** Red-winged Blackbird is consistently among the top four species observed in spring, with a daily mean count ranging from 25 to 62; in every year except 2005 it was also among the top four species overall in fall, with a daily mean count from 55 to 116. Red-winged Blackbird also is the twelfth most frequently banded bird at MBO. While Red-winged Blackbird, Rusty Blackbird, Brown-headed Cowbird, and Common Grackle are all more frequently banded in spring than fall, they form large mixed-species flocks in the second half of fall.

### 5.1.21 Other passerines

**Observed:** 7 species observed, 4 of them annually.

**Banded:** 4 species banded, 2 of them annually; 946 individuals banded (3.4%, 7.0%, 2.8%, and 0.8% of birds banded in winter, spring, summer, and fall, respectively).

**Seasonal occurrence:** Only European Starling is seen throughout the year; others are either winter visitors (Northern Shrike and Bohemian Waxwing), early spring / late fall migrants (Horned Lark and American Pipit), or a spring through fall resident and migrant (Cedar Waxwing).

**Nesting:** Only Cedar Waxwing has been confirmed breeding at MBO, although European Starling is present in summer and has at a minimum nested nearby.

**Notes:** This group comprises Northern Shrike, Horned Lark, European Starling, American Pipit, Bohemian and Cedar Waxwings, and Snow Bunting. Cedar Waxwing accounts for 98% of birds banded in this group.

## 5.2 Species not yet observed at MBO

At the time of the MBO Five-year Report (Gahbauer 2010), 199 species had been observed at MBO, and predictions were made for the next 20 species based on patterns of occurrence in southern Quebec or eastern Ontario. In the five years since, 6 of those predicted species have been observed: Great Egret (22 April 2010), Red-bellied Woodpecker (4 August 2010), Common Tern (10 August 2010), Tundra Swan (19 September 2011), Tufted Titmouse (3 June 2012), and Boreal Owl (5 November 2012). The other 14 species have not yet been observed (Black Vulture, Swainson's Hawk, Bonaparte's Gull, Red-headed Woodpecker, American Three-toed Woodpecker, Black-backed Woodpecker, Short-eared Owl, Snowy Owl, Yellow-throated Vireo, Prairie Warbler, Lapland Longspur, Louisiana Waterthrush, Orchard Oriole, and Red Crossbill). However, 5 entirely unexpected species were also added to the MBO list between 2010 and 2014: Common Goldeneye (1 October 2011), Fish Crow (20 April 2012), Black-bellied Plover (26 May 2012), Ross's Goose (12 May 2013), and Greater White-fronted Goose (21 September 2013).

Three of the originally predicted species are no longer considered likely to occur. Short-eared Owl remains in decline throughout eastern North America, and sightings around Montreal have become scarce; happening to see one migrate past seems particularly unlikely as they tend to be more active in the evening when observers are rarely present. Similarly, Red-headed Woodpecker has become increasingly rare in Quebec as its range has constricted to the south, and the odds of a vagrant occurring at MBO have become increasingly slim. Finally, although Prairie Warblers breed only 200 km west of MBO on the Frontenac Axis in Ontario, they are notoriously difficult to see on migration, and therefore the chances of one occurring off-track at MBO are low.

The other 11 originally predicted species are listed in taxonomic order below (\*), along with an expanded list of another 14 species that are considered to have a fair potential to occur based on what has been observed at MBO to date and consideration of regional occurrence records from the Quebec Breeding Bird Atlas (<http://www.atlas-oiseaux.qc.ca/donneesqc/cartes.jsp?lang=en>), the annotated list of species from Oiseaux du Quebec (<http://www.oiseauxqc.org/listeannotee.jsp>), and the cumulative eBird checklist for Montreal (<http://ebird.org/ebird/canada/GuideMe?step=saveChoices&getLocations=counties&parentState=CA-QC&bMonth=01&bYear=1900&eMonth=12&eYear=2015&reportType=location&counties=CA-QC-MR&continue.x=78&continue.y=16&continue=Continue>). Note that the list excludes Wild Turkey and White-eyed Vireo, which were planned for inclusion among the updated predictions, but were observed at MBO in 2015 between the end of the ten-year period covered in this report and its publication.

### **REDH: Redhead / Fuligule à tête rouge (*Aythya americana*)**

Although still a rare species in Quebec, with breeding evidence documented in just 19 10x10 km squares during the recent (2010-2014) Quebec Breeding Bird Atlas, the population is expanding, with 11 of those locations newly occupied compared to the first atlas period 20 years earlier. The nearest confirmed breeding location is at Ste-Timothée, less than 15 km south of MBO. Although unlikely to land at MBO, a flyover sighting is certainly possible, especially in fall.

### **BLSC: Black Scoter / Macreuse à bec jaune (*Melanitta americana*)**

Black Scoters are seen regularly in the Montreal area from mid-October to mid-November, especially along Rivière des Prairies and Rivière des Mille-Iles, just northeast of MBO. While there is no habitat for scoters at MBO, a flyover sighting is possible, and Black Scoter is readily recognizable from below.

### **BUFF: Bufflehead / Petit Garrot (*Bucephala albeola*)**

A common early spring and late fall migrant through the Montreal area; Common Goldeneye has already been observed flying over MBO, and there is no reason that Bufflehead should not be expected as well.



**LEBI: Least Bittern / Petit Blongios (*Ixobrychus exilis*)**

Least Bittern is a threatened species in Canada, but with a relatively strong population in and around Montreal, including a breeding site at Ile Bizard, less than 10 km northeast of MBO. Given the proximity of this and other nearby breeding sites, as well as available suitable habitat at MBO, an eventual observation seems likely.

**\*BLVU: Black Vulture / Urubu noir (*Coragyps atratus*)**

A southern species gradually expanding its breeding range northward, with increasingly frequent sightings in southern Quebec in recent years, including at the Montreal West Island Hawkwatch near MBO.

**\*SWHA: Swainson's Hawk / Buse de Swainson (*Buteo swainsoni*)**

A western species of which a few individuals drift east each year during fall migration, being spotted from Ontario to the east coast, including the Montreal West Island Hawkwatch in 2010, 2013, and 2014.

**\*BOGU: Bonaparte's Gull / Mouette de Bonaparte (*Chroicocephalus philadelphia*)**

A fairly common boreal breeder that migrates through the Montreal area each spring and fall, and is expected to pass over MBO at some point.

**GLGU: Glaucous Gull / Goéland bourgmestre (*Larus hyperboreus*)**

An uncommon wintering species in the Montreal area, which is expected to eventually be seen flying over MBO, as Iceland Gull has in the past.

**EUCD: Eurasian Collared-Dove / Tourterelle turque (*Streptopelia decaocto*)**

A rapidly expanding species, first recorded in 2004 and with the frequency of observations continuing to increase over time. Although there are no records to date for the island of Montreal, the northward expansion of Eurasian Collared-Dove is expected to continue, and will likely reach MBO eventually.

**\*SNOW: Snowy Owl / Harfang des neiges (*Bubo scandiaca*)**

A regular winter visitor in the Montreal area, with a number of sightings within a few kilometres of MBO in recent years. Most likely to be seen flying over MBO or in the adjacent field.



**NHOW: Northern Hawk Owl / Chouette épervière (*Surnia ulula*)**

An occasional winter visitor to the Montreal area, with multiple records from Ile Perrot just southwest of MBO, and Laval to the northeast.

**RUHU: Rufous Hummingbird / Colibri roux (*Selasphorus rufus*)**

A western species that is being seen with increasing frequency in fall across eastern North America, including several sightings in southern Quebec in recent years.

**\*ATTW: American Three-toed Woodpecker / Pic tridactyle (*Picoides dorsalis*)**

An irregular winter visitor to the Montreal area, that may be increasing regionally in response to tree die-offs caused by the Emerald Ash Borer. There have been previous sightings at the Morgan Arboretum, as well as at nearby Cap St. Jacques.



**\*BBWO: Black-backed Woodpecker / Pic à dos noir (*Picoides arcticus*)**

Like American Three-toed Woodpecker, an irregular winter visitor from the boreal forest that has been increasing regionally in recent years, and was seen at the Morgan Arboretum as recently as 2012.

**\*YTVI: Yellow-throated Vireo / Viréo à gorge jaune (*Vireo flavifrons*)**

A rare species in and around Montreal, though it breeds in good numbers in parts of eastern Ontario and is also a regular breeder in scattered parts of southern Quebec; occasional observations in spring at other Montreal area migration hotspots such as Summit Park and Parc National d'Oka suggest that it could occur at MBO.

**CASW: Cave Swallow / Hirondelle à front brun (*Petrochelidon fulva*)**

Since 1999, there have been periodic fall irruptions of Cave Swallows that reached Quebec, the most recent occurring in 2012. Although to date there is only one record in the Montreal area, there is good potential for a future sighting, given the observer effort at MBO throughout the mid-late fall period when Cave Swallow irruptions occur.

**VATH: Varied Thrush / Grive à collier (*Ixoreus naevus*)**

A western species that is increasingly frequent as a winter vagrant in the east, including at least half a dozen records in the greater Montreal area over the past decade. As a frugivore, it is likely to be attracted to the many buckthorns, hawthorns, and apples at MBO, much like another western vagrant (Townsend's Solitaire) that appeared at MBO in late 2009.



**\*LALO: Lapland Longspur / Bruant lapon (*Calcarius lapponicus*)**

A regular but uncommon winter visitor around the outskirts of Montreal; most likely to be seen in the company of Snow Buntings, and would probably favour the field adjacent to MBO.



**WEWA: Worm-eating Warbler / Paruline vermivore (*Helmitheros vermivorum*)**

A southern species that has been observed in southern Quebec in 6 of the past 10 years, including two sightings in the Montreal area.

**\*LOWA: Louisiana Waterthrush / Paruline hochequeue (*Parkesia motacilla*)**

A southern species with a range that barely reaches southern Quebec and eastern Ontario, but recent records in Gatineau Park and good numbers in the Frontenac area northeast of Kingston provide a potential source of migrants to pass through MBO without being too far off course, and two sightings in Montreal since 2011 indicate they have been close.

**HOWA: Hooded Warbler / Paruline à capuchon (*Setophaga citrina*)**

A southern species that has been showing up in southern Quebec with increasing frequency in recent years, including two sightings in the Montreal area in the past five years.

**YTWA: Yellow-throated Warbler / Paruline à gorge jaune (*Setophaga dominica*)**

Another southern warbler that is being seen with increasing frequency in southern Quebec, with at least one observation annually since 2003, including several in the Montreal area.

**\*OROR: Orchard Oriole / Oriole des vergers (*Icterus spurius*)**

A southern species with only scattered records in the Montreal area, but one of these is of a nesting pair near the entrance to the Ecomuseum (in 2002); had MBO been operational at the time, it is possible one or more of the birds from that location would have been counted at MBO.

**YHBL: Yellow-headed Blackbird / Carouge à tête jaune (*Xanthocephalus xanthocephalus*)**

A western species that has been seen on multiple occasions along the south shore of the St. Lawrence River just south of MBO, and would find suitable habitat at Stoneycroft Pond.

**\*RECR: Red Crossbill / Bec-croisé des sapins (*Loxia curvirostra*)**

A highly nomadic finch that visits feeders on occasion and has been observed at the Morgan Arboretum; chances are good of eventually spotting one at MBO during a winter when relatively large numbers occur in southern Quebec.

Of course, as was the case over the past five years, we expect the occasional surprise in the form of a species we have not predicted to occur. There is a particularly good chance this will be a species of western flycatcher, as several have been reported in the Montreal area in late fall. In fact, there is a chance that one has already been seen at MBO, but without being confirmed (see the Great Crested Flycatcher account in Appendix D).

### 5.3 Seasonal patterns

During spring and fall migration, both weather conditions and bird communities undergo significant changes throughout the season. The brief accounts below summarize typical observations on a weekly basis throughout these two seasons, and on a monthly basis during summer and winter, when conditions change less rapidly.

Dominant species observed and banded are listed for each period, including only those which have occurred in the top 10 for that period in at least 6 of 10 years (see Appendix B). They are listed in descending order of occurrence, with the mean number of individuals observed per day or the mean number banded per week (or per month in summer/winter) in parentheses. Note that for summer, birds banded through the nest monitoring program (primarily juveniles) are excluded from these summaries because effort has been highly variable across years and is not meaningful for comparison. Similarly, the weekly summaries for fall are based entirely on data from the Fall Migration Monitoring Program, and do not include results from the owl banding program.

Species peaks for spring and fall are based on the patterns of observation shown in Appendix D, and although the timing of peaks has varied over time for some species, the summaries presented in this section are based strictly on the overall averages from 2005 through 2014. Clear and consistent peaks are not apparent for all species, especially those that occur infrequently. As such, the number of species peaking per week in spring and fall is coarsely subdivided into 'common' and 'uncommon' species, defined for this purpose as those that on average have a mean total count of at least 15 individuals per spring or 20 individuals per fall (common), or fewer (uncommon). These thresholds roughly represent observing a single individual every fourth or fifth day throughout the season; there are 104 uncommon and 87 common species in spring, while in fall there are 94 uncommon and 96 species. Uncommon species are flagged with an asterisk (\*) in the list of species peaking.



Weather data are based on archived records from Environment Canada for Montreal, compiled in Appendix E.

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#### Winter Month 1 (October 31 - November 30)

**Species observed:** 77 (low 27, mean 37, high 48)

**Dominant species observed:** Canada Goose (157), American Crow (40), American Robin (27), American Goldfinch (15), Black-capped Chickadee (14), Dark-eyed Junco (14), Mallard (14), House Finch (9)

**Birds banded:** 1550 individuals (low 41, mean 194, high 378); 25 species (low 8, mean 13, high 18)

**Dominant species banded:** American Goldfinch (68.5), Dark-eyed Junco (43.6), House Finch (39.4), Black-capped Chickadee (10.0), American Tree Sparrow (8.6), Northern Cardinal (4.4), Mourning Dove (3.6), White-throated Sparrow (3.5)

**Weather:** Mean low temperature -4 to +1 (mean -1); mean high temperature 5 to 10 (mean 7). Total rainfall 13 to 104 mm (mean 66, weekly mean 16); total snowfall 0 to 29 cm (mean 9, weekly mean 2).

**Notes:** The first month of winter is always the warmest, and mean temperatures largely remain above freezing. Rainfall is also on average greater than in any other winter month, but correspondingly there is relatively little snow yet, though there has been at least some snowfall in every year except 2007. Canada Goose, American Crow, and American Robin are the dominant species observed, carrying over from the large flocks observed at the end of fall, although the goose and robin are in greatly reduced numbers already, and some other species still near their peak in week 13 drop off considerably in November (e.g., European Starling, Red-winged Blackbird). Within the winter season, diversity is highest in November, with a mean species count nearly 70% higher than the three mid-winter months. Many of these species are late-lingering fall migrants that occasionally trickle over into the first week or two of November in small numbers. Over 55% of birds banded at MBO in winter have been in November, in large part because of a greater concentration of banding effort compared to other months, which in turn is related to the warmer temperatures that place less of a limitation on banding activities. Finches dominate November banding, with American Goldfinch and House Finch accounting for 56% of birds banded during the month.

## **Winter Month 2 (December 1 - 31)**

**Species observed:** 52 (low 13, mean 23, high 32)

**Dominant species observed:** Canada Goose (164), European Starling (24), American Crow (21), Black-capped Chickadee (13), Dark-eyed Junco (10), American Goldfinch (8), House Finch (7), Mourning Dove (7), Northern Cardinal (4)

**Birds banded:** 353 individuals (low 9, mean 50, high 155); 15 species (low 5, mean 7, high 8)

**Dominant species banded:** American Goldfinch (22.7), House Finch (7.0), Dark-eyed Junco (5.4), American Tree Sparrow (3.6), Black-capped Chickadee (3.4)

**Weather:** Mean low temperature -12 to -5 (mean -9); mean high temperature -5 to +2 (mean -2). Total rainfall 6 to 96 mm (mean 52, weekly mean 13); total snowfall 20 to 113 cm (mean 67, weekly mean 16).

**Notes:** December is significantly colder than November, with mean daily high temperatures below freezing every year except 2006 and 2011. Total rainfall is on average only around 20% less than in November, but it has also been the snowiest month of winter every year except 2006, 2010, and 2011 – and in 2006 and 2011 that was due to warmer temperatures, which translated into the two Decembers with the highest volume of rainfall. Canada Goose remains by far the most abundant species on average, thanks primarily to some enormous flocks, ranging from 383 to 2540 during the unusually mild weather of December 2006, and large numbers again in both 2009 and 2010 (though no Canada Geese were observed at all in December 2008 or 2011). Diversity is much lower than in November, with an average of 23 species observed annually. The combination of cold weather and frequent snow usually limits banding opportunities in December, and the mean numbers banded are consequently much lower than in November. American Goldfinch remains by far the most commonly banded species, but House Finches are no longer as prominent by December.

## **Winter Month 3 (January 1 - 31)**

**Species observed:** 44 (low 13, mean 22, high 29)

**Dominant species observed:** European Starling (27), Black-capped Chickadee (13), Dark-eyed Junco (11), Mourning Dove (7), American Crow (6), House Finch (6), American Goldfinch (4), Blue Jay (3)

**Birds banded:** 113 individuals (low 14, mean 38, high 82); 12 species (low 4, mean 7, high 12)

**Dominant species banded:** Black-capped Chickadee (8.0), American Goldfinch (8.0), Dark-eyed Junco (6.3), American Tree Sparrow (1.3)

**Weather:** Mean low temperature -17 to -8 (mean -12); mean high temperature -9 to -1 (mean -4). Total rainfall 0 to 92 mm (mean 34, weekly mean 8); total snowfall 16 to 72 cm (mean 45, weekly mean 11).

**Notes:** January is on average the coldest month at MBO, with mean daily lows and highs both one degree less than in February; the mean daily high has been below freezing every year. Both rainfall and snowfall are on average one-third lower than in December. By January, the last of the waterfowl and other late fall migrants are finally gone, and the species observed are generally those associated with the feeders at MBO (e.g., Black-capped Chickadee, Dark-eyed Junco), or others such as European Starling and (in some years) Bohemian Waxwing that feed on the abundant buckthorn and hawthorn fruit. Mean and total cumulative diversity drop to their lowest levels of winter (and of the year) in January. Although scarce in early winter, Common Redpolls and Bohemian Waxwings often start to arrive in January, in the years that they are present. Banding opportunities continue to be scarce due to weather limitations, with Black-capped Chickadee and American Goldfinch the most common species overall when banding has been possible. More Common Redpolls (26) have been banded in January than any other species, but they were all in 2006, and therefore are not considered a dominant species for the period because there is not a regular pattern to their occurrence. Fewer individuals and species have been banded in January than any other month.

## **Winter Month 4 (February 1 - 28)**

**Species observed:** 45 (low 17, mean 22, high 27)

**Dominant species observed:** European Starling (12), Black-capped Chickadee (11), Bohemian Waxwing (10), Dark-eyed Junco (7), American Crow (6), Mourning Dove (5), American Goldfinch (4), Blue Jay (3)

**Birds banded:** 198 individuals (low 4, mean 33, high 97); 16 species (low 2, mean 6, high 10)

**Dominant species banded:** Black-capped Chickadee (6.7), Dark-eyed Junco (3.0), American Goldfinch (2.0), American Tree Sparrow (1.5)

**Weather:** Mean low temperature -15 to -8 (mean -11); mean high temperature -7 to -1 (mean -3). Total rainfall 0 to 51 mm (mean 15, weekly mean 4); total snowfall 23 to 88 cm (mean 47, weekly mean 12).

**Notes:** On average, temperatures in February start to warm up slightly, although in four years out of ten the mean daily high was actually colder than in January. Rainfall tends to be much scarcer than in any other month, but snowfall is on average nearly the same as in January. The mean diversity for February matches the season low of 22 also recorded in January, and the maximum count of 27 is the lowest for winter, but the cumulative list is one species longer. Bohemian Waxwing and Common Redpoll numbers tend to increase in February in the years that they are present, but many other winter residents remain stable or decline somewhat. Banding totals in February are generally low; 44% of all birds banded during the month over the ten-year period were Common Redpolls in February 2013. Redpolls, however, are irruptive; the only regularly banded species in February are Black-capped Chickadee, American Tree Sparrow, Dark-eyed Junco, and American Goldfinch.

### Winter Month 5 (March 1 - 27)

**Species observed:** 70 (low 23, mean 32, high 45)

**Dominant species observed:** Canada Goose (109), American Crow (15), European Starling (11), Black-capped Chickadee (11), Red-winged Blackbird (10), Dark-eyed Junco (6), American Tree Sparrow (5)

**Birds banded:** 601 individuals (low 27, mean 75, high 271); 20 species (low 6, mean 8, high 13)

**Dominant species banded:** Common Redpoll (39.1), American Tree Sparrow (8.6), Black-capped Chickadee (7.8), American Goldfinch (7.8), Dark-eyed Junco (3.8)

**Weather:** Mean low temperature -12 to -2 (mean -6); mean high temperature -2 to +8 (mean +2). Total rainfall 1 to 83 mm (mean 25, weekly mean 7); total snowfall 3 to 75 cm (mean 32, weekly mean 8).

**Notes:** Mean daily low and high temperatures in March are roughly 5 degrees warmer than in February, and the mean daily high was above freezing in every year except 2014. With the warmer temperatures, mean snowfall amounts drop by one-third from February, but rainfall increases by two-thirds. Diversity rebounds considerably in response to the change in weather, with the count usually including a number of early spring migrants, especially in years such as 2012 with an unusually extended period of very mild weather in mid-March. Canada Goose returns to the top of the list of most observed species thanks to some early flocks, while passerine migrants such as American Robin, Song Sparrow, and Red-winged Blackbird trickle in with much smaller numbers and usually don't register among the top species until MBO's spring season begins. Overall, March banding has been dominated by Common Redpolls, with the 313 individuals banded this month (mean 39 per year of banding) accounting for 11.1% of birds of all species banded throughout winter. However, Common Redpolls have only been banded in five years due to their irruptive nature; among more regularly occurring species, American Tree Sparrow, Black-capped Chickadee, and American Goldfinch are banded most frequently.



*Common Redpoll (left) and American Tree Sparrow (right) are two of the most commonly banded species at MBO in winter (Photos by Simon Duval)*



### **Spring Week 1 (March 28 - April 3)**

**Species observed:** 64 (low 24, mean 34, high 39)

**Dominant species observed:** Canada Goose (379), Red-winged Blackbird (33), American Crow (17), Ring-billed Gull (12), Black-capped Chickadee (11), American Robin (9), Blue Jay (6)

**Species peaking this week:** 9 (4 common and 5 uncommon) - Canada Goose, American Wigeon\*, American Black Duck\*, Ruffed Grouse\*, Great Black-backed Gull\*, Tufted Titmouse\*, Bohemian Waxwing, American Tree Sparrow, Common Redpoll

**Birds banded:** 0 individuals

**Weather:** Mean low temperature -5 to +3 (mean -1); mean high temperature 4 to 14 (mean 9). Total rainfall 1 to 45 mm (mean 16); total snowfall 0 to 3 cm (mean 1).

**Notes:** This was designated as the first week of spring at MBO because it commonly coincides with the return of large numbers of Canada Geese and Red-winged Blackbirds, as well as smaller numbers of other migrants ranging from Wood Duck to Song Sparrow. However, overnight temperatures still average just below freezing, even though daily highs are on average more than 6 degrees warmer than in the rest of March. Although snowfall during this week has been rare, there is often still snow on the ground, and that in combination with the cold morning temperatures has prevented any banding during this period. Only four common species peak in abundance during this week, with three of them (Bohemian Waxwing, American Tree Sparrow, and Common Redpoll) being overwintering species that are beginning to leave MBO around this time.

### **Spring Week 2 (April 4 - 10)**

**Species observed:** 77 (low 33, mean 40, high 51)

**Dominant species observed:** Canada Goose (256), Red-winged Blackbird (38), Snow Goose (26), Ring-billed Gull (18), American Crow (15), American Robin (12), Black-capped Chickadee (11), Song Sparrow (10)

**Species peaking this week:** 7 (1 common and 6 uncommon) - Ring-necked Duck\*, Hooded Merganser\*, Northern Goshawk\*, Iceland Gull\*, Northern Shrike\*, Horned Lark\*, European Starling

**Birds banded:** 34 individuals (low 17, mean 17, high 17); 13 species (low 7, mean 8, high 10)

**Dominant species banded:** Song Sparrow (3.5), American Goldfinch (2.5), American Robin (2.0), American Tree Sparrow (2.0), Black-capped Chickadee (1.5), Dark-eyed Junco (1.5), Golden-crowned Kinglet (1.0)

**Weather:** Mean low temperature -3 to +6 (mean 0); mean high temperature 3 to 14 (mean 9). Total rainfall 3 to 51 mm (mean 20); total snowfall 0 to 11 cm (mean 3).

**Notes:** Weather conditions in week 2 are remarkably similar to week 1; if anything they are sometimes more wintry. The mean daily high temperature is marginally higher in week 2 (by 0.3 degrees), but in four years it has been colder than in week 1, by as much as 7 degrees in 2006 and 2007. Similarly, snowfall in week 2 has been greater than in week 1 in six of ten years; rainfall is on average also somewhat greater. While banding was attempted during this week for the first two years, the weather limitations were sufficiently frequent to negate the value of operating the nets during this period. The only common species peaking in week 2 is European Starling.

### **Spring Week 3 (April 11 - 17)**

**Species observed:** 77 (low 36, mean 44, high 54)

**Dominant species observed:** Canada Goose (205), Red-winged Blackbird (40), Ring-billed Gull (17), American Crow (15), American Robin (15), Song Sparrow (14), Black-capped Chickadee (9)

**Species peaking this week:** 2 (both uncommon) - Northern Shoveler\*, Evening Grosbeak\*

**Birds banded:** 85 individuals (low 17, mean 42, high 68); 20 species (low 8, mean 14, high 19)

**Dominant species banded:** Dark-eyed Junco (10.5), American Robin (4.0), Cedar Waxwing (4.0), Song Sparrow (4.0), Golden-crowned Kinglet (2.5), Fox Sparrow (2.5), Ruby-crowned Kinglet (2.0), American Tree Sparrow (2.0), Red-winged Blackbird (2.0), Eastern Phoebe (1.5), American Goldfinch (1.5)

**Weather:** Mean low temperature -1 to +5 (mean +1); mean high temperature 5 to 18 (mean 12). Total rainfall 1 to 45 mm (mean 16); total snowfall 0 to 3 cm (mean 1).



**Notes:** Temperatures typically spike notably in week 3, with daily highs on average 3 degrees warmer than in week 2. However, the two snowiest weeks of spring have occurred during this period, in 2007 and 2013, and there have been smaller amounts of snow in three other years. Given the relative frequency of snow and overnight temperatures on average still barely above freezing, banding during week 3 was also abandoned after the first two years. Numbers of many common early migrants continue to build during week 3, but only two uncommon species peak during this week.

#### Spring Week 4 (April 18 - 24)

**Species observed:** 104 (low 59, mean 64, high 69)

**Dominant species observed:** Canada Goose (289), Red-winged Blackbird (53), Ring-billed Gull (28), American Crow (24), American Robin (24), Song Sparrow (18), Black-capped Chickadee (14)

**Species peaking this week:** 42 (23 common and 19 uncommon) - Greater White-fronted Goose\*, Snow Goose, Wood Duck, Mallard, Northern Pintail, American Green-winged Teal, Common Merganser\*, Red-breasted Merganser\*, American Bittern\*, Black-crowned Night-Heron\*, Turkey Vulture, Northern Harrier\*, Cooper's Hawk\*, Broad-winged Hawk\*, Red-tailed Hawk, Rough-legged Hawk\*, American Kestrel\*, Sandhill Crane\*, Killdeer, Wilson's Snipe\*, Herring Gull\*, Mourning Dove, Belted Kingfisher\*, Downy Woodpecker, Hairy Woodpecker, Eastern Phoebe, American Crow, Fish Crow\*, Black-capped Chickadee, White-breasted Nuthatch, Brown Creeper\*, Winter Wren\*, Golden-crowned Kinglet, American Robin, Field Sparrow\*, Vesper Sparrow\*, Fox Sparrow, Song Sparrow, Dark-eyed Junco, Northern Cardinal, House Finch, Pine Siskin

**Birds banded:** 934 individuals (low 39, mean 93, high 169); 37 species (low 13, mean 17, high 20)

**Dominant species banded:** Ruby-crowned Kinglet (15.6), Fox Sparrow (12.1), Red-winged Blackbird (9.1), Song Sparrow (7.8), Dark-eyed Junco (6.8), White-throated Sparrow (5.2), Swamp Sparrow (3.6), American Goldfinch (3.3)

**Weather:** Mean low temperature 1 to 6 (mean 3); mean high temperature 9 to 22 (mean 15). Total rainfall 1 to 63 mm (mean 23); total snowfall 0 to 3 cm (mean 0).

**Notes:** Week 4 of spring is the first week of the year during which no years had a mean low temperature below freezing, and the mean daily high is another 3 degrees warmer than in week 3. There has only once been snowfall in week 4, in 2011. The results show a tremendous influx of birds in week 4, and this in part reflects the advance of the season and sharp increase in temperature. However, to some degree it is also a function of the banding program beginning in week 4 (since 2008), and the extra observer effort associated with that, compared to the one-hour census that takes place daily during the first three weeks. Correspondingly, more species peak in week 4 than any other week of spring. Among the common species peaking, a few (most notably Golden-crowned Kinglet, Fox Sparrow, and Dark-eyed Junco) are early season migrants that are likely somewhat under-detected in previous weeks and may in reality have a somewhat earlier peak. Banding counts often are quite modest to start the season; overall Ruby-crowned Kinglet is banded considerably more than any other species. Results are fairly variable from year to year, depending on weather conditions.



#### Spring Week 5 (April 25 - May 1)

**Species observed:** 114 (low 55, mean 64, high 75)

**Dominant species observed:** Canada Goose (168), Red-winged Blackbird (54), American Crow (22), American Robin (14), Ring-billed Gull (14), Song Sparrow (14), White-throated Sparrow (14), Black-capped Chickadee (12), Tree Swallow (11)

**Species peaking this week:** 9 (4 common and 5 uncommon) - American Woodcock\*, Great Horned Owl\*, Yellow-shafted Flicker, Hermit Thrush\*, American Pipit\*, Cedar Waxwing, White-throated Sparrow, Eastern Meadowlark\*, Rusty Blackbird

**Birds banded:** 804 individuals (low 13, mean 80, high 197); 41 species (low 3, mean 14, high 18)

**Dominant species banded:** Red-winged Blackbird (13.5), Ruby-crowned Kinglet (10.3), White-throated Sparrow (9.4), Swamp Sparrow (4.3), American Robin (3.6), Song Sparrow (2.9)

**Weather:** Mean low temperature 1 to 7 (mean 4); mean high temperature 10 to 22 (mean 15). Total rainfall 1 to 71 mm (mean 25); total snowfall 0 to 1 cm (mean 0).

**Notes:** The mean high temperature is the same for weeks 4 and 5, but the mean low temperature is 1.2 degrees warmer in week 5. However, both are highly variable, and can have quite an influence on migration. For example, in 2007 a cold snap in week 5 reduced the mean daily high temperature by 6 degrees compared to week 4, and this effectively stalled migration, resulting in a lower capture rate for the week than in any other year. The latest ever snow at MBO was a small amount in week 5 of 2012. Two of the five highest weekly rainfall totals for all of spring have occurred in week 5, but overall, average rainfall by week throughout spring varies relatively little (from 16 to 26 mm) and does not show a clear pattern over the course of the season. The number of species peaking in week 5 is less than one-quarter the count in week 4, which as previously noted may have a total somewhat inflated by the contrast in effort between it and the preceding three weeks of census only. Canada Goose and Red-winged Blackbird have been the first and second most abundant species in week 5 every year except 2014, when Cedar Waxwing bumped them both down. For the first five years, one of Ruby-crowned Kinglet, White-throated Sparrow, or Red-winged Blackbird dominated the nets in week 5 by a wide margin over other species; since then the week 5 banding totals have tended to be quite low without any standout species, except for an enormous influx of Cedar Waxwings in 2014. Others that have been banded in good numbers in some years include American Robin, Song Sparrow, and Dark-eyed Junco; again the results are fairly variable from year to year depending on weather. The first warblers of the season are sometimes banded in week 5, most often Yellow-rumped Warblers, but occasionally also Northern Waterthrush, Nashville Warbler, Common Yellowthroat, and Yellow Warbler.

### Spring Week 6 (May 2 - 8)

**Species observed:** 142 (low 60, mean 78, high 89)

**Dominant species observed:** Canada Goose (277), Red-winged Blackbird (52), Ring-billed Gull (23), American Crow (22), Tree Swallow (15), Song Sparrow (13), Black-capped Chickadee (12), American Goldfinch (12)

**Species peaking this week:** 21 (11 common and 10 uncommon) - Cackling Goose\*, Blue-winged Teal\*, Common Loon, Osprey\*, Sharp-shinned Hawk\*, Red-shouldered Hawk, Common Moorhen\*, Greater Yellowlegs\*, Black Tern\*, Barred Owl\*, Yellow-bellied Sapsucker\*, Pileated Woodpecker, Blue Jay, Common Raven, Ruby-crowned Kinglet, Yellow Palm Warbler\*, Savannah Sparrow, Swamp Sparrow, Brown-headed Cowbird, Purple Finch, House Sparrow

**Birds banded:** 954 individuals (low 52, mean 95, high 148); 50 species (low 12, mean 19, high 23)

**Dominant species banded:** Red-winged Blackbird (23.5), Ruby-crowned Kinglet (17.0), White-throated Sparrow (14.9), Common Grackle (4.8), American Goldfinch (4.7), Swamp Sparrow (2.9)

**Weather:** Mean low temperature 5 to 11 (mean 7); mean high temperature 14 to 26 (mean 17). Total rainfall 0 to 40 mm (mean 17); no snowfall.

**Notes:** Mean temperatures jump upwards again in week 6, with a mean increase of 2.3 degrees in both daily lows and highs. Even in the coldest years, the mean low temperature for the week was barely below 5 degrees, and these warmer conditions favour the arrival of many more spring migrants. The top three species banded are the same as in week 5, all in greater numbers, though the mean daily count of Ruby-crowned Kinglets observed is similar to week 5 and that of White-throated Sparrows is actually lower. The first wave of neotropical migrants usually arrives in week 6, typically including Yellow Warbler and Rose-breasted Grosbeak, and often also Eastern Kingbird and Baltimore Oriole.

### Spring Week 7 (May 9 - 15)

**Species observed:** 149 (low 68, mean 89, high 98)

**Dominant species observed:** Red-winged Blackbird (56), Canada Goose (56), Ring-billed Gull (46), American Crow (19), Cliff Swallow (16), Tree Swallow (15), American Goldfinch (13), Yellow-rumped Warbler (13), Common Grackle (13), Yellow Warbler (12)

**Species peaking this week:** 26 (13 common and 13 uncommon) - Ross's Goose\*, Bald Eagle\*, Golden Eagle\*, Merlin\*, Virginia Rail\*, Solitary Sandpiper, Lesser Yellowlegs\*, Least Sandpiper\*, Ring-billed Gull, Rock Pigeon, Tree Swallow, Northern Rough-winged Swallow\*, Cliff Swallow, Northern Mockingbird\*, Blue-winged Warbler\*, Nashville Warbler, Western Palm Warbler\*, Pine Warbler\*, Yellow-rumped Warbler, Black-throated Green



Warbler, Chipping Sparrow, Lincoln's Sparrow\*, (Eastern) White-crowned Sparrow, Red-winged Blackbird, Common Grackle, American Goldfinch

**Birds banded:** 1512 individuals (low 55, mean 151, high 305); 68 species (low 18, mean 31, high 43)

**Dominant species banded:** Red-winged Blackbird (24.5), Yellow-rumped Warbler (19.6), White-throated Sparrow (9.1), Yellow Warbler (9.0), American Goldfinch (9.0), Ruby-crowned Kinglet (8.7), Common Grackle (5.4), Baltimore Oriole (4.7)

**Weather:** Mean low temperature 4 to 12 (mean 8); mean high temperature 14 to 23 (mean 19). Total rainfall 5 to 43 mm (mean 17); no snowfall.

**Notes:** Temperatures continue to increase in week 7, with a mean daily high of at least 17 degrees in every year except 2010. Diversity spikes upward in week 7, with a mean count of 89 species, an increase of 11 over week 6. This largely reflects the arrival of more neotropical migrants, although many of them do not peak in numbers for another week or two. After being the most abundant species observed since the beginning of spring, Canada Goose numbers start to drop off, falling out of the top spot for the week in five of ten years (although generally remaining more numerous in recent years compared to earlier ones). Swallows often begin swarming over Stonecroft Pond in large numbers in week 7. This tends to be the peak week for both observing and banding Red-winged Blackbirds, after which some move on and others begin to settle down for nesting. Yellow Warbler is the earliest of the neotropical migrants to be banded in good numbers, with a mean of 9 this week, in addition to usually at least a couple of returns of residents banded in previous years. Dominant mid-season migrants such as Ruby-crowned Kinglet and White-throated Sparrow start to taper off. For the first time in spring, there are routinely multiple warbler species among the top ten banded, although this number has increased over time (five species annually since 2012; a mean of just under three annually from 2005 to 2011).

### **Spring Week 8 (May 16 - 22)**

**Species observed:** 148 (low 86, mean 96, high 107)

**Dominant species observed:** Red-winged Blackbird (43), Ring-billed Gull (35), American Crow (19), Yellow Warbler (15), Tree Swallow (14), American Goldfinch (12), Common Grackle (10), Baltimore Oriole (10)

**Species peaking this week:** 28 (12 common and 16 uncommon) - Atlantic Brant\*, Greater Scaup\*, White-winged Scoter\*, Double-crested Cormorant, Peregrine Falcon\*, Chimney Swift\*, Least Flycatcher, Eastern Kingbird, Blue-headed Vireo\*, Purple Martin\*, Barn Swallow, Wood Thrush\*, Northern Waterthrush, Golden-winged Warbler\*, Black-and-white Warbler, Orange-crowned Warbler\*, Cape May Warbler\*, Northern Parula\*, Magnolia Warbler, Bay-breasted Warbler\*, Blackburnian Warbler\*, Yellow Warbler, Black-throated Blue Warbler, Clay-colored Sparrow\*, Scarlet Tanager\*, Rose-breasted Grosbeak, Bobolink, Baltimore Oriole

**Birds banded:** 1886 individuals (low 123, mean 189, high 300); 74 species (low 28, mean 37, high 44)

**Dominant species banded:** Tennessee Warbler (19.2), Yellow Warbler (16.8), Magnolia Warbler (16.7), Red-winged Blackbird (14.8), Yellow-rumped Warbler (13.5), American Goldfinch (12.2), Common Yellowthroat (10.5), Northern Waterthrush (9.1), Gray Catbird (5.9)

**Weather:** Mean low temperature 4 to 11 (mean 8); mean high temperature 13 to 24 (mean 19). Total rainfall 0 to 85 mm (mean 26); no snowfall.

**Notes:** On average, temperatures in week 8 are virtually the same as in week 7, although they have been warmer in recent years (2005-2008 were the four coldest years during week 8, while 2012-2014 are three of the four years with a mean daily high more than one degree above the ten-year mean for the period). This is also the first week of the year during which no sub-freezing temperatures have been recorded. Week 8 is generally the peak of spring migration, with a mean of 96 species observed and peak count of 107 species both well above any other week in any season. Also, more birds have been banded in week 8 than any other in spring (1886, 22.4% of the season total), and the mean of 37 species banded during the week is at least 5 more than in any other week of the season. Yellow Warbler takes over as the most commonly banded species overall, though it topped the weekly list only in 2008, reflecting high inter-annual variability at the peak of migration. It is followed closely by Magnolia Warbler, largely on the strength of topping the week 8 counts in 2013 and 2014. An additional two warblers (Common Yellowthroat and Yellow-rumped Warbler) are among the five most dominant species banded in week 8, and on average there are six warbler species among the top ten banded during week 8 each

year. Almost half of the warbler species observed at MBO in spring peak in week 8. Sparrows have largely moved through by this point, aside from the resident populations of Song and Swamp Sparrow; the only species to appear among the top ten banded in more than two years is White-crowned Sparrow, in five years.

### **Spring Week 9 (May 23 - 29)**

**Species observed:** 142 (low 79, mean 91, high 100)

**Dominant species observed:** Red-winged Blackbird (34), Ring-billed Gull (32), American Crow (18), Cedar Waxwing (16), Cliff Swallow (14), Yellow Warbler (14), Tree Swallow (14), American Goldfinch (12)

**Species peaking this week:** 35 (17 common and 18 uncommon) – Gadwall\*, Pied-billed Grebe\*, Great Blue Heron, Green Heron, Sora\*, Black-bellied Plover\*, Semipalmated Plover\*, Spotted Sandpiper\*, Black-billed Cuckoo\*, Ruby-throated Hummingbird, Olive-sided Flycatcher\*, Yellow-bellied Flycatcher\*, Traill's Flycatcher, Great Crested Flycatcher, Warbling Vireo, Philadelphia Vireo\*, Bank Swallow\*, Red-breasted Nuthatch\*, Marsh Wren\*, Veery, Gray-cheeked Thrush\*, Bicknell's Thrush\*, Swainson's Thrush\*, Gray Catbird, Brown Thrasher, Ovenbird, Tennessee Warbler, Mourning Warbler\*, Common Yellowthroat, American Redstart, Chestnut-sided Warbler, Blackpoll Warbler, Canada Warbler\*, Wilson's Warbler, Indigo Bunting

**Birds banded:** 1733 individuals (low 98, mean 173, high 318); 65 species (low 26, mean 32, high 40)

**Dominant species banded:** Cedar Waxwing (15.4), Blackpoll Warbler (14.5), Wilson's Warbler (10.7), American Goldfinch (10.7), Magnolia Warbler (10.5), Red-winged Blackbird (9.1), Traill's Flycatcher (8.4), Northern Waterthrush (7.9), Common Yellowthroat (7.3)

**Weather:** Mean low temperature 8 to 16 (mean 11); mean high temperature 17 to 29 (mean 21). Total rainfall 0 to 66 mm (mean 21); no snowfall.

**Notes:** Week 9 represents the last major jump in temperatures during spring, with the mean daily low and high both 2.7 degrees higher than in week 8; in six of ten years the mean daily low has been above 10 degrees. In some years there are already early heat waves in week 9, reaching as high as 31 degrees. Species diversity tends to drop slightly in week 9, but remains the second highest of the year thanks to the arrival of several late migrants, which on average increase the season total by 6.5 species. Most of the species peaking this week are neotropical migrants, including four thrushes and another eight warblers. There is considerable turnover in dominant species banded compared to week 8, with two late-season migrants (Blackpoll and Wilson's Warblers) among the top three for week 9 overall, along with Cedar Waxwing. For the second week in a row, on average six of the ten top species banded in week 9 are warblers.

### **Spring Week 10 (May 30 - June 5)**

**Species observed:** 133 (low 58, mean 75, high 83)

**Dominant species observed:** Red-winged Blackbird (30), Cedar Waxwing (16), American Crow (13), Ring-billed Gull (13), Yellow Warbler (11), Tree Swallow (10), American Goldfinch (9), Song Sparrow (8), Cliff Swallow (7)

**Species peaking this week:** 12 (2 common and 10 uncommon) - Great Egret\*, Common Tern\*, Yellow-billed Cuckoo\*, Red-bellied Woodpecker\*, Eastern Wood-Pewee\*, Red-eyed Vireo, House Wren, Sedge Wren\*, Carolina Wren\*, Blue-gray Gnatcatcher\*, Eastern Bluebird\*, Eastern Towhee\*

**Birds banded:** 468 individuals (low 28, mean 47, high 74); 46 species (low 15, mean 19, high 26)

**Dominant species banded:** Cedar Waxwing (10.2), Blackpoll Warbler (4.3), Traill's Flycatcher (3.4), Red-winged Blackbird (2.9), Wilson's Warbler (2.5)

**Weather:** Mean low temperature 7 to 14 (mean 13); mean high temperature 18 to 26 (mean 22). Total rainfall 0 to 52 mm (mean 26); no snowfall.

**Notes:** By the final week of spring, weather conditions are often more summer-like, but they are subject to somewhat more variability from year to year than the rest of June. Despite this, it would be premature to call spring migration over at the end of May, since there are several late migrants that typically linger into early June, most notably the two common migrants peaking this week (Red-eyed Vireo and House Wren), as well as other late migrants still moving through in good numbers, such as Yellow-bellied Flycatcher, Traill's Flycatcher, and four non-breeding warblers (Tennessee, Magnolia, Blackpoll, and Wilson's). However, since 2007, the banding period has been cut off after June 1, since data from the first two years showed that later captures were

dominated by local breeders, and daily census observations from subsequent years reaffirm the shift in species abundance over the course of the week. While relatively few birds are banded as a result of the scaled-back effort during week 10, Cedar Waxwing has been particularly common during this period, accounting for 22% of all birds banded. The only other species among the top ten banded in week 10 in almost all years is Traill's Flycatcher; others such as Tennessee Warbler, Blackpoll Warbler, Wilson's Warbler, Red-winged Blackbird and American Goldfinch have been among the top three in some years, but not banded at all in several others.



*Baltimore Oriole (left) and Wood Duck (right) are among the colourful species common at MBO in spring (Photos by Barbara Frei and Simon Duval)*

### **Summer Month 1 (June 6 - 30)**

**Species observed:** 90 (low 33, mean 50, high 64)

**Dominant species observed:** Red-winged Blackbird (21), American Goldfinch (8), Tree Swallow (8), Yellow Warbler (8), Cedar Waxwing (7), Song Sparrow (7), American Crow (6), Ring-billed Gull (4), Common Grackle (4), Black-capped Chickadee (4)

**Birds banded:** 131 individuals (low 15, mean 22, high 29); 22 species (low 8, mean 10, high 14)

**Dominant species banded:** Red-winged Blackbird (3.5), Song Sparrow (2.2), Yellow Warbler (1.5)

**Weather:** Mean low temperature 14 to 16 (mean 15); mean high temperature 22 to 26 (mean 25). Total rainfall 41 to 145 mm (mean 89, weekly mean 25); no snowfall.

**Notes:** Temperatures in June are consistently warm, with a mean daily high ranging among years from 22 to 26; rainfall continues around similar levels to spring, with an average of 25 mm per week. Red-winged Blackbird is by far the dominant species at MBO in June, although there are many other regular residents at a lower level of abundance. However, mean diversity drops by one-third compared to the week 10 of spring, reinforcing the value of classifying the first several days of June as part of spring. Even so, some of the records for the first month of summer are late-lingering spring migrants. June banding is generally limited to the first three sessions of MAPS (mostly adults) and some opportunistic banding of nestlings, and numbers are low overall. Red-winged Blackbird and Song Sparrow are the only species routinely banded in June.

### **Summer Month 2 (July 1 - 31)**

**Species observed:** 91 (low 35, mean 50, high 67)

**Dominant species observed:** Red-winged Blackbird (12), Song Sparrow (10), American Goldfinch (10), American Robin (8), Black-capped Chickadee (6), Yellow Warbler (5), Cedar Waxwing (5), Common Grackle (5)

**Birds banded:** 728 individuals (low 5, mean 81, high 164); 45 species (low 3, mean 19, high 30)

**Dominant species banded:** Song Sparrow (12.7), Yellow Warbler (11.1), American Robin (9.2), Gray Catbird (5.3), Red-eyed Vireo (4.1), Rose-breasted Grosbeak (3.0), Downy Woodpecker (2.8)

**Weather:** Mean low temperature 16 to 18 (mean 17); mean high temperature 24 to 28 (mean 27). Total rainfall 59 to 135 mm (mean 103, weekly mean 23); no snowfall.

**Notes:** Weather conditions in July are overall very similar to June, with temperatures on average just 2 degrees warmer, and mean weekly rainfall just 2 mm less. Mean, maximum, and cumulative total species counts for July are also very similar to June. Again these primarily represent local breeders, but also include some migrants, in



this case early fall arrivals (most notably some flycatchers and warblers). Banding is mostly through the final four sessions of MAPS, which are increasingly dominated by juveniles. Overall numbers banded are higher than in June; Song Sparrow and Yellow Warbler are most consistently numerous, while American Robin counts have been increasing in recent years.



*Yellow Warbler (left) and Eastern Phoebe (right) are regular breeders at MBO (Photos by Marcel Gahbauer and Lisa Keelty)*

### Fall Week 1 (August 1 - 7)

**Species observed:** 125 (low 65, mean 73, high 84)

**Dominant species observed:** Red-winged Blackbird (29), Song Sparrow (20), American Robin (18), Cedar Waxwing (18), Black-capped Chickadee (16), American Goldfinch (16), Common Grackle (14), American Crow (13), Yellow Warbler (8)

**Species peaking this week:** 19 (10 common and 9 uncommon) - Hooded Merganser\*, Pied-billed Grebe\*, Great Blue Heron, Green Heron, Black-crowned Night-Heron\*, Virginia Rail\*, Spotted Sandpiper\*, Black Tern\*, Red-bellied Woodpecker\*, Eastern Kingbird, Cliff Swallow\*, House Wren, Veery, Wood Thrush\*, Yellow Warbler, Song Sparrow, Swamp Sparrow, Rose-breasted Grosbeak, Indigo Bunting

**Birds banded:** 2138 individuals (low 69<sup>^</sup>, mean 214, high 300); 60 species (low 22, mean 34, high 42)

<sup>^</sup> - banding coverage was limited to 3 days in 2005; the next lowest total for week 1 was 152 in 2006.

**Dominant species banded:** Song Sparrow (39.6), Yellow Warbler (24.3), American Redstart (13.6), Cedar Waxwing (12.5), Gray Catbird (9.2), Rose-breasted Grosbeak (9.2), Black-capped Chickadee (8.8), Common Yellowthroat (8.1)

**Weather:** Mean low temperature 15 to 19 (mean 17); mean high temperature 24 to 29 (mean 27). Total rainfall 8 to 82 mm (mean 36); no snowfall.

**Notes:** In terms of weather, there is no indication that the first week of August classifies as fall, given that mean daily high temperatures match those for July, and the second highest weekly mean temperature recorded at MBO was in this week in 2012. Rainfall is on average higher than in any other week of fall, but largely due to heavy downpours in 2006 and 2010, with those two weeks being among the seven rainiest weeks throughout fall across all years. Despite the warm temperatures, migration is underway for several species in the first week of August, with 10 common species peaking already, although three (Song Sparrow, Swamp Sparrow, and Indigo Bunting) remain frequent for much of fall. Most of the other species in that group are local breeding species that are early to depart. The resident population of Red-winged Blackbirds remains dominant with respect to observations, followed by a number of other common breeders. The mean number of species observed jumps by nearly 50% from July, reflecting the influx of early fall migrants. Song Sparrow and Yellow Warbler dominate the banding counts by a large margin over Black-capped Chickadee; other species such as Cedar Waxwing, Rose-breasted Grosbeak and Baltimore Oriole can be numerous too, but vary more from year to year.

### Fall Week 2 (August 8 - 14)

**Species observed:** 122 (low 68, mean 75, high 84)

**Dominant species observed:** American Crow (18), Song Sparrow (18), Common Grackle (17), American Goldfinch (17), Black-capped Chickadee (17), Cedar Waxwing (16), American Robin (14)





**Species peaking this week:** 9 (2 common and 7 uncommon) – American Bittern\*, Lesser Yellowlegs\*, American Woodcock\*, Caspian Tern\*, Belted Kingfisher\*, Eastern Wood-Pewee\*, Traill's Flycatcher, Great Crested Flycatcher, Golden-winged Warbler\*

**Birds banded:** 1783 individuals (low 142, mean 178, high 243); 67 species (low 28, mean 35, high 42)

**Dominant species banded:** Song Sparrow (31.4), American Redstart (20.0), Yellow Warbler (10.3), Traill's Flycatcher (7.2), Rose-breasted Grosbeak (7.1), Red-eyed Vireo (6.6), Common Yellowthroat (6.6), Cedar Waxwing (5.5)

**Weather:** Mean low temperature 12 to 19 (mean 16); mean high temperature 23 to 28 (mean 26). Total rainfall 1 to 68 mm (mean 23); no snowfall.

**Notes:** Temperatures in week 2 are only slightly lower than in week 1, and rainfall is somewhat less, with less than 10 mm in four of ten years. Species counts are nearly identical to week 1, reflecting relatively minor changes in the composition of resident and migrant birds present. In most years the number of birds banded drops off compared to the previous week, partly a function of having banded many local juveniles in week 1. Song Sparrow and American Redstart are consistently the most numerous species banded in week 2, followed by Traill's Flycatcher and Red-eyed Vireo; some other species (e.g., Yellow Warbler, Baltimore Oriole) have had high counts in week 2 in some years. Only two common species peak in week 2, both of them flycatchers.

### Fall Week 3 (August 15 - 21)

**Species observed:** 129 (low 72, mean 81, high 94)

**Dominant species observed:** Common Grackle (31), American Crow (25), American Goldfinch (18), Cedar Waxwing (17), Black-capped Chickadee (17), Song Sparrow (15), American Robin (14), Blue Jay (8)

**Species peaking this week:** 22 (9 common and 13 uncommon) - Double-crested Cormorant\*, Great Egret\*, Common Moorhen\*, Killdeer\*, Wilson's Snipe\*, Common Tern\*, Chimney Swift, Ruby-throated Hummingbird, Purple Martin\*, Tree Swallow, Northern Rough-winged Swallow\*, Bank Swallow\*, Sedge Wren\*, Blue-gray Gnatcatcher\*, Black-and-white Warbler, Mourning Warbler\*, American Redstart, Chestnut-sided Warbler, Pine Warbler\*, Canada Warbler, Bobolink, Baltimore Oriole

**Birds banded:** 1571 individuals (low 91, mean 157, high 250); 59 species (low 25, mean 34, high 41)

**Dominant species banded:** Song Sparrow (22.2), American Redstart (19.4), Magnolia Warbler (10.1), Common Yellowthroat (9.2), Ovenbird (5.7)

**Weather:** Mean low temperature 11 to 19 (mean 15); mean high temperature 22 to 29 (mean 25). Total rainfall 0 to 53 mm (mean 20); no snowfall.

**Notes:** Temperatures again cool only slightly compared to the previous week, while rainfall remains largely unchanged overall. There is often a lull in migration in mid-August, with capture rates typically at their lowest point for fall. Although the number of common species peaking in week 3 is far greater than in week 2, most of them are only barely above the threshold separating common and uncommon species, and therefore overall numbers are relatively modest. Overall this is the fall peak for swallows. Either American Redstart or Song Sparrow has topped the list of birds banded during this week each year except 2012 when Common Yellowthroat outnumbered both of them. Others regularly banded in week 3 include a mix of lingering early fall migrants such as Yellow Warbler, Rose-breasted Grosbeak, and Baltimore Oriole, and the vanguard of somewhat later species such as Nashville Warbler, Magnolia Warbler, and Common Yellowthroat.

### Fall Week 4 (August 22 - 28)

**Species observed:** 119 (low 71, mean 80, high 87)

**Dominant species observed:** Common Grackle (35), American Crow (28), American Goldfinch (19), Cedar Waxwing (19), Black-capped Chickadee (18), American Robin (12), Song Sparrow (12), Blue Jay (11), Magnolia Warbler (8)

**Species peaking this week:** 9 (7 common and 2 uncommon) - Least Sandpiper\*, Least Flycatcher, Red-eyed Vireo, Barn Swallow, White-breasted Nuthatch, Cedar Waxwing, Ovenbird, Northern Waterthrush, Blue-winged Warbler\*

**Birds banded:** 2168 individuals (low 128, mean 217, high 330); 63 species (low 30, mean 36, high 43)



**Dominant species banded:** Magnolia Warbler (34.9), Tennessee Warbler (20.9), American Redstart (18.2), Song Sparrow (15.2), Common Yellowthroat (11.4), Nashville Warbler (8.1), Ovenbird (7.6)

**Weather:** Mean low temperature 12 to 18 (mean 15); mean high temperature 21 to 28 (mean 25). Total rainfall 1 to 68 mm (mean 19); no snowfall.

**Notes:** On average, weather conditions in week 4 are virtually identical to week 3. Migration typically remains fairly slow, but often starts to pick up the pace slightly and is reflected in a shift in dominant species banded. Magnolia Warbler takes over as the top species by a wide margin over Tennessee Warbler, while American Redstart and Song Sparrow remain numerous as well, but at somewhat lower levels than previously. In general, warblers dominate the banding results for week 4, with an average of more than 7 out of the top 10 species each year. Although seven common species peak this week, most of them are routinely present over more than half of the fall season, and numbers during week 4 are only modestly higher than in other weeks.

#### **Fall Week 5 (August 29 - September 4)**

**Species observed:** 127 (low 76, mean 82, high 93)

**Dominant species observed:** Common Grackle (76), American Crow (42), American Goldfinch (22), Black-capped Chickadee (20), Cedar Waxwing (18), Canada Goose (18), Blue Jay (12), American Robin (12), Magnolia Warbler (9)

**Species peaking this week:** 8 (2 common and 6 uncommon) - Solitary Sandpiper\*, Common Nighthawk\*, Olive-sided Flycatcher\*, Yellow-bellied Flycatcher, Tennessee Warbler, Connecticut Warbler\*, Bay-breasted Warbler\*, Blackburnian Warbler\*

**Birds banded:** 2210 individuals (low 131, mean 221, high 311); 64 species (low 34, mean 37, high 44)

**Dominant species banded:** Magnolia Warbler (41.2), Tennessee Warbler (22.9), American Redstart (16.9), Common Yellowthroat (12.7), Red-eyed Vireo (12.1), Song Sparrow (9.9), Wilson's Warbler (8.2), Northern Waterthrush (7.7)

**Weather:** Mean low temperature 12 to 20 (mean 15); mean high temperature 21 to 30 (mean 25). Total rainfall 1 to 75 mm (mean 20); no snowfall.

**Notes:** For a third week in a row, mean weather conditions are virtually the same, and migration also continues in a relatively consistent manner, although the species count continues to inch upward. Magnolia Warbler, American Redstart, and Common Yellowthroat are the most commonly banded species. This is the only week of fall during which a species (Magnolia Warbler) has been among the top two banded every year; more than twice as many Magnolia Warblers have been banded in week 5 as any other species. Banding is again dominated by warblers, with an average of seven species among the top ten every year; the only other species among the top ten in more than half of years are Red-eyed Vireo and Song Sparrow. In four years the top four species banded were all warblers (with Northern Waterthrush, Tennessee Warbler, Blackpoll Warbler, and Wilson's Warbler all in the mix along with the overall top three for the week). Only two common species peak this week, tying it with week 2 of fall for the fewest of the first half of the season.

#### **Fall Week 6 (September 5 - 11)**

**Species observed:** 135 (low 75, mean 83, high 88)

**Dominant species observed:** Common Grackle (95), American Crow (60), Canada Goose (24), American Goldfinch (23), Black-capped Chickadee (21), Cedar Waxwing (17), Blue Jay (15), Magnolia Warbler (10), Song Sparrow (9)

**Species peaking this week:** 9 (7 common and 2 uncommon) - Northern Gannet\*, Sora\*, Warbling Vireo, Common Yellowthroat, Magnolia Warbler, Blackpoll Warbler, Western Palm Warbler, Wilson's Warbler, American Goldfinch

**Birds banded:** 2469 individuals (low 109, mean 247, high 416); 63 species (low 33, mean 37, high 42)

**Dominant species banded:** Magnolia Warbler (45.0), Nashville Warbler (15.5), Tennessee Warbler (15.3), Common Yellowthroat (13.0), American Redstart (12.5), American Goldfinch (12.0), White-throated Sparrow (11.8), Red-eyed Vireo (11.7), Wilson's Warbler (11.3), Song Sparrow (10.0)

**Weather:** Mean low temperature 10 to 13 (mean 12); mean high temperature 20 to 25 (mean 22). Total rainfall 0 to 29 mm (mean 15); no snowfall.

**Notes:** After three weeks of largely stable temperatures on average, week 6 marks a distinct shift in conditions, with mean temperatures dropping by roughly 3 degrees; it is also among the driest weeks of fall. The cooler temperatures are often associated with at least one cold front, and the arrival of some of the mid-season migrants. Overall, the list of species observed in this week across all years is considerably greater than in any other week of fall, although the mean count is fairly stable between 80 and 83 from week 3 through to week 8. Magnolia Warbler remains far more abundant than all other species banded, comprising 18% of all individuals banded in week 6 over the years. Otherwise the results vary considerably among years; for example, Song Sparrow and White-throated Sparrow were both among the top ten annually from 2005 to 2009 but only twice each between 2010 and 2014, while Tennessee Warbler was among the top five annually since 2011, but only once previously in 2008. While Common Grackle has recorded the two highest mean daily counts for week 6 (425 in 2005 and 319 in 2012), it has not even been among the top ten in three other years. This is the peak week of fall for five warblers, as well as Warbling Vireo and American Goldfinch.

### **Fall Week 7 (September 12 - 18)**

**Species observed:** 130 (low 72, mean 82, high 91)

**Dominant species observed:** American Crow (84), Common Grackle (72), Canada Goose (57), Blue Jay (25), American Goldfinch (21), White-throated Sparrow (20), Black-capped Chickadee (19), Cedar Waxwing (16)

**Species peaking this week:** 15 (8 common and 7 uncommon) – Osprey\*, Northern Goshawk\*, Red-shouldered Hawk, Broad-winged Hawk, American Kestrel\*, Eastern Screech-Owl\*, Philadelphia Vireo\*, Swainson's Thrush, Gray Catbird, Brown Thrasher, Nashville Warbler, Cape May Warbler, Northern Parula\*, Yellow Palm Warbler\*, Black-throated Green Warbler

**Birds banded:** 2769 individuals (low 135, mean 277, high 426); 70 species (low 34, mean 41, high 49)

**Dominant species banded:** Magnolia Warbler (43.8), White-throated Sparrow (26.4), Nashville Warbler (18.6), Tennessee Warbler (13.4), Song Sparrow (12.9), American Goldfinch (12.1), Red-eyed Vireo (11.9), Common Yellowthroat (10.1)

**Weather:** Mean low temperature 6 to 17 (mean 10); mean high temperature 15 to 24 (mean 20). Total rainfall 4 to 39 mm (mean 24); no snowfall.

**Notes:** Mean temperatures drop another 2 degrees in week 7, and along with that change often comes a bit more rainfall than in most previous weeks. Although the number of species observed remains close to the peak of week 6, composition of migrants begins to shift, with warbler diversity starting to decline and more mid-late season migrants such as Ruby-crowned Kinglet, Swainson's Thrush, Yellow-rumped Warbler, and White-throated Sparrow beginning to build. In fact, White-throated Sparrow is already the second-most banded species in week 7, behind only Magnolia Warbler. However, there are also on average still six warbler species among the top ten species banded in week 7. Overall numbers observed and banded tend to start increasing around this point in the season, reflecting the influx of mid-season species, many of which are among the most numerous of fall migrants. The number of species peaking also continues to rise.

### **Fall Week 8 (September 19 - 25)**

**Species observed:** 128 (low 74, mean 82, high 90)

**Dominant species observed:** Canada Goose (352), American Crow (95), White-throated Sparrow (39), Blue Jay (36), Red-winged Blackbird (33), American Robin (24), Black-capped Chickadee (19)

**Species peaking this week:** 13 (6 common and 7 uncommon) - Greater White-fronted Goose\*, Tundra Swan\*, Yellow-bellied Sapsucker\*, Downy Woodpecker, Yellow-shafted Flicker, Pileated Woodpecker, Eastern Phoebe, Gray-cheeked Thrush\*, Black-throated Blue Warbler, Clay-colored Sparrow\*, Field Sparrow\*, Lincoln's Sparrow, Scarlet Tanager\*

**Birds banded:** 3925 individuals (low 205, mean 392, high 1279); 63 species (low 32, mean 38, high 48)

**Dominant species banded:** Yellow-rumped Warbler (133.1), White-throated Sparrow (52.1), Ruby-crowned Kinglet (21.7), Magnolia Warbler (19.0), Nashville Warbler (17.7), Song Sparrow (14.8), Golden-crowned Kinglet (8.2)

**Weather:** Mean low temperature 7 to 14 (mean 10); mean high temperature 18 to 26 (mean 20). Total rainfall 0 to 24 mm (mean 12); no snowfall.

**Notes:** Average temperatures in week 8 are nearly identical to week 7, but it is typically the driest week of the season, with the lowest maximum and mean rainfall. White-throated Sparrow has been the most banded bird in week 8 in six years, and Yellow-rumped Warbler in another three; only in 2011 were both of them relatively scarce, and Magnolia Warblers continued as the top species for another week. Otherwise though this usually represents the last week that Magnolia Warblers are common, along with other early-mid season warblers such as Tennessee and Nashville. Overall this is a transitional week, with the number of warbler species among the top ten banded dropping to 3-5 most years, and the number of sparrows usually rising to 2-3. Among the six common species peaking this week are three of the woodpeckers.

### **Fall Week 9 (September 26 - October 2)**

**Species observed:** 124 (low 68, mean 77, high 89)

**Dominant species observed:** Canada Goose (733), American Crow (89), Red-winged Blackbird (71), Yellow-rumped Warbler (70), White-throated Sparrow (60), Common Grackle (51), American Robin (43), Blue Jay (37), Ruby-crowned Kinglet (26)

**Species peaking this week:** 19 (12 common and 7 uncommon) - Canada Goose, Northern Pintail\*, Common Goldeneye\*, Turkey Vulture, Bald Eagle\*, Northern Harrier\*, Sharp-shinned Hawk, Cooper's Hawk, Merlin, Great Horned Owl\*, Northern Saw-whet Owl, Blue-headed Vireo, Blue Jay, Marsh Wren\*, Bicknell's Thrush\*, Yellow-rumped Warbler, Savannah Sparrow, Rusty Blackbird, Brown-headed Cowbird

**Birds banded:** 5296 individuals (low 263, mean 530, high 1112); 66 species (low 31, mean 37, high 46)

**Dominant species banded:** Yellow-rumped Warbler (195.8), White-throated Sparrow (80.5), Ruby-crowned Kinglet (71.9), Song Sparrow (21.3), Nashville Warbler (14.9), Golden-crowned Kinglet (12.7)

**Weather:** Mean low temperature 7 to 12 (mean 10); mean high temperature 14 to 22 (mean 19). Total rainfall 0 to 91 mm (mean 30); no snowfall.

**Notes:** Although daily low temperatures remain relatively stable for a third straight week, daily mean highs drop by 1.6 degrees compared to week 8. It is also among the wettest weeks of fall, although largely influenced by the rainiest week in MBO's history in 2010. Diversity is starting to taper off by this point, although week 9 is the start of the period with the largest number of individual birds observed and banded. Every year, Canada Goose has been the most abundant species observed during week 9, usually by a large margin. Identical to week 8, White-throated Sparrow was the most banded bird in 2005, 2007, 2009, 2012, 2013, and 2014, with Yellow-rumped Warbler taking that place in 2006, 2008, and 2010; the only difference is that Ruby-crowned Kinglet topped the list in 2011 instead of Magnolia Warbler in week 8. Ruby-crowned Kinglet has been the second or third most banded species in all other years; together these top three species comprise 66% of birds banded in week 9 across all years. This is the first week of fall with more than 10 common species peaking; among them are four raptors, as well as other abundant species such as Canada Goose and Yellow-rumped Warbler.

### **Fall Week 10 (October 3 - 9)**

**Species observed:** 123 (low 63, mean 74, high 83)

**Dominant species observed:** Canada Goose (665), Red-winged Blackbird (116), American Robin (108), Common Grackle (107), American Crow (89), White-throated Sparrow (72), Yellow-rumped Warbler (70), European Starling (54), Ruby-crowned Kinglet (44)

**Species peaking this week:** 22 (12 common and 10 uncommon) - Common Merganser\*, Red-breasted Merganser\*, Common Loon\*, Peregrine Falcon\*, Greater Yellowlegs\*, Dunlin\*, Great Black-backed Gull\*, Black-billed Cuckoo\*, Black-capped Chickadee, Red-breasted Nuthatch, Brown Creeper\*, Winter Wren, Golden-crowned Kinglet, Ruby-crowned Kinglet, American Pipit, Orange-crowned Warbler\*, Chipping Sparrow, White-throated Sparrow, (Eastern) White-crowned Sparrow, Common Grackle, Purple Finch, Pine Siskin

**Birds banded:** 5792 individuals (low 275, mean 579, high 1113); 63 species (low 23, mean 32, high 39)

**Dominant species banded:** Yellow-rumped Warbler (171.2), Ruby-crowned Kinglet (115.0), White-throated Sparrow (79.7), Dark-eyed Junco (37.2), (Eastern) White-crowned Sparrow (19.7), American Robin (19.1), Song Sparrow (19.0), Hermit Thrush (16.2), Golden-crowned Kinglet (16.0)

**Weather:** Mean low temperature 4 to 11 (mean 8); mean high temperature 14 to 21 (mean 17). Total rainfall 3 to 71 mm (mean 27); no snowfall.

**Notes:** Mean daily low and high temperatures drop another 2 degrees in week 10 and rainfall remains above average for fall, reflecting the passage of the aftermath of tropical storms in some years. While another 12 common species peak in week 10, most of these are only slightly less numerous in week 9, and overall migration over these two weeks is often remarkably similar. On the whole, numbers tend to be somewhat higher in week 10, and the total count of individuals banded during this week (5792) is higher than in any other. Again this number is primarily driven by the top three species of the week, Yellow-rumped Warbler, Ruby-crowned Kinglet, and White-throated Sparrow, which account for 63% of the cumulative total. As in week 9, this trio has dominated the top three each year, with just three exceptions – Black-capped Chickadee in place of Yellow-rumped Warbler in 2005, American Robin in place of Yellow-rumped Warbler in 2007, and Dark-eyed Junco in place of White-throated Sparrow in 2010. Canada Goose usually continues to dominate the skies, but large flocks of American Robins and mixed blackbirds are generally building too.

### **Fall Week 11 (October 10 - 16)**

**Species observed:** 107 (low 52, mean 62, high 75)

**Dominant species observed:** Canada Goose (316), American Robin (271), Red-winged Blackbird (199), American Crow (93), Common Grackle (76), European Starling (52), White-throated Sparrow (47), Dark-eyed Junco (29), Ruby-crowned Kinglet (25), Black-capped Chickadee (21)

**Species peaking this week:** 6 (1 common and 5 uncommon) - American Green-winged Teal\*, Ruffed Grouse\*, Yellow-billed Cuckoo\*, Hermit Thrush, Northern Mockingbird\*, Eastern Towhee\*

**Birds banded:** 3378 individuals (low 104, mean 338, high 635); 52 species (low 19, mean 24, high 28)

**Dominant species banded:** Ruby-crowned Kinglet (56.4), American Robin (46.6), Dark-eyed Junco (43.3), Yellow-rumped Warbler (41.7), White-throated Sparrow (41.1), Black-capped Chickadee (22.5), Hermit Thrush (22.3), Song Sparrow (12.4), Golden-crowned Kinglet (9.9)

**Weather:** Mean low temperature 1 to 10 (mean 6); mean high temperature 8 to 19 (mean 14). Total rainfall 4 to 81 mm (mean 28); no snowfall.

**Notes:** Mean daily low and high temperatures drop another 2 degrees this week, and mean rainfall levels remain comparable, as they do throughout October. This week usually marks the most drastic drop in species diversity during fall, with on average 13 species fewer than in the previous week. While Ruby-crowned Kinglet, Yellow-rumped Warbler, and White-throated Sparrow all remain among the top five species banded in week 11, all are usually in much lower numbers than during their peak of weeks 9 and 10, whereas American Robin and Dark-eyed Junco numbers on average have increased to comparable levels. While Canada Goose remains the most abundant species observed overall, flock size tends to be somewhat lower than in previous weeks, and in four years has been outnumbered by American Robin. Corresponding to the overall drop in numbers, there are fewer species peaking this week than any other in fall, with Hermit Thrush the only one among them that is considered common.

### **Fall Week 12 (October 17 - 23)**

**Species observed:** 105 (low 49, mean 57, high 69)

**Dominant species observed:** Canada Goose (450), American Robin (303), Red-winged Blackbird (248), American Crow (125), European Starling (93), Common Grackle (62), Dark-eyed Junco (37), White-throated Sparrow (25), Black-capped Chickadee (23)

**Species peaking this week:** 12 (6 common and 6 uncommon) - Wood Duck, Barred Owl\*, Common Raven, Horned Lark\*, Boreal Chickadee\*, Carolina Wren\*, Eastern Bluebird, American Robin, European Starling, Dark-eyed Junco, Eastern Meadowlark\*, White-winged Crossbill\*

**Birds banded:** 3006 individuals (low 139, mean 301, high 605); 44 species (low 13, mean 20, high 28)

**Dominant species banded:** American Robin (80.2), Dark-eyed Junco (54.6), Ruby-crowned Kinglet (33.3), Black-capped Chickadee (30.8), White-throated Sparrow (24.2), Song Sparrow (11.2), American Tree Sparrow (10.8), Golden-crowned Kinglet (9.8), Hermit Thrush (9.5), Fox Sparrow (8.3)

**Weather:** Mean low temperature 0 to 9 (mean 4); mean high temperature 9 to 20 (mean 12). Total rainfall 6 to 86 mm (mean 31); total snowfall 0 to 1 cm (mean 0).

**Notes:** Again mean daily low and high temperatures drop by around 2 degrees compared to the previous week, and there are usually at least one or two nights that drop below freezing. In most years this is enough to cause most of the remaining mid-fall migrants to move on, leaving lower overall numbers for week 12, largely dominated by late-season migrants and overwintering species. Large flocks of Canada Geese, American Robins, and blackbirds (especially Red-winged Blackbird) remain present, but number of species and individuals banded drops sharply. American Robin and Dark-eyed Junco are by far the most commonly banded species in week 12. Overall, sparrows are dominant by this point in the season, accounting for four or five out of the top ten species banded annually, usually accompanied by one or both kinglet species, Black-capped Chickadee, and Hermit Thrush, along with American Robin. The late fall migrants are moving in good numbers by this point, as reflected in a rebound in the number of species peaking this week.

### **Fall Week 13 (October 24 - 30)**

**Species observed:** 99 (low 46, mean 56, high 70)

**Dominant species observed:** Canada Goose (512), Red-winged Blackbird (307), American Robin (296), American Crow (142), European Starling (89), Dark-eyed Junco (35), Mallard (31), Common Grackle (30), Black-capped Chickadee (23)

**Species peaking this week:** 30 (14 common and 16 uncommon) - Snow Goose, Cackling Goose\*, American Black Duck\*, Mallard, Blue-winged Teal\*, Northern Shoveler\*, Unidentified Scaup sp.\*, Red-tailed Hawk, Rough-legged Hawk\*, Golden Eagle\*, Ring-billed Gull, Herring Gull\*, Rock Pigeon, Mourning Dove, Long-eared Owl\*, Hairy Woodpecker, Northern Shrike\*, American Crow, Townsend's Solitaire\*, Bohemian Waxwing\*, Snow Bunting\*, American Tree Sparrow, Fox Sparrow, Northern Cardinal, Red-winged Blackbird, Pine Grosbeak\*, House Finch, Common Redpoll\*, Evening Grosbeak\*, House Sparrow

**Birds banded:** 2192 individuals (low 94, mean 219, high 406); 41 species (low 11, mean 17, high 21)

**Dominant species banded:** American Robin (61.4), Dark-eyed Junco (53.1), American Tree Sparrow (27.4), Black-capped Chickadee (21.9), White-throated Sparrow (11.4), Fox Sparrow (9.8), Ruby-crowned Kinglet (6.9), Golden-crowned Kinglet (5.0), Song Sparrow (4.6)

**Weather:** Mean low temperature -1 to 8 (mean 3); mean high temperature 6 to 16 (mean 10). Total rainfall 3 to 62 mm (mean 24); total snowfall 0 to 3 cm (mean 1).

**Notes:** As is the case throughout October, mean temperatures drop another two degrees in the final week of the season, and at least some mornings below freezing are typical. This is the only week of fall that has had snowfall in more than one year (just twice though). However, species diversity differs only marginally from week 12, partly due to the arrival of late fall migrants such as Rough-legged Hawk, Northern Shrike, and winter finches, offsetting the departure of lingering mid-season migrants. Canada Goose, American Crow, American Robin, and Red-winged Blackbird remain the most abundant species observed by a large margin. American Robin remains the species banded the most, but just by a small margin over Dark-eyed Junco, with all others far scarcer. Overall, banding results generally taper off a bit, although in some years numbers are actually higher than in week 12. During the first five years of operation, non-standardized operations in early November showed a sharp decline in bird numbers, warranting the conclusions of the fall season at week 13. In more recent years, increasingly many species have been peaking in week 13 and carrying on into November in good numbers, and overall there are more species peaking (both common and uncommon) in week 13 than any other. This suggests that migration is not yet quite over, and an additional week of monitoring may be warranted to consistently document the passage of late-fall migrants such as American Tree Sparrow, Fox Sparrow, and Dark-eyed Junco.



## 6 Education

Education has been a priority at MBO since its inception. This is achieved through on-site training in field techniques, including the McGill University ornithology class and specialized workshops, as well as sharing information through the MBO website and presentations to the public, including school groups.

### 6.1 On-site training

At the core of MBO's education program is on-site training of volunteers. To effectively operate a standardized long-term migration monitoring program requires substantial volunteer involvement, and to maintain consistency in data over time it is important that training be provided. All volunteers are expected to be familiar with the MBO migration monitoring protocol, and generally receive training with respect to mist net operation and data collection during their first few visits. The most specialized roles are extraction and banding, and the consistent safe operation of MBO is dependent on enough volunteers with these skills being available to allow full coverage of the schedule. As such, an effort is made to provide advanced training to those volunteers who display an interest and aptitude for these roles.

### 6.2 McGill Ornithology class

From 1995 until 2003, the McGill University ornithology class had been visiting the Stoneycroft Wildlife Area (now MBO) on average twice each fall for banding demonstrations by professors Dr. David Bird and Dr. Rodger Titman. With the inception of MBO in the fall of 2004, leadership of the demonstrations was turned over to the MBO banders-in-charge. Since 2005, participation in MBO activities by students has been integrated into the ornithology curriculum, with all students visiting the site during field labs for the course, and many signing up for additional volunteer shifts to gain field experience that complements their classroom learning. Over half of the volunteers at MBO from 2005 to 2014 were McGill students, some of whom volunteered for years after graduation. Several have also undertaken research projects based on data collected at MBO (see Section 4.6.2).

### 6.3 Workshops

Five multi-day workshops led by Marcel Gahbauer have been held at MBO to provide specialized training in ageing and sexing birds. Each workshop has spanned 2-3 days, and included both classroom and field components except for the two winter sessions which were indoor only. In the classroom setting, diagrams and photos have been used to illustrate lessons and quiz the participants, and sometimes specimens from the Bird Banding Office have been used for practice. Dates and themes of the presentations to date were:

- December 2006 – Understanding molt and learning how to effectively use the Identification Guide to North American Birds
- August 2007 – Ageing birds by molt patterns in fall
- September 2008 – Knowing the common birds well and being prepared for rarities
- May 2010 – Ageing and sexing of spring migrants (four days, co-leader Peter Pyle)
- February 2013 – Knowing what to look for – ageing common species and recognizing rarities



### 6.4 Other lectures and presentations

Whereas the MBO workshops are quite technical and advanced, there is also an interest in the community for briefer presentations on migration monitoring and banding research. Between 2005 and 2014, Simon Duval, Barbara Frei, Marcel Gahbauer, Gay Gruner, and Marie-Anne Hudson gave over 40 talks on various aspects of MBO research to local and national birding groups including Bird Protection Quebec, the Zoological Society of Montreal, the Congrès des Ornithologues Amateurs du Québec, and the Canadian Migration Monitoring Network. In addition, many volunteers have helped with staffing displays at public events such as the Bird Protection Quebec Bird Fair, and Ste-Anne-de-Bellevue's Ecology Day. In recent years, local naturalist societies have also scheduled group visits to MBO for presentations during the owl banding program.

## 6.5 Website

The MBO website has traditionally been a subset of the Migration Research Foundation's website ([www.migrationresearch.org](http://www.migrationresearch.org)), but as of 2015 the content has been updated and moved to [www.oommbo.org](http://www.oommbo.org), a fully bilingual site. Much of the MBO website is dynamic, with program reports being added to the banding log section weekly during migration and monthly in summer and winter, and annual reports posted in the results section each winter. The weekly reports typically contain tables summarizing weekly and cumulative totals of birds banded and observed, and the ten species most banded and observed in the greatest numbers; photos illustrating some of the highlights of the week; and a variety of text describing the results, weather, site maintenance, and any other noteworthy news, including recoveries of banded birds. The annual reports provide a comprehensive overview of seasonal summaries, species occurrences, and some high-level comparisons with previous years. Other parts of the website, including a site checklist, information for volunteers, a history of MBO, and tips for extractors are updated less frequently, but provide important background information.

The most frequently visited part of the MBO website over the years was the photo ID library ([www.migrationresearch.org/mbo/id/index.html](http://www.migrationresearch.org/mbo/id/index.html)). Started as a visual aid to banders at MBO, to complement the text in Pyle (1997), it quickly grew a wider following and gained international recognition from the American Birding Association and through being referenced as a valuable resource in various online identification forums. The ID library grew to over 60 species, with the number of examples provided for each also expanding over time. In 2015, the content was transferred to Environment Canada's Piranga website ([www.natureinstruct.org/piranga](http://www.natureinstruct.org/piranga)), aimed at providing a resource to identifying, ageing, and sexing birds of the western hemisphere. As before, each species has its own page on the website, beginning with a set of tips on ageing and sexing, followed by a table of thumbnail photos comparing age and sex classes for both spring and fall, each linked to larger photos allowing for more detailed examination of features. Additional benefits of Piranga include:

- The option for side-by-side comparison of any two birds in the database, allowing for users to directly contrast different ages, sexes, or even species
- The option (for most photos) to view full-size images to examine details more closely
- Classification of images as "reference" (best available photos, ideally showing typical features), "supplementary" (additional verified photos, often showing atypical features), and "contributed" (photos submitted by visitors to the site, which have not necessarily been screened for quality or accuracy of classification)
- A comment field allowing for feedback on any images in the database
- Full bilingual content (English/French) for all species curated by MBO (60 as of 2015)

As with the original version of the MBO photo ID library, degree of coverage varies among species to some extent, depending on the availability of photos to illustrate each age/sex class, although the majority of accounts have at least one example for each. Among the species with the best coverage are Magnolia Warbler, Dark-eyed Junco, and American Goldfinch. Efforts are ongoing to expand and improve Piranga, both through adding more species, and updating the selection of photos in existing accounts.

## 6.6 School visits

MBO banders-in-charge have given several presentations to school classes in Montreal at the request of teachers. These typically involve discussions of migration, basic avian biology, the tools and methods used for banding, and habitat and conservation issues relevant to bird populations. As a hands-on component for the students, a mist net is brought into the classroom, and students can practice extracting plush toy birds from the net and banding them with plastic rings.

## **7 Future plans (2015-2019)**

MBO has completed its first ten years, during which the value of consistent long-term monitoring at this location has been established. The primary goals for the next five years are to maintain operation of existing programs, take advantage of opportunities to expand on research and education, and build capacity to support the long-term persistence of MBO.

### **7.1 Management**

For much of the first five years, MBO was largely dependent on three or fewer banders-in-charge, who were also largely responsible for managing operations. Although MBO was successful during this period, it required substantial time commitments from those volunteers, and was not sustainable. Fortunately, from 2010 to 2014 the leadership base grew, as did the number of banders-in-charge available to participate on a regular basis. One of the goals set in the MBO five-year report (Gahbauer 2010) was hiring a full-time coordinator for MBO to serve as the primary bander, lead an expanded education program, supervise researchers and other volunteers, and contribute to ongoing fundraising efforts. This was achieved in 2013 and has made a significant difference in improving overall capacity. All the same, MBO remains somewhat vulnerable should any of the current team members become unavailable, so training of additional banders-in-charge remains a priority, to ensure continued ability to undertake full coverage of all programs.

In addition to maintaining a core of key personnel, it remains important to secure more consistent funding for MBO. For the first eight years, MBO operated with a modest annual budget of under \$20,000 but always managed to cover all expenses. The budget has since increased, with the hiring of a full-time site coordinator, which was enabled through large grants and generous donations in 2013 and 2014. However, most sources of funding provide support one year at a time, and some are non-renewable. To ensure that programs can continue to be operated consistently, MBO's proven track record over the past decade needs to be translated into long-term partnerships and sponsorships that will provide greater financial stability. Additionally, having ten years of standardized migration monitoring data provides a strong basis for developing larger research projects (see 7.2 below), and efforts should be made over the next five years to seek more research grants.

### **7.2 Research**

The top priority for research remains to maintain consistent operation of all seasonal monitoring programs; if funding should become limiting, the most important is fall migration, followed by spring migration, MAPS, owl migration, and winter monitoring. While all programs generate valuable data, winter monitoring is least standardized due to variability in weather from year to year and, unlike for other seasons, missing one or more years would not constitute a significant gap in data.

The summaries presented in this ten-year report provide only a rather high-level overview of the data collected during this period. Much more exploration of this database can and should be done. Among the topics meriting further analysis are:

- Summarizing in greater detail the patterns of occurrence of common migrants at MBO, comparing earliest, latest, and peak dates over the years and evaluating whether there are any temporal or weather-related trends for any species, or any differences in timing by age or sex.
- Reviewing the over 3700 repeats recorded to date, to explore aspects of stopover ecology (such as duration of stay and changes in fat and mass) and assess whether differences across years can be related to weather patterns and can be used to refine estimates of species counts.
- Reviewing the over 600 returns recorded to date, with an emphasis on identifying the patterns of occurrence of resident species and compiling a list of returns that are not breeding on site.
- Examining recapture data to separate resident and migrant populations of species such as Black-capped Chickadee, Gray Catbird, and Song Sparrow, and refine daily estimated totals by modeling probable and known stopovers

In addition to making more use of the current MBO database, there are opportunities to collect additional data through the existing research programs, in support of various research questions. We now have good knowledge of what species occur at MBO commonly, and for many of these birds there are aspects of morphometrics, timing/sequence of molt, or ageing/sexing techniques that remain poorly understood. Small projects have already been undertaken for Black-capped Chickadee, American Redstart, Magnolia Warbler, House Finch, and American Goldfinch (see Section 4.6), and many additional promising candidates exist.

Whether for new projects or those involving analysis of existing data, the hope is that such research will increasingly be undertaken by undergraduate or graduate students from McGill University. While MBO banders are eager to provide guidance and assist with data collection, their priority is generally the operation of standard monitoring programs, therefore having specific research under the leadership of students and their academic supervisors will improve the ability for such projects to be completed in a timely, thorough, and rigorous manner. Closely related to this, another objective for the next five years is to increase the scientific output of MBO, especially in peer-reviewed journals and at ornithological conferences. During the first ten years of MBO, both data and time were limiting factors, but now that a solid database has been established, research opportunities have been identified, and the potential for student involvement has been demonstrated, output should increase significantly over the next five years. Efforts should also be made to capitalize on MBO's location and membership in the Canadian Migration Monitoring Network, to further engage in collaborative research and to lead regional components of national or international initiatives such as the Motus wildlife tracking system, which at a local scale would yield data on habitat use and direction of movement of migrants banded at MBO.

### 7.3 Education

The priorities for education over the next five years are to continue on-site training of students and other volunteers, regular dissemination of results via the MBO website, and presentations to naturalist clubs and other interested community groups. Workshops should continue to be offered periodically, both to make previous course material available to newer volunteers, and to focus on additional topics of interest, including focused sessions aimed at a subset of the species commonly encountered at MBO. Plans are underway for at least one bander-in-charge to become a certified trainer under the North American Banding Council, which will open the opportunity to host future certification sessions at MBO. A new bilingual education program will be launched in fall 2015 to complement the Northern Saw-whet Owl research program, providing visitors with an introduction to owl biology and bird banding, along with an opportunity to see owls being banded. To date, a few schools have been visited upon request, and this program could be greatly expanded. This should involve development of a standard classroom presentation, perhaps with a few variations for different age levels, targeted specifically at relevant aspects of the curriculum for each grade. Across all aspects of education, a goal over the next five years will be to continuing expanding the potential to offer bilingual content.



*Two of the species that have been the subject of focused research at MBO:  
American Redstart (left) and Black-capped Chickadee (right)  
(Photos by Simon Duval)*

## 8 Acknowledgements

MBO was started in 2004 as a pilot project by a few graduate students, but over the course of ten years has become established as an important member of the Canadian Migration Monitoring Network, has developed an international following through its website, and has positively influenced many students and community members through training and outreach efforts. These achievements would not have been possible without the sustained effort of dedicated leaders and a large group of volunteers always willing to assist whenever help was required. In particular, the long-term banders-in-charge (Simon Duval, Barbara Frei, Marcel Gahbauer, Gay Gruner, and Marie-Anne Hudson) have all contributed countless hours off-site over the years to developing protocols, managing data, fundraising, and communications, all of which have been essential to building a strong framework for long-term monitoring at MBO. Also deserving of special recognition are David Davey for developing and maintaining the MBO database, Richard Gregson and Geneviève Gélinas for designing and managing the updated MBO website, and Malcolm Johnson for many years as site caretaker managing the facilities, mowing net lanes, and much more. However, a project of this scope demands a much larger team to be active, and the long list of volunteers in Appendix G demonstrates how many people have played a role in MBO's success, with special thanks to those who have contributed for multiple years.

### 8.1 Funders and supporters

Despite MBO relying heavily on volunteers, there are some costs that require fundraising on an annual basis. MBO has been fortunate to receive financial support from corporate sponsors, grants, individual donations, and volunteer fundraising initiatives, and is deeply grateful to all of the following for their contributions:

The **Great Canadian Birdathon** (formerly Baillie Birdathon), coordinated by Bird Studies Canada, is a major source of funding for many members of the Canadian Migration Monitoring Network, including MBO. Each year, between one and four teams of birders have raised between \$4,000 and \$11,000 for MBO through the Birdathon, and in most years this funding has been critical to ensuring that all programs were able to take place in full. Participants in alphabetical order (\* indicating those who have been involved in the Birdathon at least five years) supporting MBO between 2005 and 2014 were:



Lise Amarasekera, Jean Bacon, Lina Bardo, Christine Barrie, Jean Beaudreault, Michel Beupré, Nicolas Bernier, David Bird, Sue Bishop, Eric Boodman, Martin Bowman, Christine Burt, Sophie Cauchon, Céline Charette, Joel Coutu, Averill Craig\*, Steven Dedesko, Jean Demers, Samuel Denault, Joy Ding, Christina Donehower, Catherine Doucet, Manon Dubé, Pierre-Alexandre Dumas, Simon Duval\*, Bob Edwards, David Fishman, Linda Fishman, Nicki Fleming, Sarah Fraser, Barbara Frei\*, Louise Gagné, Marcel Gahbauer\*, Alain Goulet, Jean Gregson, Richard Gregson, Gay Gruner\*, Peter Gruner\*, Alison Hackney, Frédéric Hareau, Jeff Harrison, Marie-Anne Hudson\*, Stacey Jarema, James Junda, Marie-Melissa Kalamaras, Kristen Keyes, Pamela Lagrange, Marie-Pier Laplante, Lance Laviolette, Helen Leroux, Dylan Letchuk, Morgan Letchuk, Penny Letchuk, Jessy Loranger, Barbara MacDuff\*, Francine Marcoux, Sarah Marteinson, Mike Mayerhofer, Betsy McFarlane\*, Sandy McNeil, Anthi Mimidakis, George Mony, Chris Murphy\*, Jeremy Pauté, André Pelletier, Oliver Rind, Steve Rosenstein, Catherine Russell, Ahmad Shaw, Clémence Soulard, Rodger Titman, and Bruno Tremblay. The James L. Baillie Memorial Fund, also derived from Birdathon proceeds and managed by Bird Studies Canada, provided financial support for the 2006 Spring Migration Monitoring Program.

**Bird Protection Quebec (BPQ)** offered grants from their Support and Education Funds annually from 2005 to 2007, has contributed to the operation of the Fall Migration Monitoring Program annually since 2010, has covered the costs of seeds for the winter monitoring program since 2012, and also funded MBO's winter finch study (see details under the House Finch account in Appendix D). In addition, BPQ has been supportive of MBO through encouraging its members to participate in MBO activities, and inviting MBO banders to give presentations to BPQ.





**Environment Canada** has provided financial support for the spring and fall migration monitoring programs annually since 2008.

**Canada Steamship Lines** was MBO's first corporate sponsor, and is gratefully acknowledged for having provided a generous donation annually for each of MBO's first ten years of operation.



**Canada Steamship Lines**

The **John Hackney Foundation for the Noosphere** has made a generous annual donation in support of migration monitoring at MBO annually since 2012.

The 2013 *Call for the Wild* contest by **Jamieson Vitamins** was MBO's biggest fundraising effort to date, and was instrumental in enabling the hiring of a full-time site coordinator. Thanks also to the countless MBO supporters who influenced the outcome by voting for MBO daily throughout the contest.



A generous bequest from the estate of **Ian Dalton** in 2014 was another major contribution toward MBO's financial stability, and MBO is very grateful for this thoughtful gift.

A grant from the **Mountain Equipment Co-op Environment Fund** covered the 2006 Fall Migration Monitoring Program, while a grant from the **TD Friends of the Environment Foundation** funded equipment and other costs for migration monitoring in 2009. TD FEF also provided environment grants to cover the purchase and installation of a solar panel in 2013 and replacing mist nets and other equipment in 2014.



In-kind donations from several other companies have made valuable contributions to MBO's operations. These include contributions of bird feeders and seed from **Wildlifers** (2005-2006) and **Centre de conservation de la faune ailée** (2009-2011), the donation of roofing materials for the cabin from **EMCO Building Products** (2005), and a half-price discount from **Sun-Mar** for MBO's composting toilet (2008), donation of building materials for the cabin from **Home Depot** (2012), donation of three windows for the cabin from **PF Expert** (2012).



MBO has also received donations from **United Way/Centraide** Ottawa and Montreal (2011-2013), **Club de golf Royal Montreal** (2011), and **La compagnie du Cimetière de Montréal** (2012).

We would also to thank the **Canadian Migration Monitoring Network**, **Bird Studies Canada**, the **Ecomuseum**, and the **Avian Science and Conservation Centre** for their advice, on-site contributions, and logistical support. Last but certainly not least, we thank the many individuals who have made generous cash or in-kind donations in support of MBO. All donations to MBO (through The Migration Research Foundation Inc.) are eligible for charitable tax receipts; see <http://www.migrationresearch.org/supporters/howtohelp.html> for details.



## 9 References

AOU (American Ornithologists' Union). 2015. The American Ornithologists' Union Checklist of North and Middle American Birds. Available at <http://checklist.aou.org/taxa/>

Bardo, L., L. Goulet, A. Hibbert, V. Lukasik and K. Poitras. 2003. Ecological assessment of the Stoneycroft Wildlife Area. Internal Report, Department of Natural Resource Sciences, McGill University. 50 pp.

DeSante, D.F., K.M. Burton, P. Velez, D. Froehlich, and D. Kaschube. 2010. Instructions for the establishment and operation of constant-effort bird-banding stations as part of the Monitoring Avian Productivity and Survivorship (MAPS) Program. Institute for Bird Populations, Point Reyes Station, CA. 85 pp.

Gahbauer, M.A. and M-A. Hudson. 2007. McGill Bird Observatory Operations Manual. Migration Research Foundation, Ste-Anne-de-Bellevue QC. 24 pp.

Gahbauer, M.A. and M-A. Hudson. 2014. McGill Bird Observatory Field Protocol for Migration Monitoring Program (Revised). Migration Research Foundation, Ste-Anne-de-Bellevue QC. 22 pp.

Whalen, D.M. and B.D. Watts. 1999. The influence of audio-lures on capture patterns of migrant Northern Saw-whet Owls. *Journal of Field Ornithology* 70: 163-168.

*Note: See Section 4.7 for a listing of all MBO seasonal and annual reports, as well as a list of publications including data generated through MBO research programs.*



*Pileated Woodpecker (Photo by Simon Duval)*

## Appendix A: Spring Migration Monitoring Program Overview

Statistics compiled for the Spring Migration Monitoring Program, 2005-2014. Numbers in the first row of each cell are for the week, while those in the second row are the cumulative season total to date. See section 5.3 for the dates corresponding to S1 to S10, and further details on the characteristics of each week of the spring season. For each period, the lowest result among ten years is shown in blue, and the highest in red.

|                                     | Year | S1  | S2                 | S3                 | S4                   | S5                   | S6                   | S7                   | S8                   | S9                    | S10                  | FINAL     |
|-------------------------------------|------|-----|--------------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|-----------|
| # individual birds (species) banded | 2005 | n/a | 17 (7)<br>17 (7)   | 17 (8)<br>34 (10)  | 50 (15)<br>84 (19)   | 97 (18)<br>181 (25)  | 82 (18)<br>263 (30)  | 55 (18)<br>318 (40)  | 164 (39)<br>482 (56) | 109 (30)<br>591 (59)  | 59 (26)<br>650 (62)  | 650 (62)  |
|                                     | 2006 | n/a | 17 (10)<br>17 (10) | 68 (19)<br>85 (22) | 77 (15)<br>162 (26)  | 78 (13)<br>240 (29)  | 148 (23)<br>388 (33) | 88 (23)<br>476 (39)  | 123 (28)<br>599 (52) | 127 (30)<br>726 (62)  | 28 (16)<br>754 (63)  | 754 (63)  |
|                                     | 2007 | n/a | n/a                | n/a                | 56 (13)<br>56 (13)   | 13 (3)<br>69 (14)    | 85 (12)<br>154 (20)  | 197 (35)<br>351 (41) | 131 (36)<br>482 (52) | 167 (37)<br>649 (58)  | 46 (18)<br>695 (61)  | 695 (61)  |
|                                     | 2008 | n/a | n/a                | n/a                | 141 (18)<br>141 (18) | 68 (11)<br>209 (21)  | 67 (22)<br>276 (34)  | 177 (32)<br>453 (45) | 147 (34)<br>600 (55) | 171 (31)<br>771 (63)  | 55 (15)<br>826 (64)  | 826 (64)  |
|                                     | 2009 | n/a | n/a                | n/a                | 39 (20)<br>39 (20)   | 92 (18)<br>131 (27)  | 52 (16)<br>183 (30)  | 115 (27)<br>298 (44) | 300 (44)<br>598 (62) | 175 (30)<br>773 (66)  | 42 (24)<br>815 (66)  | 815 (66)  |
|                                     | 2010 | n/a | n/a                | n/a                | 98 (15)<br>98 (15)   | 55 (14)<br>153 (18)  | 74 (18)<br>227 (26)  | 124 (31)<br>351 (40) | 146 (36)<br>497 (52) | 98 (26)<br>595 (58)   | 32 (17)<br>627 (59)  | 627 (59)  |
|                                     | 2011 | n/a | n/a                | n/a                | 89 (20)<br>89 (20)   | 66 (17)<br>155 (25)  | 140 (23)<br>295 (33) | 129 (30)<br>424 (46) | 198 (37)<br>622 (55) | 248 (36)<br>870 (64)  | 36 (17)<br>906 (64)  | 906 (64)  |
|                                     | 2012 | n/a | n/a                | n/a                | 102 (19)<br>102 (19) | 72 (16)<br>174 (24)  | 140 (22)<br>314 (33) | 220 (40)<br>534 (53) | 202 (33)<br>736 (60) | 188 (30)<br>924 (64)  | 67 (20)<br>991 (66)  | 991 (66)  |
|                                     | 2013 | n/a | n/a                | n/a                | 113 (15)<br>113 (15) | 66 (13)<br>179 (18)  | 82 (22)<br>261 (31)  | 102 (28)<br>363 (43) | 266 (40)<br>629 (60) | 132 (28)<br>761 (68)  | 29 (19)<br>790 (68)  | 790 (68)  |
|                                     | 2014 | n/a | n/a                | n/a                | 169 (20)<br>169 (20) | 197 (17)<br>366 (25) | 84 (17)<br>450 (29)  | 305 (43)<br>755 (56) | 209 (41)<br>964 (65) | 318 (40)<br>1282 (69) | 74 (19)<br>1356 (69) | 1356 (69) |
| # individual birds (species) return | 2005 | n/a | 2 (1)<br>2 (1)     | 0 (0)<br>2 (1)     | 5 (3)<br>7 (3)       | 3 (3)<br>10 (5)      | 4 (1)<br>14 (5)      | 1 (1)<br>15 (5)      | 2 (1)<br>17 (5)      | 3 (3)<br>20 (6)       | 0 (0)<br>20 (6)      | 20 (6)    |
|                                     | 2006 | n/a | 6 (2)<br>6 (2)     | 8 (3)<br>14 (4)    | 6 (5)<br>20 (6)      | 7 (6)<br>27 (7)      | 6 (5)<br>33 (9)      | 7 (5)<br>40 (11)     | 14 (6)<br>54 (14)    | 14 (9)<br>68 (17)     | 2 (2)<br>70 (17)     | 70 (17)   |
|                                     | 2007 | n/a | n/a                | n/a                | 13 (6)<br>13 (6)     | 2 (2)<br>15 (7)      | 12 (5)<br>27 (9)     | 18 (9)<br>45 (14)    | 20 (11)<br>65 (18)   | 14 (6)<br>79 (21)     | 3 (1)<br>82 (21)     | 82 (21)   |
|                                     | 2008 | n/a | n/a                | n/a                | 21 (6)<br>21 (6)     | 13 (5)<br>34 (7)     | 16 (7)<br>50 (10)    | 13 (11)<br>63 (14)   | 17 (8)<br>80 (15)    | 8 (4)<br>88 (16)      | 2 (2)<br>90 (16)     | 90 (16)   |
|                                     | 2009 | n/a | n/a                | n/a                | 13 (4)<br>13 (4)     | 9 (7)<br>22 (8)      | 9 (5)<br>31 (10)     | 25 (10)<br>56 (16)   | 29 (15)<br>85 (21)   | 14 (8)<br>99 (22)     | 0 (0)<br>99 (22)     | 99 (22)   |
|                                     | 2010 | n/a | n/a                | n/a                | 16 (8)<br>16 (8)     | 9 (6)<br>25 (11)     | 11 (8)<br>36 (15)    | 29 (10)<br>65 (19)   | 29 (12)<br>94 (23)   | 15 (8)<br>109 (23)    | 3 (3)<br>112 (24)    | 112 (24)  |
|                                     | 2011 | n/a | n/a                | n/a                | 13 (6)<br>13 (6)     | 9 (6)<br>22 (10)     | 4 (4)<br>26 (12)     | 8 (5)<br>34 (16)     | 15 (7)<br>49 (17)    | 10 (6)<br>59 (17)     | 4 (3)<br>63 (17)     | 63 (17)   |
|                                     | 2012 | n/a | n/a                | n/a                | 21 (6)<br>21 (6)     | 11 (4)<br>32 (7)     | 17 (8)<br>49 (11)    | 28 (8)<br>77 (13)    | 12 (6)<br>89 (14)    | 10 (8)<br>99 (17)     | 4 (3)<br>103 (17)    | 103 (17)  |
|                                     | 2013 | n/a | n/a                | n/a                | 24 (9)<br>24 (9)     | 9 (7)<br>33 (12)     | 8 (5)<br>41 (15)     | 13 (7)<br>54 (16)    | 36 (11)<br>90 (23)   | 11 (6)<br>101 (23)    | 4 (4)<br>105 (23)    | 105 (23)  |
|                                     | 2014 | n/a | n/a                | n/a                | 31 (9)<br>31 (9)     | 12 (4)<br>43 (9)     | 9 (6)<br>52 (11)     | 33 (10)<br>85 (18)   | 19 (11)<br>104 (21)  | 19 (10)<br>123 (23)   | 4 (4)<br>127 (25)    | 127 (25)  |
| # individual birds (species) repeat | 2005 | n/a | 1 (1)<br>1 (1)     | 5 (2)<br>6 (2)     | 9 (3)<br>15 (3)      | 12 (6)<br>27 (6)     | 22 (8)<br>49 (9)     | 12 (7)<br>61 (11)    | 57 (12)<br>118 (17)  | 56 (11)<br>174 (19)   | 37 (13)<br>211 (21)  | 211 (21)  |
|                                     | 2006 | n/a | 7 (3)<br>7 (3)     | 8 (4)<br>15 (5)    | 6 (3)<br>21 (6)      | 17 (6)<br>38 (10)    | 12 (10)<br>50 (13)   | 23 (9)<br>73 (16)    | 25 (10)<br>98 (20)   | 39 (14)<br>137 (23)   | 7 (6)<br>144 (23)    | 144 (23)  |
|                                     | 2007 | n/a | n/a                | n/a                | 13 (4)<br>13 (4)     | 3 (3)<br>16 (6)      | 12 (4)<br>28 (8)     | 16 (8)<br>44 (12)    | 20 (8)<br>64 (15)    | 32 (11)<br>96 (19)    | 7 (5)<br>103 (20)    | 103 (20)  |
|                                     | 2008 | n/a | n/a                | n/a                | 20 (6)<br>20 (6)     | 27 (9)<br>47 (11)    | 12 (8)<br>59 (14)    | 25 (12)<br>84 (18)   | 61 (17)<br>145 (23)  | 39 (14)<br>184 (25)   | 10 (8)<br>194 (25)   | 194 (25)  |
|                                     | 2009 | n/a | n/a                | n/a                | 8 (3)<br>8 (3)       | 14 (5)<br>22 (6)     | 12 (5)<br>34 (7)     | 45 (13)<br>79 (15)   | 83 (18)<br>162 (24)  | 68 (20)<br>230 (29)   | 16 (9)<br>246 (29)   | 246 (29)  |
|                                     | 2010 | n/a | n/a                | n/a                | 19 (7)<br>19 (7)     | 16 (5)<br>35 (9)     | 13 (4)<br>48 (10)    | 23 (10)<br>71 (17)   | 45 (15)<br>116 (23)  | 35 (13)<br>151 (25)   | 9 (5)<br>160 (25)    | 160 (25)  |
|                                     | 2011 | n/a | n/a                | n/a                | 7 (5)<br>7 (5)       | 12 (7)<br>19 (8)     | 15 (7)<br>34 (13)    | 11 (6)<br>45 (16)    | 26 (12)<br>71 (20)   | 52 (14)<br>123 (25)   | 6 (5)<br>129 (25)    | 129 (25)  |
|                                     | 2012 | n/a | n/a                | n/a                | 24 (6)<br>24 (6)     | 37 (8)<br>61 (10)    | 27 (9)<br>88 (13)    | 64 (17)<br>152 (23)  | 64 (18)<br>216 (27)  | 60 (15)<br>276 (29)   | 22 (11)<br>298 (30)  | 298 (30)  |
|                                     | 2013 | n/a | n/a                | n/a                | 36 (11)<br>36 (11)   | 21 (9)<br>57 (13)    | 17 (9)<br>74 (15)    | 21 (10)<br>95 (18)   | 54 (16)<br>149 (27)  | 55 (18)<br>204 (31)   | 21 (10)<br>225 (32)  | 225 (32)  |
|                                     | 2014 | n/a | n/a                | n/a                | 22 (9)<br>22 (9)     | 28 (9)<br>50 (11)    | 22 (7)<br>72 (12)    | 51 (18)<br>123 (22)  | 75 (18)<br>198 (29)  | 73 (19)<br>271 (33)   | 24 (8)<br>295 (34)   | 295 (34)  |

|                                | Year | S1       | S2             | S3             | S4             | S5              | S6              | S7              | S8              | S9              | S10             | FINAL  |
|--------------------------------|------|----------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------|
| # species observed             | 2005 | n/a      | 51<br>51       | 42<br>56       | 59<br>65       | 59<br>76        | 60<br>84        | 68<br>102       | 86<br>121       | 85<br>129       | 72<br>133       | 133    |
|                                | 2006 | 39<br>39 | 50<br>55       | 54<br>63       | 60<br>72       | 63<br>81        | 78<br>99        | 85<br>118       | 104<br>137      | 99<br>148       | 74<br>148       | 148    |
|                                | 2007 | 35<br>35 | 38<br>44       | 36<br>48       | 66<br>70       | 58<br>78        | 78<br>97        | 91<br>116       | 98<br>132       | 91<br>134       | 79<br>134       | 134    |
|                                | 2008 | 24<br>24 | 36<br>38       | 44<br>48       | 69<br>71       | 70<br>80        | 82<br>102       | 91<br>118       | 90<br>129       | 100<br>137      | 83<br>139       | 139    |
|                                | 2009 | 38<br>38 | 33<br>45       | 40<br>52       | 64<br>72       | 72<br>90        | 89<br>112       | 95<br>128       | 96<br>138       | 89<br>144       | 75<br>146       | 146    |
|                                | 2010 | 37<br>37 | 39<br>46       | 46<br>54       | 65<br>72       | 55<br>78        | 80<br>105       | 85<br>118       | 93<br>131       | 81<br>137       | 58<br>138       | 138    |
|                                | 2011 | 32<br>32 | 37<br>42       | 38<br>50       | 59<br>67       | 75<br>86        | 77<br>102       | 94<br>123       | 98<br>134       | 93<br>139       | 79<br>140       | 140    |
|                                | 2012 | 35<br>35 | 41<br>46       | 45<br>55       | 64<br>74       | 64<br>83        | 87<br>107       | 96<br>129       | 94<br>135       | 79<br>141       | 70<br>143       | 143    |
|                                | 2013 | 35<br>35 | 42<br>47       | 47<br>59       | 66<br>73       | 67<br>87        | 78<br>102       | 87<br>122       | 94<br>136       | 93<br>144       | 76<br>145       | 145    |
|                                | 2014 | 30<br>30 | 37<br>41       | 44<br>53       | 68<br>71       | 57<br>73        | 70<br>84        | 98<br>124       | 107<br>134      | 98<br>140       | 81<br>141       | 141    |
| # net hours                    | 2005 | n/a      | 115.3<br>115.3 | 61.3<br>176.6  | 97.0<br>273.6  | 214.1<br>487.7  | 281.6<br>769.3  | 112.7<br>882.0  | 274.7<br>1156.7 | 281.7<br>1438.4 | 137.2<br>1575.6 | 1575.6 |
|                                | 2006 | n/a      | 169.0<br>169.0 | 313.9<br>482.9 | 353.0<br>835.9 | 386.9<br>1222.8 | 463.9<br>1686.7 | 295.4<br>1982.1 | 236.3<br>2218.4 | 483.8<br>2702.2 | 209.9<br>2912.1 | 2912.1 |
|                                | 2007 | n/a      | n/a            | n/a            | 413.5<br>413.5 | 75.0<br>488.5   | 510.0<br>998.5  | 454.5<br>1453.0 | 300.5<br>1753.5 | 533.0<br>2286.5 | 173.5<br>2460.0 | 2460.0 |
|                                | 2008 | n/a      | n/a            | n/a            | 510.0<br>510.0 | 436.7<br>946.7  | 436.0<br>1382.7 | 508.0<br>1890.7 | 454.0<br>2344.7 | 446.0<br>2790.7 | 121.5<br>2912.2 | 2912.2 |
|                                | 2009 | n/a      | n/a            | n/a            | 398.0<br>398.0 | 464.0<br>862.0  | 352.5<br>1214.5 | 525.0<br>1739.5 | 554.5<br>2294.0 | 464.0<br>2758.0 | 198.5<br>2956.5 | 2956.5 |
|                                | 2010 | n/a      | n/a            | n/a            | 554.4<br>554.4 | 400.0<br>954.4  | 421.0<br>1375.4 | 480.0<br>1855.4 | 544.0<br>2399.4 | 560.0<br>2959.4 | 156.0<br>3115.4 | 3115.4 |
|                                | 2011 | n/a      | n/a            | n/a            | 327.5<br>327.5 | 376.0<br>703.5  | 407.5<br>1111.0 | 400.0<br>1511.0 | 279.0<br>1790.0 | 406.0<br>2196.0 | 240.0<br>2436.0 | 2436.0 |
|                                | 2012 | n/a      | n/a            | n/a            | 346.0<br>346.0 | 389.0<br>735.0  | 408.0<br>1143.0 | 467.0<br>1610.0 | 480.0<br>2090.0 | 492.0<br>2582.0 | 236.0<br>2818.0 | 2818.0 |
|                                | 2013 | n/a      | n/a            | n/a            | 511.0<br>511.0 | 399.0<br>910.0  | 560.0<br>1470.0 | 407.0<br>1877.0 | 482.0<br>2359.0 | 324.8<br>2683.8 | 240.0<br>2923.8 | 2923.8 |
|                                | 2014 | n/a      | n/a            | n/a            | 502.5<br>502.5 | 356.7<br>859.2  | 378.7<br>1237.9 | 523.7<br>1761.6 | 499.0<br>2260.6 | 528.0<br>2788.6 | 216.0<br>3004.6 | 3004.6 |
| # birds banded / 100 net hours | 2005 | n/a      | 14.7<br>14.7   | 27.7<br>19.3   | 51.5<br>30.7   | 45.3<br>37.1    | 29.1<br>34.2    | 48.8<br>36.1    | 59.7<br>41.7    | 38.7<br>41.1    | 43.0<br>41.3    | 41.3   |
|                                | 2006 | n/a      | 10.1<br>10.1   | 21.7<br>17.6   | 21.8<br>19.4   | 20.2<br>19.6    | 31.9<br>23.0    | 29.8<br>24.0    | 52.1<br>27.0    | 26.3<br>26.9    | 13.3<br>25.9    | 25.9   |
|                                | 2007 | n/a      | n/a            | n/a            | 13.5<br>13.5   | 17.3<br>14.1    | 16.7<br>15.4    | 43.3<br>24.2    | 43.6<br>27.5    | 31.3<br>28.4    | 26.5<br>28.3    | 28.3   |
|                                | 2008 | n/a      | n/a            | n/a            | 27.6<br>27.6   | 15.6<br>22.1    | 15.4<br>20.0    | 34.8<br>24.0    | 32.4<br>25.6    | 38.3<br>27.6    | 45.3<br>28.4    | 28.4   |
|                                | 2009 | n/a      | n/a            | n/a            | 9.8<br>9.8     | 19.8<br>15.2    | 14.8<br>15.1    | 21.9<br>17.1    | 54.1<br>26.1    | 37.7<br>28.0    | 21.2<br>27.6    | 27.6   |
|                                | 2010 | n/a      | n/a            | n/a            | 17.7<br>17.7   | 13.8<br>16.0    | 17.6<br>16.5    | 25.8<br>18.9    | 26.8<br>20.7    | 17.5<br>20.1    | 20.5<br>20.1    | 20.1   |
|                                | 2011 | n/a      | n/a            | n/a            | 27.2<br>27.2   | 17.6<br>22.0    | 34.4<br>26.6    | 32.2<br>28.1    | 71.0<br>34.7    | 61.1<br>39.6    | 15.0<br>37.2    | 37.2   |
|                                | 2012 | n/a      | n/a            | n/a            | 29.5<br>29.5   | 18.5<br>23.7    | 34.3<br>27.5    | 47.1<br>33.2    | 42.1<br>35.2    | 38.2<br>35.8    | 28.4<br>35.2    | 35.2   |
|                                | 2013 | n/a      | n/a            | n/a            | 22.1<br>22.1   | 16.5<br>19.7    | 14.6<br>17.8    | 25.1<br>19.3    | 55.2<br>26.7    | 40.6<br>28.4    | 12.1<br>27.0    | 27.0   |
|                                | 2014 | n/a      | n/a            | n/a            | 33.6<br>33.6   | 55.2<br>42.6    | 22.2<br>36.4    | 58.2<br>42.9    | 41.9<br>42.6    | 60.2<br>46.0    | 34.3<br>45.1    | 45.1   |

## Appendix B: Fall Migration Monitoring Program Overview

Statistics compiled for the Fall Migration Monitoring Program, 2005-2014. Numbers in the first row of each cell are for the week, while those in the second row are the cumulative season total to date. See section 5.3 for the dates corresponding to F1 to F13, and further details on the characteristics of each week of the fall season. For each period, the lowest result among ten years is shown in blue, and the highest in red.

|                                     | Year | F1                   | F2                   | F3                   | F4                   | F5                    | F6                    | F7                    | F8                     | F9                     | F10                    | F11                   | F12                   | F13                   | FINAL     |
|-------------------------------------|------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------|
| # individual birds (species) banded | 2005 | 69 (22)<br>69 (22)   | 158 (28)<br>227 (32) | 141 (39)<br>368 (43) | 196 (35)<br>564 (49) | 283 (41)<br>847 (53)  | 181 (34)<br>1028 (59) | 426 (49)<br>1454 (64) | 480 (48)<br>1934 (68)  | 380 (36)<br>2314 (69)  | 375 (37)<br>2689 (70)  | 185 (24)<br>2874 (73) | 157 (17)<br>3031 (75) | 195 (21)<br>3226 (78) | 3226 (78) |
|                                     | 2006 | 152 (30)<br>152 (30) | 225 (40)<br>377 (46) | 162 (31)<br>539 (48) | 200 (34)<br>739 (54) | 146 (37)<br>885 (58)  | 279 (39)<br>1164 (59) | 266 (41)<br>1430 (65) | 332 (32)<br>1762 (67)  | 545 (35)<br>2307 (70)  | 305 (23)<br>2612 (72)  | 241 (22)<br>2853 (74) | 333 (19)<br>3186 (76) | 94 (11)<br>3280 (76)  | 3280 (76) |
|                                     | 2007 | 210 (29)<br>210 (29) | 142 (32)<br>352 (36) | 91 (25)<br>443 (41)  | 128 (30)<br>571 (47) | 131 (36)<br>702 (56)  | 162 (36)<br>864 (60)  | 135 (34)<br>999 (66)  | 210 (38)<br>1209 (71)  | 311 (33)<br>1520 (71)  | 486 (34)<br>2006 (74)  | 430 (28)<br>2436 (75) | 289 (19)<br>2725 (77) | 152 (17)<br>2877 (77) | 2877 (77) |
|                                     | 2008 | 187 (32)<br>187 (32) | 182 (42)<br>369 (45) | 155 (33)<br>524 (48) | 166 (36)<br>690 (52) | 271 (44)<br>961 (59)  | 345 (42)<br>1306 (62) | 203 (36)<br>1509 (66) | 393 (34)<br>1902 (67)  | 1112 (46)<br>3014 (71) | 1113 (39)<br>4127 (74) | 531 (26)<br>4658 (77) | 218 (13)<br>4876 (77) | 224 (13)<br>5100 (77) | 5100 (77) |
|                                     | 2009 | 228 (39)<br>228 (39) | 148 (33)<br>376 (47) | 184 (33)<br>560 (50) | 196 (33)<br>756 (54) | 159 (34)<br>915 (56)  | 109 (33)<br>1024 (59) | 185 (38)<br>1209 (64) | 252 (34)<br>1461 (69)  | 372 (43)<br>1833 (69)  | 591 (36)<br>2424 (71)  | 257 (22)<br>2681 (72) | 359 (20)<br>3040 (73) | 351 (19)<br>3391 (75) | 3391 (75) |
|                                     | 2010 | 250 (37)<br>250 (37) | 192 (34)<br>442 (42) | 250 (38)<br>692 (48) | 177 (34)<br>869 (53) | 197 (34)<br>1066 (57) | 416 (38)<br>1482 (58) | 297 (42)<br>1779 (64) | 1279 (40)<br>3058 (67) | 1085 (36)<br>4143 (68) | 1019 (24)<br>5162 (70) | 635 (28)<br>5797 (72) | 605 (23)<br>6402 (74) | 406 (19)<br>6808 (74) | 6808 (74) |
|                                     | 2011 | 257 (35)<br>257 (35) | 142 (35)<br>399 (42) | 136 (33)<br>535 (45) | 240 (38)<br>775 (53) | 311 (36)<br>1086 (56) | 257 (37)<br>1343 (57) | 217 (37)<br>1560 (60) | 241 (40)<br>1801 (65)  | 327 (31)<br>2128 (70)  | 275 (29)<br>2403 (74)  | 104 (19)<br>2507 (75) | 139 (18)<br>2646 (76) | 146 (17)<br>2792 (78) | 2792 (78) |
|                                     | 2012 | 281 (34)<br>281 (34) | 243 (39)<br>524 (44) | 161 (41)<br>685 (52) | 239 (43)<br>924 (56) | 166 (36)<br>1090 (59) | 263 (40)<br>1353 (64) | 404 (49)<br>1757 (71) | 210 (35)<br>1967 (73)  | 447 (42)<br>2414 (77)  | 850 (36)<br>3264 (79)  | 316 (26)<br>3580 (81) | 331 (28)<br>3911 (82) | 153 (20)<br>4064 (86) | 4064 (86) |
|                                     | 2013 | 300 (41)<br>300 (41) | 160 (30)<br>460 (45) | 170 (34)<br>630 (48) | 330 (39)<br>960 (53) | 309 (39)<br>1269 (59) | 234 (33)<br>1503 (61) | 312 (40)<br>1815 (64) | 205 (37)<br>2020 (68)  | 263 (35)<br>2283 (69)  | 483 (30)<br>2766 (71)  | 271 (22)<br>3037 (75) | 170 (21)<br>3207 (76) | 134 (17)<br>3341 (77) | 3341 (77) |
|                                     | 2014 | 204 (42)<br>204 (42) | 191 (39)<br>395 (48) | 121 (32)<br>516 (49) | 296 (38)<br>812 (54) | 237 (37)<br>1049 (56) | 223 (40)<br>1272 (61) | 324 (41)<br>1596 (65) | 323 (39)<br>1919 (69)  | 454 (37)<br>2373 (70)  | 295 (30)<br>2668 (73)  | 408 (25)<br>3076 (73) | 405 (27)<br>3481 (75) | 337 (20)<br>3818 (77) | 3818 (77) |
| # individual birds (species) return | 2005 | 0 (0)<br>0 (0)       | 3 (2)<br>3 (2)       | 3 (3)<br>6 (4)       | 3 (3)<br>9 (5)       | 7 (5)<br>16 (9)       | 4 (3)<br>20 (9)       | 3 (2)<br>23 (9)       | 6 (3)<br>29 (10)       | 6 (4)<br>35 (11)       | 5 (3)<br>40 (11)       | 1 (1)<br>41 (11)      | 0 (0)<br>41 (11)      | 2 (2)<br>43 (13)      | 43 (13)   |
|                                     | 2006 | 6 (5)<br>6 (5)       | 6 (4)<br>12 (6)      | 1 (1)<br>13 (6)      | 2 (2)<br>15 (8)      | 1 (1)<br>16 (8)       | 3 (2)<br>19 (8)       | 2 (2)<br>21 (8)       | 0 (0)<br>21 (8)        | 2 (1)<br>23 (8)        | 1 (1)<br>24 (8)        | 2 (1)<br>26 (8)       | 2 (2)<br>28 (9)       | 3 (2)<br>31 (9)       | 31 (9)    |
|                                     | 2007 | 10 (6)<br>10 (6)     | 6 (4)<br>16 (7)      | 6 (2)<br>22 (7)      | 5 (5)<br>27 (10)     | 3 (2)<br>30 (11)      | 7 (5)<br>37 (11)      | 2 (2)<br>39 (11)      | 3 (3)<br>42 (12)       | 0 (0)<br>42 (12)       | 1 (1)<br>43 (12)       | 1 (1)<br>44 (12)      | 1 (1)<br>45 (12)      | 1 (1)<br>46 (12)      | 46 (12)   |
|                                     | 2008 | 11 (7)<br>11 (7)     | 0 (0)<br>11 (7)      | 1 (1)<br>12 (8)      | 1 (1)<br>13 (8)      | 2 (2)<br>15 (10)      | 3 (3)<br>18 (11)      | 3 (3)<br>21 (11)      | 3 (3)<br>24 (14)       | 0 (0)<br>24 (14)       | 1 (1)<br>25 (14)       | 5 (2)<br>30 (14)      | 0 (0)<br>30 (14)      | 2 (1)<br>32 (14)      | 32 (14)   |
|                                     | 2009 | 6 (6)<br>6 (6)       | 3 (3)<br>9 (8)       | 3 (3)<br>12 (10)     | 3 (3)<br>15 (11)     | 7 (6)<br>22 (15)      | 4 (4)<br>26 (16)      | 1 (1)<br>27 (16)      | 4 (2)<br>31 (16)       | 2 (1)<br>33 (16)       | 2 (2)<br>35 (16)       | 1 (1)<br>36 (16)      | 5 (3)<br>41 (18)      | 2 (2)<br>43 (18)      | 43 (18)   |
|                                     | 2010 | 6 (5)<br>6 (5)       | 2 (2)<br>8 (7)       | 3 (3)<br>11 (9)      | 4 (3)<br>15 (10)     | 3 (3)<br>18 (12)      | 3 (3)<br>21 (14)      | 6 (3)<br>27 (15)      | 3 (2)<br>30 (15)       | 2 (2)<br>32 (16)       | 4 (3)<br>36 (18)       | 1 (1)<br>37 (18)      | 2 (1)<br>39 (18)      | 5 (3)<br>44 (20)      | 44 (20)   |
|                                     | 2011 | 5 (2)<br>5 (2)       | 1 (1)<br>6 (3)       | 5 (5)<br>11 (7)      | 2 (2)<br>13 (9)      | 2 (2)<br>15 (11)      | 1 (1)<br>16 (12)      | 1 (1)<br>17 (12)      | 2 (2)<br>19 (12)       | 8 (4)<br>27 (14)       | 5 (2)<br>32 (14)       | 2 (2)<br>34 (14)      | 3 (2)<br>37 (14)      | 3 (1)<br>40 (15)      | 40 (15)   |
|                                     | 2012 | 13 (10)<br>13 (10)   | 7 (4)<br>20 (12)     | 9 (7)<br>29 (16)     | 2 (2)<br>31 (17)     | 10 (8)<br>41 (19)     | 2 (2)<br>43 (19)      | 15 (7)<br>58 (20)     | 2 (2)<br>60 (20)       | 6 (3)<br>66 (20)       | 3 (1)<br>69 (20)       | 6 (4)<br>75 (21)      | 3 (3)<br>78 (22)      | 9 (6)<br>87 (24)      | 87 (24)   |
|                                     | 2013 | 7 (5)<br>7 (5)       | 8 (5)<br>15 (8)      | 4 (4)<br>19 (10)     | 2 (2)<br>21 (11)     | 5 (5)<br>26 (15)      | 2 (2)<br>28 (15)      | 6 (4)<br>34 (16)      | 4 (2)<br>38 (16)       | 5 (4)<br>43 (17)       | 0 (0)<br>43 (17)       | 3 (3)<br>46 (18)      | 4 (3)<br>50 (18)      | 3 (2)<br>53 (18)      | 53 (18)   |
|                                     | 2014 | 13 (9)<br>13 (9)     | 3 (2)<br>16 (9)      | 6 (6)<br>22 (11)     | 8 (6)<br>30 (14)     | 3 (3)<br>33 (15)      | 2 (2)<br>35 (16)      | 6 (4)<br>41 (17)      | 5 (4)<br>46 (17)       | 5 (4)<br>51 (17)       | 2 (1)<br>53 (17)       | 2 (2)<br>55 (18)      | 3 (2)<br>58 (18)      | 3 (3)<br>61 (20)      | 61 (20)   |
| # individual birds (species) repeat | 2005 | 4 (4)<br>4 (4)       | 23 (11)<br>27 (13)   | 24 (12)<br>51 (15)   | 19 (12)<br>70 (18)   | 47 (15)<br>117 (22)   | 38 (14)<br>155 (25)   | 58 (19)<br>213 (29)   | 82 (18)<br>295 (32)    | 52 (12)<br>347 (34)    | 53 (17)<br>400 (38)    | 24 (10)<br>424 (38)   | 11 (7)<br>435 (40)    | 45 (9)<br>480 (42)    | 480 (42)  |
|                                     | 2006 | 22 (10)<br>22 (10)   | 31 (11)<br>53 (15)   | 33 (12)<br>86 (19)   | 25 (10)<br>111 (23)  | 19 (8)<br>130 (24)    | 35 (14)<br>165 (26)   | 54 (18)<br>219 (30)   | 28 (12)<br>247 (32)    | 48 (10)<br>295 (33)    | 26 (10)<br>321 (34)    | 49 (10)<br>370 (37)   | 35 (9)<br>405 (37)    | 8 (3)<br>413 (38)     | 413 (38)  |
|                                     | 2007 | 31 (12)<br>31 (12)   | 50 (16)<br>81 (18)   | 40 (16)<br>121 (24)  | 24 (10)<br>145 (25)  | 33 (15)<br>178 (27)   | 47 (14)<br>225 (28)   | 41 (15)<br>266 (30)   | 36 (13)<br>302 (32)    | 72 (17)<br>374 (37)    | 68 (13)<br>442 (41)    | 55 (12)<br>497 (41)   | 42 (12)<br>539 (43)   | 22 (8)<br>561 (43)    | 561 (43)  |
|                                     | 2008 | 42 (17)<br>42 (17)   | 47 (14)<br>89 (20)   | 50 (19)<br>139 (26)  | 36 (12)<br>175 (28)  | 53 (19)<br>228 (32)   | 76 (16)<br>304 (35)   | 64 (18)<br>368 (37)   | 69 (14)<br>437 (38)    | 137 (13)<br>574 (39)   | 152 (17)<br>726 (42)   | 122 (15)<br>848 (46)  | 52 (14)<br>900 (47)   | 33 (8)<br>933 (48)    | 933 (48)  |
|                                     | 2009 | 29 (11)<br>29 (11)   | 35 (16)<br>64 (19)   | 38 (16)<br>102 (23)  | 39 (17)<br>141 (25)  | 37 (11)<br>178 (25)   | 29 (11)<br>207 (26)   | 29 (10)<br>236 (28)   | 49 (12)<br>285 (28)    | 93 (13)<br>378 (33)    | 66 (10)<br>444 (34)    | 38 (8)<br>482 (35)    | 50 (9)<br>532 (37)    | 73 (9)<br>605 (39)    | 605 (39)  |
|                                     | 2010 | 35 (16)<br>35 (16)   | 38 (17)<br>73 (21)   | 28 (14)<br>101 (23)  | 38 (18)<br>139 (25)  | 35 (15)<br>174 (27)   | 43 (15)<br>217 (29)   | 59 (22)<br>276 (31)   | 80 (10)<br>356 (34)    | 171 (9)<br>527 (36)    | 103 (12)<br>630 (39)   | 100 (11)<br>730 (40)  | 75 (13)<br>805 (42)   | 71 (10)<br>876 (44)   | 876 (44)  |
|                                     | 2011 | 50 (17)<br>50 (17)   | 43 (17)<br>93 (23)   | 32 (15)<br>125 (25)  | 42 (15)<br>167 (26)  | 39 (12)<br>206 (26)   | 45 (17)<br>251 (29)   | 52 (16)<br>303 (32)   | 44 (11)<br>347 (32)    | 67 (14)<br>414 (39)    | 36 (12)<br>475 (40)    | 36 (12)<br>511 (43)   | 55 (12)<br>566 (43)   | 38 (11)<br>604 (45)   | 604 (45)  |
|                                     | 2012 | 50 (13)<br>50 (13)   | 74 (22)<br>124 (25)  | 61 (18)<br>185 (27)  | 74 (21)<br>259 (31)  | 52 (17)<br>311 (33)   | 65 (16)<br>376 (34)   | 89 (19)<br>465 (35)   | 65 (13)<br>530 (38)    | 118 (23)<br>648 (46)   | 152 (17)<br>800 (50)   | 148 (16)<br>948 (51)  | 83 (15)<br>1031 (52)  | 58 (9)<br>1089 (52)   | 1089 (52) |
|                                     | 2013 | 67 (16)<br>67 (16)   | 63 (22)<br>130 (25)  | 48 (17)<br>178 (28)  | 80 (21)<br>258 (31)  | 61 (15)<br>319 (32)   | 54 (15)<br>373 (35)   | 72 (24)<br>445 (37)   | 63 (18)<br>508 (37)    | 69 (20)<br>577 (40)    | 79 (16)<br>656 (42)    | 48 (9)<br>704 (43)    | 25 (7)<br>729 (45)    | 30 (7)<br>759 (46)    | 759 (46)  |
|                                     | 2014 | 43 (19)<br>43 (19)   | 48 (19)<br>91 (28)   | 44 (21)<br>135 (32)  | 61 (17)<br>196 (34)  | 50 (15)<br>246 (36)   | 69 (19)<br>315 (36)   | 99 (20)<br>414 (40)   | 48 (16)<br>462 (40)    | 76 (17)<br>538 (45)    | 64 (14)<br>602 (45)    | 99 (14)<br>701 (47)   | 75 (14)<br>776 (49)   | 72 (13)<br>848 (49)   | 848 (49)  |

|                                | Year | F1    | F2     | F3     | F4     | F5     | F6     | F7     | F8     | F9     | F10    | F11    | F12    | F13    | FINAL  |
|--------------------------------|------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| # species observed             | 2005 | 74    | 71     | 75     | 76     | 82     | 88     | 89     | 90     | 75     | 83     | 67     | 59     | 55     | 151    |
|                                |      | 74    | 88     | 95     | 102    | 110    | 120    | 124    | 128    | 131    | 135    | 140    | 146    | 151    |        |
|                                | 2006 | 75    | 84     | 78     | 82     | 87     | 86     | 74     | 77     | 70     | 63     | 60     | 55     | 50     | 134    |
|                                |      | 75    | 91     | 95     | 101    | 106    | 114    | 120    | 123    | 126    | 131    | 134    | 134    | 134    |        |
|                                | 2007 | 65    | 72     | 82     | 81     | 83     | 84     | 75     | 81     | 74     | 74     | 55     | 53     | 58     | 144    |
|                                |      | 65    | 84     | 98     | 106    | 112    | 116    | 123    | 131    | 133    | 135    | 135    | 137    | 144    |        |
|                                | 2008 | 71    | 71     | 77     | 74     | 82     | 83     | 76     | 76     | 73     | 73     | 61     | 57     | 46     | 141    |
|                                |      | 71    | 85     | 96     | 103    | 110    | 113    | 117    | 121    | 126    | 131    | 136    | 141    | 141    |        |
|                                | 2009 | 71    | 73     | 82     | 78     | 76     | 75     | 72     | 82     | 78     | 70     | 65     | 51     | 52     | 144    |
|                                |      | 71    | 86     | 98     | 106    | 111    | 115    | 121    | 128    | 128    | 131    | 133    | 136    | 144    |        |
|                                | 2010 | 71    | 68     | 72     | 71     | 78     | 85     | 87     | 74     | 68     | 80     | 63     | 52     | 57     | 140    |
|                                |      | 71    | 83     | 92     | 95     | 102    | 106    | 117    | 120    | 125    | 134    | 135    | 137    | 140    |        |
|                                | 2011 | 67    | 75     | 77     | 78     | 86     | 77     | 84     | 86     | 81     | 81     | 52     | 49     | 53     | 146    |
|                                |      | 67    | 81     | 87     | 97     | 107    | 112    | 121    | 124    | 132    | 136    | 140    | 141    | 146    |        |
|                                | 2012 | 74    | 84     | 85     | 84     | 77     | 85     | 84     | 87     | 89     | 77     | 59     | 69     | 66     | 148    |
|                                |      | 74    | 91     | 101    | 109    | 112    | 119    | 125    | 132    | 136    | 138    | 139    | 142    | 148    |        |
|                                | 2013 | 84    | 74     | 94     | 86     | 81     | 82     | 91     | 88     | 81     | 70     | 67     | 60     | 53     | 147    |
|                                |      | 84    | 95     | 107    | 114    | 116    | 122    | 130    | 136    | 141    | 142    | 143    | 144    | 147    |        |
|                                | 2014 | 78    | 81     | 88     | 87     | 93     | 85     | 90     | 83     | 84     | 73     | 75     | 64     | 70     | 150    |
|                                |      | 78    | 91     | 105    | 110    | 115    | 120    | 124    | 128    | 133    | 135    | 143    | 145    | 150    |        |
| # net hours                    | 2005 | 74.5  | 132.3  | 152.8  | 245.6  | 435.0  | 481.5  | 444.0  | 436.4  | 397.7  | 368.5  | 168.4  | 190.3  | 281.1  | 3808.1 |
|                                |      | 74.5  | 206.8  | 359.6  | 605.2  | 1040.2 | 1521.7 | 1965.7 | 2402.1 | 2799.8 | 3168.3 | 3336.7 | 3527.0 | 3808.1 |        |
|                                | 2006 | 420.0 | 426.5  | 390.9  | 412.9  | 343.8  | 498.2  | 377.9  | 175.4  | 208.9  | 333.3  | 310.4  | 318.3  | 206.6  | 4423.1 |
|                                |      | 420.0 | 846.5  | 1237.4 | 1650.3 | 1994.1 | 2492.3 | 2870.2 | 3045.6 | 3254.5 | 3587.8 | 3898.2 | 4216.5 | 4423.1 |        |
|                                | 2007 | 370.0 | 462.0  | 493.4  | 414.7  | 490.5  | 434.5  | 417.5  | 489.5  | 369.7  | 398.9  | 348.5  | 370.7  | 363.0  | 5422.9 |
|                                |      | 370.0 | 832.0  | 1325.4 | 1740.1 | 2230.6 | 2665.1 | 3082.6 | 3572.1 | 3941.8 | 4340.7 | 4689.2 | 5059.9 | 5422.9 |        |
|                                | 2008 | 386.5 | 459.2  | 520.0  | 540.0  | 553.0  | 433.0  | 358.0  | 536.5  | 377.5  | 377.5  | 373.0  | 402.2  | 290.7  | 5607.1 |
|                                |      | 386.5 | 845.7  | 1365.7 | 1905.7 | 2458.7 | 2891.7 | 3249.7 | 3786.2 | 4163.7 | 4541.2 | 4914.2 | 5316.4 | 5607.1 |        |
|                                | 2009 | 499.7 | 466.0  | 544.0  | 533.0  | 476.3  | 554.0  | 504.0  | 532.0  | 459.0  | 359.5  | 225.5  | 307.0  | 377.4  | 5837.4 |
|                                |      | 499.7 | 965.7  | 1509.7 | 2042.7 | 2519.0 | 3073.0 | 3577.0 | 4109.0 | 4568.0 | 4927.5 | 5153.0 | 5460.0 | 5837.4 |        |
|                                | 2010 | 468.0 | 558.0  | 508.5  | 524.0  | 556.0  | 456.5  | 532.0  | 425.0  | 274.5  | 380.0  | 430.0  | 438.0  | 491.0  | 6041.5 |
|                                |      | 468.0 | 1026.0 | 1534.5 | 2058.5 | 2614.5 | 3071.0 | 3603.0 | 4028.0 | 4302.5 | 4682.5 | 5112.5 | 5550.5 | 6041.5 |        |
|                                | 2011 | 557.5 | 560.0  | 480.0  | 426.0  | 531.6  | 480.0  | 472.0  | 516.0  | 505.0  | 534.0  | 307.0  | 466.0  | 558.0  | 6393.1 |
|                                |      | 557.5 | 1117.5 | 1597.5 | 2023.5 | 2555.1 | 3035.1 | 3507.1 | 4023.1 | 4528.1 | 5062.1 | 5369.1 | 5835.1 | 6393.1 |        |
|                                | 2012 | 560.0 | 552.0  | 540.0  | 560.0  | 504.8  | 547.0  | 544.0  | 514.0  | 552.0  | 477.5  | 479.0  | 454.0  | 504.0  | 6788.3 |
|                                |      | 560.0 | 1112.0 | 1652.0 | 2212.0 | 2716.8 | 3263.8 | 3807.8 | 4321.8 | 4873.8 | 5351.3 | 5830.3 | 6284.3 | 6788.3 |        |
|                                | 2013 | 560.0 | 490.0  | 560.0  | 539.5  | 526.0  | 480.0  | 469.5  | 541.6  | 546.0  | 505.0  | 497.5  | 343.0  | 431.2  | 6489.3 |
|                                |      | 560.0 | 1050.0 | 1610.0 | 2149.5 | 2675.5 | 3155.5 | 3625.0 | 4166.6 | 4712.6 | 5217.6 | 5715.1 | 6058.1 | 6489.3 |        |
|                                | 2014 | 548.0 | 471.0  | 444.0  | 560.0  | 560.0  | 479.0  | 560.0  | 516.0  | 541.0  | 328.2  | 466.0  | 461.5  | 488.0  | 6422.7 |
|                                |      | 548.0 | 1019.0 | 1463.0 | 2023.0 | 2583.0 | 3062.0 | 3622.0 | 4138.0 | 4679.0 | 5007.2 | 5473.2 | 5934.7 | 6422.7 |        |
| # birds banded / 100 net hours | 2005 | 92.6  | 119.4  | 92.3   | 79.8   | 65.1   | 37.6   | 95.9   | 110.0  | 95.5   | 101.8  | 109.9  | 82.5   | 69.4   | 84.7   |
|                                |      | 92.6  | 109.8  | 102.3  | 93.2   | 81.4   | 67.6   | 74.0   | 80.5   | 82.6   | 84.9   | 86.1   | 85.9   | 84.7   |        |
|                                | 2006 | 36.2  | 52.8   | 41.4   | 48.4   | 42.5   | 56.0   | 70.4   | 189.3  | 260.9  | 91.5   | 77.6   | 104.6  | 45.5   | 74.2   |
|                                |      | 36.2  | 44.5   | 43.6   | 44.8   | 44.4   | 46.7   | 49.8   | 57.9   | 70.9   | 72.8   | 73.2   | 75.6   | 74.2   |        |
|                                | 2007 | 56.8  | 30.7   | 18.4   | 30.9   | 26.7   | 37.3   | 32.3   | 42.9   | 84.1   | 121.8  | 123.4  | 78.0   | 41.9   | 53.1   |
|                                |      | 56.8  | 42.3   | 33.4   | 32.8   | 31.5   | 32.4   | 32.4   | 33.8   | 38.6   | 46.2   | 51.9   | 53.9   | 53.1   |        |
|                                | 2008 | 48.4  | 39.6   | 29.8   | 30.7   | 49.0   | 79.7   | 56.7   | 73.3   | 294.6  | 294.8  | 142.4  | 54.2   | 77.1   | 91.0   |
|                                |      | 48.4  | 43.6   | 38.4   | 36.2   | 39.1   | 45.2   | 46.4   | 50.2   | 72.4   | 90.9   | 94.8   | 91.7   | 91.0   |        |
|                                | 2009 | 45.6  | 31.8   | 33.8   | 36.8   | 33.4   | 19.7   | 36.7   | 47.4   | 81.0   | 164.4  | 114.0  | 116.9  | 93.0   | 58.1   |
|                                |      | 45.6  | 38.9   | 37.1   | 37.0   | 36.3   | 33.3   | 33.8   | 35.6   | 40.1   | 49.2   | 52.0   | 55.7   | 58.1   |        |
|                                | 2010 | 53.4  | 34.4   | 49.2   | 33.8   | 35.4   | 91.1   | 55.8   | 300.9  | 395.3  | 268.2  | 147.7  | 138.1  | 82.7   | 112.7  |
|                                |      | 53.4  | 43.1   | 45.1   | 42.2   | 40.8   | 48.3   | 49.4   | 75.9   | 96.3   | 110.2  | 113.4  | 115.3  | 112.7  |        |
|                                | 2011 | 46.1  | 25.4   | 28.3   | 56.3   | 58.5   | 53.5   | 46.0   | 46.7   | 64.8   | 51.5   | 33.9   | 29.8   | 26.2   | 43.7   |
|                                |      | 46.1  | 35.7   | 33.5   | 38.3   | 42.5   | 44.2   | 44.5   | 44.8   | 47.0   | 47.5   | 46.7   | 45.3   | 43.7   |        |
|                                | 2012 | 50.2  | 44.0   | 29.8   | 42.7   | 32.9   | 48.1   | 74.3   | 40.9   | 81.0   | 178.0  | 66.0   | 72.9   | 30.4   | 59.9   |
|                                |      | 50.2  | 47.1   | 41.5   | 41.8   | 40.1   | 41.5   | 46.1   | 45.5   | 49.5   | 61.0   | 61.4   | 62.2   | 59.9   |        |
|                                | 2013 | 53.6  | 32.7   | 30.4   | 61.2   | 58.7   | 48.8   | 66.5   | 37.9   | 48.2   | 95.6   | 54.5   | 49.6   | 31.1   | 51.5   |
|                                |      | 53.6  | 43.8   | 39.1   | 44.7   | 47.4   | 47.6   | 50.1   | 48.5   | 48.4   | 53.0   | 53.1   | 52.9   | 51.5   |        |
|                                | 2014 | 37.2  | 40.6   | 27.3   | 52.9   | 42.3   | 46.6   | 57.9   | 62.6   | 83.9   | 89.9   | 87.6   | 87.8   | 69.1   | 59.4   |
|                                |      | 37.2  | 38.8   | 35.3   | 40.1   | 40.6   | 41.5   | 44.1   | 46.4   | 50.7   | 53.3   | 56.2   | 58.7   | 59.4   |        |



## Appendix C: Weekly Species Charts for Spring and Fall Migration

This section summarizes the most frequently observed and banded species on a weekly basis throughout the spring and fall migration seasons. Numbers banded represent weekly (or seasonal) totals, with tied species listed in taxonomic sequence. Observations are presented as mean daily counts, rounded to the nearest whole number. Species are listed in decreasing order of abundance, with tied species sequenced first by numbers prior to rounding, and secondarily by taxonomic sequence. Last-place ties which increase the list beyond ten species are included only if 4 or more individuals per species were banded. Species are colour-coded in the tables to highlight seasonal patterns of occurrence of different groups; the table below serves as a legend.

| Species group        | Species included                                   |
|----------------------|----------------------------------------------------|
| Waterfowl            | Geese and ducks                                    |
| Other waterbirds     | Cormorants, gulls, and terns                       |
| Woodpeckers          | Woodpeckers, including flicker                     |
| Other non-passerines | Hawks, hummingbirds, doves, cuckoos, owls          |
| Flycatchers          | Flycatchers, including phoebe, pewee, and kingbird |
| Swallows             | Swallows, including martin                         |
| Vireos               | Vireos                                             |
| Corvids              | Crow, raven, jay                                   |
| Chickadees etc.      | Chickadees, nuthatches, creeper, kinglets, wrens   |
| Thrushes etc.        | Thrushes, mimids, waxwings                         |
| Warblers             | Warblers                                           |
| Sparrows             | Sparrows                                           |
| Finches              | Finches, including cardinal, grosbeak, bunting     |
| Blackbirds           | Blackbirds, including oriole, starling             |

**Banding, Spring Week 1 (March 28 - April 3):** No banding during this period in any year

**Observations, Spring Week 1 (March 28 - April 3):**

| 2005                               | 2006                      | 2007                     | 2008                      | 2009                      |
|------------------------------------|---------------------------|--------------------------|---------------------------|---------------------------|
| No observations during this period | Canada Goose (715)        | Canada Goose (1099)      | Red-wing. Blackbird (24)  | Canada Goose (293)        |
|                                    | Red-wing. Blackbird (25)  | Red-wing. Blackbird (47) | Cedar Waxwing (17)        | Snow Goose (186)          |
|                                    | American Crow (24)        | American Crow (17)       | American Crow (14)        | Bohemian Waxwing (55)     |
|                                    | Ring-billed Gull (17)     | Ring-billed Gull (17)    | Bohemian Waxwing (14)     | Ring-billed Gull (26)     |
|                                    | Black-cap. Chickadee (13) | Mallard (13)             | Black-cap. Chickadee (10) | Red-wing. Blackbird (25)  |
|                                    | Dark-eyed Junco (12)      | American Robin (13)      | Dark-eyed Junco (4)       | American Crow (20)        |
|                                    | American Robin (9)        | Blue Jay (10)            | American Robin (4)        | American Robin (15)       |
|                                    | Am. Tree Sparrow (7)      | Song Sparrow (7)         | Canada Goose (3)          | Black-cap. Chickadee (10) |
|                                    | Song Sparrow (7)          | Black-cap. Chickadee (6) | Northern Cardinal (3)     | Song Sparrow (10)         |
|                                    | Mallard (6)               | European Starling (5)    | Blue Jay (3)              | Wood Duck (9)             |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                     |
|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| Canada Goose (179)        | Snow Goose (501)          | Canada Goose (298)        | Canada Goose (297)        | Canada Goose (26)        |
| Red-wing. Blackbird (44)  | Canada Goose (454)        | Red-wing. Blackbird (42)  | Red-wing. Blackbird (37)  | Red-wing. Blackbird (16) |
| Snow Goose (31)           | Red-wing. Blackbird (31)  | American Crow (16)        | Common Redpoll (23)       | American Crow (10)       |
| American Crow (25)        | Bohemian Waxwing (27)     | Black-cap. Chickadee (15) | Black-cap. Chickadee (11) | Black-cap. Chickadee (9) |
| American Robin (13)       | American Crow (16)        | American Robin (13)       | Ring-billed Gull (7)      | Blue Jay (7)             |
| Black-cap. Chickadee (12) | Ring-billed Gull (15)     | Ring-billed Gull (13)     | Snow Goose (7)            | European Starling (6)    |
| Wood Duck (8)             | Black-cap. Chickadee (13) | Mallard (12)              | American Crow (7)         | Dark-eyed Junco (5)      |
| Song Sparrow (7)          | Dark-eyed Junco (13)      | Song Sparrow (11)         | Northern Cardinal (6)     | American Robin (5)       |
| Am. Tree Sparrow (7)      | Cedar Waxwing (11)        | Wood Duck (9)             | Blue Jay (5)              | Cedar Waxwing (5)        |
| Ring-billed Gull (5)      | Common Redpoll (11)       | Blue Jay (8)              | European Starling (5)     | Northern Cardinal (4)    |



**Banding, Spring Week 2 (April 4 - 10):**

| 2005                     | 2006                     | 2007                          | 2008                          | 2009                          |
|--------------------------|--------------------------|-------------------------------|-------------------------------|-------------------------------|
| Song Sparrow (5)         | Dark-eyed Junco (3)      | No banding during this period | No banding during this period | No banding during this period |
| American Goldfinch (5)   | Black-cap. Chickadee (2) |                               |                               |                               |
| American Robin (2)       | Golden-cr. Kinglet (2)   |                               |                               |                               |
| Am. Tree Sparrow (2)     | American Robin (2)       |                               |                               |                               |
| Eastern Phoebe (1)       | Am. Tree Sparrow (2)     |                               |                               |                               |
| Black-cap. Chickadee (1) | Song Sparrow (2)         |                               |                               |                               |
| Swamp Sparrow (1)        | Pileated Woodpecker (1)  |                               |                               |                               |
|                          | Brown Creeper (1)        |                               |                               |                               |
|                          | Fox Sparrow (1)          |                               |                               |                               |
|                          | House Sparrow (1)        |                               |                               |                               |

| 2010                          | 2011                          | 2012                          | 2013                          | 2014                          |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| No banding during this period | No banding during this period | No banding during this period | No banding during this period | No banding during this period |

**Observations, Spring Week 2 (April 4 - 10):**

| 2005                      | 2006                      | 2007                     | 2008                     | 2009                     |
|---------------------------|---------------------------|--------------------------|--------------------------|--------------------------|
| Canada Goose (241)        | Canada Goose (854)        | Canada Goose (178)       | Canada Goose (174)       | Canada Goose (112)       |
| Snow Goose (53)           | Ring-billed Gull (69)     | Red-wing. Blackbird (44) | Red-wing. Blackbird (42) | Red-wing. Blackbird (40) |
| Bohemian Waxwing (35)     | Snow Goose (62)           | American Crow (22)       | Snow Goose (20)          | Ring-billed Gull (22)    |
| Red-wing. Blackbird (28)  | Red-wing. Blackbird (38)  | Ring-billed Gull (13)    | American Crow (13)       | American Robin (18)      |
| Cedar Waxwing (18)        | American Robin (21)       | American Robin (10)      | American Robin (10)      | American Crow (17)       |
| American Crow (17)        | Song Sparrow (20)         | Song Sparrow (9)         | Song Sparrow (7)         | Bohemian Waxwing (14)    |
| Song Sparrow (14)         | Dark-eyed Junco (20)      | Black-cap. Chickadee (9) | Black-cap. Chickadee (6) | Song Sparrow (13)        |
| Black-cap. Chickadee (13) | American Crow (18)        | Wood Duck (8)            | Ring-billed Gull (6)     | Black-cap. Chickadee (9) |
| American Robin (10)       | Black-cap. Chickadee (16) | Mallard (8)              | Blue Jay (5)             | Snow Goose (7)           |
| Common Grackle (8)        | Blue Jay (10)             | Blue Jay (7)             | European Starling (4)    | European Starling (7)    |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Canada Goose (61)         | Canada Goose (510)        | Canada Goose (162)        | Canada Goose (236)        | Canada Goose (90)         |
| Red-wing. Blackbird (35)  | Snow Goose (36)           | Red-wing. Blackbird (29)  | Snow Goose (84)           | Red-wing. Blackbird (41)  |
| American Crow (21)        | Bohemian Waxwing (31)     | Ring-billed Gull (20)     | Red-wing. Blackbird (58)  | Cedar Waxwing (35)        |
| Cedar Waxwing (15)        | Red-wing. Blackbird (29)  | Song Sparrow (13)         | Ring-billed Gull (14)     | Black-cap. Chickadee (10) |
| Black-cap. Chickadee (13) | Ring-billed Gull (29)     | American Crow (12)        | Black-cap. Chickadee (14) | American Robin (9)        |
| Song Sparrow (12)         | Cedar Waxwing (18)        | American Robin (12)       | European Starling (14)    | American Crow (8)         |
| American Robin (11)       | Wood Duck (13)            | Black-cap. Chickadee (11) | Mallard (11)              | Song Sparrow (6)          |
| Wood Duck (8)             | American Robin (12)       | Wood Duck (9)             | Dark-eyed Junco (9)       | Dark-eyed Junco (6)       |
| Ring-billed Gull (4)      | American Crow (12)        | Dark-eyed Junco (8)       | Am. Tree Sparrow (9)      | Ring-billed Gull (5)      |
| European Starling (4)     | Black-cap. Chickadee (11) | Mallard (7)               | American Robin (8)        | Northern Cardinal (5)     |

**Banding, Spring Week 3 (April 11 - 17):**

| 2005                     | 2006                    | 2007                          | 2008                          | 2009                          |
|--------------------------|-------------------------|-------------------------------|-------------------------------|-------------------------------|
| Cedar Waxwing (7)        | Dark-eyed Junco (20)    | No banding during this period | No banding during this period | No banding during this period |
| Song Sparrow (3)         | American Robin (6)      |                               |                               |                               |
| American Robin (2)       | Golden-cr. Kinglet (5)  |                               |                               |                               |
| Black-cap. Chickadee (1) | Fox Sparrow (5)         |                               |                               |                               |
| Swamp Sparrow (1)        | Song Sparrow (5)        |                               |                               |                               |
| Dark-eyed Junco (1)      | Ruby-cr. Kinglet (4)    |                               |                               |                               |
| Northern Cardinal (1)    | Am. Tree Sparrow (4)    |                               |                               |                               |
| American Goldfinch (1)   | Red-wing. Blackbird (4) |                               |                               |                               |
|                          | Eastern Phoebe (3)      |                               |                               |                               |

| 2010                          | 2011                          | 2012                          | 2013                          | 2014                          |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| No banding during this period | No banding during this period | No banding during this period | No banding during this period | No banding during this period |

**Observations, Spring Week 3 (April 11 - 17):**

| 2005                     | 2006                     | 2007                     | 2008                     | 2009                     |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Canada Goose (66)        | Canada Goose (751)       | Canada Goose (198)       | Canada Goose (440)       | Snow Goose (96)          |
| Cedar Waxwing (36)       | Ring-billed Gull (78)    | Red-wing. Blackbird (31) | Snow Goose (162)         | Canada Goose (88)        |
| Red-wing. Blackbird (21) | Red-wing. Blackbird (57) | Snow Goose (28)          | Red-wing. Blackbird (40) | Red-wing. Blackbird (30) |
| Song Sparrow (17)        | American Crow (28)       | American Crow (20)       | Ring-billed Gull (19)    | American Robin (17)      |
| American Robin (16)      | American Robin (23)      | American Robin (13)      | American Robin (16)      | American Crow (16)       |
| American Crow (11)       | Dark-eyed Junco (23)     | Blue Jay (9)             | American Crow (14)       | Song Sparrow (11)        |
| Black-cap. Chickadee (6) | Song Sparrow (21)        | Black-cap. Chickadee (9) | Song Sparrow (13)        | Ring-billed Gull (10)    |
| American Goldfinch (6)   | Mallard (12)             | Mallard (8)              | Mallard (8)              | Black-cap. Chickadee (9) |
| Tree Swallow (5)         | Brown-head. Cowbird (11) | Ring-billed Gull (8)     | Black-cap. Chickadee (8) | Cedar Waxwing (8)        |
| Ring-billed Gull (5)     | House Sparrow (10)       | Song Sparrow (6)         | Dark-eyed Junco (5)      | Wood Duck (6)            |
| Brown-head. Cowbird (5)  |                          |                          |                          |                          |

| 2010                     | 2011                      | 2012                      | 2013                      | 2014                     |
|--------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| Red-wing. Blackbird (34) | Canada Goose (52)         | Canada Goose (101)        | Canada Goose (101)        | Canada Goose (246)       |
| American Crow (18)       | Red-wing. Blackbird (43)  | Red-wing. Blackbird (42)  | Red-wing. Blackbird (46)  | Red-wing. Blackbird (56) |
| Canada Goose (11)        | Dark-eyed Junco (18)      | Cedar Waxwing (19)        | Song Sparrow (13)         | Cedar Waxwing (26)       |
| Song Sparrow (11)        | American Crow (16)        | American Crow (19)        | Black-cap. Chickadee (11) | American Robin (25)      |
| Cedar Waxwing (9)        | American Robin (12)       | Mallard (19)              | Ring-billed Gull (9)      | Song Sparrow (15)        |
| Wood Duck (8)            | Song Sparrow (11)         | Song Sparrow (16)         | American Robin (8)        | Snow Goose (14)          |
| Black-cap. Chickadee (7) | Bohemian Waxwing (11)     | American Robin (14)       | American Crow (8)         | Ring-billed Gull (13)    |
| American Robin (6)       | Black-cap. Chickadee (10) | Wood Duck (12)            | Wood Duck (6)             | Dark-eyed Junco (9)      |
| Tree Swallow (5)         | Wood Duck (10)            | Black-cap. Chickadee (12) | Mallard (6)               | Black-cap. Chickadee (8) |
| American Goldfinch (5)   | Ring-billed Gull (9)      | Ring-billed Gull (11)     | Dark-eyed Junco (6)       | Blue Jay (6)             |

**Banding, Spring Week 4 (April 18 - 24):**

| 2005                    | 2006                     | 2007                     | 2008                    | 2009                    |
|-------------------------|--------------------------|--------------------------|-------------------------|-------------------------|
| Cedar Waxwing (14)      | Red-wing. Blackbird (18) | Red-wing. Blackbird (12) | Ruby-cr. Kinglet (56)   | Dark-eyed Junco (8)     |
| Song Sparrow (7)        | Ruby-cr. Kinglet (15)    | Song Sparrow (9)         | Fox Sparrow (23)        | Ruby-cr. Kinglet (5)    |
| Ruby-cr. Kinglet (6)    | Dark-eyed Junco (9)      | American Robin (8)       | Dark-eyed Junco (9)     | Northern Cardinal (3)   |
| Fox Sparrow (4)         | Song Sparrow (7)         | Ruby-cr. Kinglet (6)     | Red-wing. Blackbird (9) | Brown Creeper (2)       |
| Swamp Sparrow (4)       | White-thr. Sparrow (6)   | American Goldfinch (4)   | Song Sparrow (8)        | Golden-cr. Kinglet (2)  |
| American Goldfinch (4)  | American Goldfinch (4)   | Downy Woodpecker (3)     | White-thr. Sparrow (8)  | Cedar Waxwing (2)       |
| White-thr. Sparrow (2)  | Downy Woodpecker (3)     | Eastern Phoebe (3)       | American Goldfinch (8)  | White-thr. Sparrow (2)  |
| Red-wing. Blackbird (2) | American Robin (3)       | Black-cap. Chickadee (3) | Swamp Sparrow (7)       | Red-wing. Blackbird (2) |
|                         | Fox Sparrow (3)          |                          |                         | American Goldfinch (2)  |
|                         | Swamp Sparrow (3)        |                          |                         |                         |

| 2010                     | 2011                     | 2012                     | 2013                      | 2014                     |
|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------|
| Cedar Waxwing (23)       | Dark-eyed Junco (24)     | Red-wing. Blackbird (21) | Fox Sparrow (32)          | Cedar Waxwing (33)       |
| Fox Sparrow (16)         | American Robin (14)      | Ruby-cr. Kinglet (20)    | Black-cap. Chickadee (14) | Ruby-cr. Kinglet (28)    |
| Song Sparrow (14)        | Fox Sparrow (12)         | White-thr. Sparrow (18)  | Ruby-cr. Kinglet (13)     | Fox Sparrow (28)         |
| Red-wing. Blackbird (12) | Am. Tree Sparrow (6)     | Song Sparrow (10)        | Song Sparrow (9)          | American Robin (21)      |
| Ruby-cr. Kinglet (6)     | Cedar Waxwing (5)        | Swamp Sparrow (7)        | Dark-eyed Junco (9)       | Golden-cr. Kinglet (13)  |
| Dark-eyed Junco (6)      | Black-cap. Chickadee (4) | American Goldfinch (5)   | Red-wing. Blackbird (8)   | Song Sparrow (10)        |
| Swamp Sparrow (5)        | Song Sparrow (3)         | American Robin (4)       | Eastern Phoebe (5)        | White-thr. Sparrow (6)   |
| American Goldfinch (4)   | White-thr. Sparrow (3)   | Purple Finch (3)         | Am. Tree Sparrow (5)      | Black-cap. Chickadee (5) |
| Tree Swallow (3)         | Red-wing. Blackbird (3)  |                          | Swamp Sparrow (5)         | Am. Tree Sparrow (5)     |
|                          |                          |                          | White-thr. Sparrow (5)    | Red-wing. Blackbird (4)  |

**Observations, Spring Week 4 (April 18 - 24):**

| 2005                     | 2006                     | 2007                      | 2008                     | 2009                      |
|--------------------------|--------------------------|---------------------------|--------------------------|---------------------------|
| Canada Goose (92)        | Canada Goose (899)       | Snow Goose (791)          | Canada Goose (561)       | Snow Goose (156)          |
| Cedar Waxwing (32)       | Ring-billed Gull (51)    | Canada Goose (322)        | Snow Goose (139)         | Canada Goose (151)        |
| Red-wing. Blackbird (24) | Red-wing. Blackbird (46) | Red-wing. Blackbird (73)  | Ring-billed Gull (71)    | Red-wing. Blackbird (44)  |
| American Crow (23)       | American Crow (35)       | American Crow (33)        | Red-wing. Blackbird (57) | American Crow (26)        |
| Song Sparrow (17)        | Dark-eyed Junco (24)     | Ring-billed Gull (32)     | Common Grackle (38)      | Ring-billed Gull (19)     |
| Tree Swallow (13)        | American Robin (22)      | American Robin (26)       | Ruby-cr. Kinglet (28)    | American Robin (18)       |
| American Robin (10)      | Mallard (19)             | Song Sparrow (24)         | Song Sparrow (20)        | Song Sparrow (17)         |
| Black-cap. Chickadee (8) | Song Sparrow (19)        | American Goldfinch (15)   | American Crow (19)       | Dark-eyed Junco (15)      |
| American Goldfinch (7)   | Tree Swallow (16)        | Mallard (14)              | American Robin (15)      | Black-cap. Chickadee (11) |
| Ring-billed Gull (6)     | Brown-head. Cowbird (13) | Black-cap. Chickadee (14) | Fox Sparrow (14)         | Wood Duck (10)            |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Canada Goose (48)         | Canada Goose (147)        | Canada Goose (158)        | Canada Goose (110)        | Canada Goose (372)        |
| Red-wing. Blackbird (48)  | Red-wing. Blackbird (59)  | American Robin (57)       | Red-wing. Blackbird (57)  | Cedar Waxwing (69)        |
| Cedar Waxwing (34)        | Bohemian Waxwing (42)     | Red-wing. Blackbird (55)  | Song Sparrow (26)         | Red-wing. Blackbird (62)  |
| American Crow (27)        | Dark-eyed Junco (30)      | American Crow (34)        | Fox Sparrow (20)          | American Robin (43)       |
| Black-cap. Chickadee (14) | Cedar Waxwing (24)        | White-thr. Sparrow (23)   | Black-cap. Chickadee (17) | Ring-billed Gull (39)     |
| Tree Swallow (13)         | American Crow (23)        | Black-cap. Chickadee (20) | Ring-billed Gull (16)     | Snow Goose (24)           |
| Wood Duck (12)            | Black-cap. Chickadee (22) | Wood Duck (14)            | American Crow (13)        | Song Sparrow (19)         |
| American Robin (12)       | Snow Goose (21)           | Song Sparrow (14)         | American Robin (12)       | Black-cap. Chickadee (13) |
| Song Sparrow (11)         | Ring-billed Gull (20)     | Ring-billed Gull (13)     | Wood Duck (12)            | Fox Sparrow (13)          |
| Fox Sparrow (8)           | American Robin (19)       | Mallard (12)              | Ruby-cr. Kinglet (11)     | Common Grackle (12)       |
|                           |                           | Ruby-cr. Kinglet (12)     |                           |                           |

**Banding, Spring Week 5 (April 25 - May 1):**

| 2005                     | 2006                     | 2007                     | 2008                      | 2009                     |
|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------|
| Red-wing. Blackbird (24) | Red-wing. Blackbird (35) | Red-wing. Blackbird (11) | White-thr. Sparrow (27)   | Ruby-cr. Kinglet (53)    |
| White-thr. Sparrow (16)  | Dark-eyed Junco (14)     | Brown Thrasher (1)       | Red-wing. Blackbird (11)  | White-thr. Sparrow (7)   |
| American Goldfinch (12)  | Common Grackle (9)       | American Goldfinch (1)   | Ruby-cr. Kinglet (6)      | Song Sparrow (6)         |
| Ruby-cr. Kinglet (8)     | White-thr. Sparrow (4)   |                          | Swamp Sparrow (6)         | Swamp Sparrow (6)        |
| Song Sparrow (7)         | Ruby-cr. Kinglet (3)     |                          | Tree Swallow (5)          | Red-wing. Blackbird (3)  |
| Cedar Waxwing (5)        | House Sparrow (3)        |                          | American Goldfinch (5)    | American Robin (2)       |
| Swamp Sparrow (4)        | American Robin (2)       |                          | Yellow-bel. Sapsucker (2) | Northern Waterthrush (2) |
|                          | Swamp Sparrow (2)        |                          | Yellow-rumped Warbler (2) | Yellow Warbler (2)       |
|                          | American Goldfinch (2)   |                          | Song Sparrow (2)          | Rusty Blackbird (2)      |

| 2010                     | 2011                      | 2012                     | 2013                     | 2014                    |
|--------------------------|---------------------------|--------------------------|--------------------------|-------------------------|
| Red-wing. Blackbird (15) | Dark-eyed Junco (10)      | American Robin (13)      | White-thr. Sparrow (12)  | Cedar Waxwing (147)     |
| Ruby-cr. Kinglet (8)     | Am. Tree Sparrow (9)      | Red-wing. Blackbird (12) | Red-wing. Blackbird (12) | American Robin (8)      |
| Cedar Waxwing (6)        | White-thr. Sparrow (8)    | White-thr. Sparrow (11)  | Ruby-cr. Kinglet (10)    | Fox Sparrow (6)         |
| Swamp Sparrow (5)        | Red-wing. Blackbird (8)   | Swamp Sparrow (7)        | Fox Sparrow (10)         | Song Sparrow (6)        |
| American Goldfinch (5)   | Ruby-cr. Kinglet (6)      | Common Grackle (5)       | Swamp Sparrow (10)       | White-thr. Sparrow (6)  |
| Tree Swallow (3)         | American Robin (6)        | Ruby-cr. Kinglet (4)     | Eastern Phoebe (2)       | Ruby-cr. Kinglet (5)    |
| White-thr. Sparrow (3)   | Yellow-rumped Warbler (4) | Fox Sparrow (4)          | Song Sparrow (2)         | Red-wing. Blackbird (4) |
| American Robin (2)       | Fox Sparrow (4)           | Song Sparrow (4)         | Dark-eyed Junco (2)      | Brown Creeper (3)       |
| Dark-eyed Junco (2)      | Brown-head. Cowbird (3)   | Black-cap. Chickadee (3) | Purple Finch (2)         |                         |
| Common Grackle (2)       |                           |                          |                          |                         |

**Observations, Spring Week 5 (April 25 - May 1):**

| 2005                      | 2006                     | 2007                     | 2008                     | 2009                     |
|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Canada Goose (102)        | Canada Goose (541)       | Canada Goose (109)       | Canada Goose (203)       | Canada Goose (201)       |
| Red-wing. Blackbird (30)  | Red-wing. Blackbird (79) | Red-wing. Blackbird (65) | Red-wing. Blackbird (49) | Red-wing. Blackbird (43) |
| White-thr. Sparrow (20)   | American Crow (37)       | American Crow (25)       | American Crow (24)       | Snow Goose (29)          |
| Cedar Waxwing (19)        | Ring-billed Gull (35)    | Tree Swallow (16)        | Ring-billed Gull (22)    | American Robin (20)      |
| American Robin (15)       | Dark-eyed Junco (25)     | Song Sparrow (15)        | White-thr. Sparrow (20)  | American Crow (19)       |
| Song Sparrow (13)         | Mallard (20)             | American Goldfinch (13)  | Tree Swallow (12)        | Ring-billed Gull (19)    |
| Black-cap. Chickadee (12) | Common Grackle (19)      | Ruby-cr. Kinglet (12)    | Song Sparrow (11)        | Ruby-cr. Kinglet (17)    |
| American Crow (11)        | Northern Pintail (17)    | American Robin (11)      | American Goldfinch (11)  | Tree Swallow (14)        |
| Tree Swallow (10)         | Tree Swallow (17)        | Black-cap. Chickadee (8) | Ruby-cr. Kinglet (11)    | Song Sparrow (13)        |
| American Goldfinch (10)   | Song Sparrow (15)        | White-thr. Sparrow (8)   | Black-cap. Chickadee (9) | Black-cap. Chickadee (9) |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Canada Goose (79)         | Canada Goose (96)         | Red-wing. Blackbird (86)  | Canada Goose (183)        | Cedar Waxwing (154)       |
| Red-wing. Blackbird (38)  | Red-wing. Blackbird (45)  | Canada Goose (69)         | Red-wing. Blackbird (49)  | Canada Goose (101)        |
| American Crow (25)        | Dark-eyed Junco (26)      | American Crow (26)        | Song Sparrow (16)         | Red-wing. Blackbird (51)  |
| Cedar Waxwing (24)        | American Crow (25)        | White-thr. Sparrow (21)   | White-thr. Sparrow (15)   | American Robin (24)       |
| Tree Swallow (12)         | White-thr. Sparrow (16)   | American Robin (21)       | Black-cap. Chickadee (13) | Ring-billed Gull (22)     |
| Black-cap. Chickadee (10) | Black-cap. Chickadee (16) | Black-cap. Chickadee (18) | American Crow (11)        | Snow Goose (21)           |
| Song Sparrow (10)         | American Robin (13)       | Song Sparrow (18)         | Wood Duck (10)            | Song Sparrow (15)         |
| American Goldfinch (10)   | Tree Swallow (13)         | Ruby-cr. Kinglet (13)     | Ruby-cr. Kinglet (10)     | American Crow (14)        |
| Wood Duck (9)             | Song Sparrow (11)         | Snow Goose (13)           | Ring-billed Gull (10)     | Black-cap. Chickadee (13) |
| American Robin (9)        | Bohemian Waxwing (10)     | Ring-billed Gull (12)     | Fox Sparrow (10)          | White-thr. Sparrow (12)   |

**Banding, Spring Week 6 (May 2 - 8):**

| 2005                     | 2006                     | 2007                     | 2008                     | 2009                    |
|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| Red-wing. Blackbird (21) | Red-wing. Blackbird (42) | Ruby-cr. Kinglet (31)    | White-thr. Sparrow (13)  | White-thr. Sparrow (16) |
| American Goldfinch (16)  | Ruby-cr. Kinglet (32)    | Red-wing. Blackbird (27) | Red-wing. Blackbird (13) | Ruby-cr. Kinglet (7)    |
| Cedar Waxwing (15)       | Common Grackle (24)      | White-thr. Sparrow (7)   | Ruby-cr. Kinglet (10)    | Red-wing. Blackbird (5) |
| White-thr. Sparrow (5)   | White-thr. Sparrow (18)  | American Goldfinch (6)   | American Goldfinch (5)   | Tree Swallow (4)        |
| Swamp Sparrow (4)        | Blue Jay (3)             | Common Grackle (5)       | Tree Swallow (3)         | American Goldfinch (4)  |
| Tree Swallow (3)         | American Robin (3)       | Downy Woodpecker (2)     | White-cr. Sparrow (3)    | Purple Finch (3)        |
| Common Grackle (3)       | White-cr. Sparrow (3)    | Savannah Sparrow (2)     | Common Yellowthroat (2)  | American Robin (2)      |
|                          | Brown-head. Cowbird (3)  |                          | Yellow Warbler (2)       | Song Sparrow (2)        |
|                          | American Goldfinch (3)   |                          | Lincoln's Sparrow (2)    | Brown-head. Cowbird (2) |
|                          |                          |                          | Swamp Sparrow (2)        |                         |

| 2010                      | 2011                       | 2012                     | 2013                     | 2014                     |
|---------------------------|----------------------------|--------------------------|--------------------------|--------------------------|
| Red-wing. Blackbird (19)  | Ruby-cr. Kinglet (30)      | Red-wing. Blackbird (49) | Red-wing. Blackbird (25) | Red-wing. Blackbird (19) |
| Ruby-cr. Kinglet (14)     | White-thr. Sparrow (30)    | White-thr. Sparrow (24)  | Ruby-cr. Kinglet (12)    | White-thr. Sparrow (16)  |
| White-thr. Sparrow (10)   | Yellow-rumped Warbler (26) | Ruby-cr. Kinglet (20)    | White-thr. Sparrow (10)  | Ruby-cr. Kinglet (14)    |
| White-cr. Sparrow (4)     | Red-wing. Blackbird (15)   | Common Grackle (8)       | Swamp Sparrow (7)        | Cedar Waxwing (12)       |
| Tree Swallow (3)          | Swamp Sparrow (7)          | American Goldfinch (8)   | Song Sparrow (5)         | American Robin (6)       |
| Cedar Waxwing (3)         | American Robin (6)         | Tree Swallow (4)         | House Wren (3)           | Song Sparrow (3)         |
| Yellow-rumped Warbler (3) | Cedar Waxwing (3)          | Nashville Warbler (3)    | Nashville Warbler (2)    | Northern Waterthrush (2) |
| Common Grackle (3)        | Common Yellowthroat (3)    | Yellow Warbler (3)       | Chipping Sparrow (2)     | Am. Tree Sparrow (2)     |
|                           |                            | Swamp Sparrow (3)        | Northern Cardinal (2)    | Swamp Sparrow (2)        |
|                           |                            |                          | Common Grackle (2)       |                          |

**Observations, Spring Week 6 (May 2 - 8):**

| 2005                      | 2006                     | 2007                     | 2008                      | 2009                     |
|---------------------------|--------------------------|--------------------------|---------------------------|--------------------------|
| Canada Goose (219)        | Snow Goose (582)         | Canada Goose (431)       | Canada Goose (459)        | Canada Goose (292)       |
| Cedar Waxwing (44)        | Canada Goose (251)       | Red-wing. Blackbird (97) | Snow Goose (150)          | Red-wing. Blackbird (36) |
| Red-wing. Blackbird (29)  | Ring-billed Gull (97)    | Snow Goose (57)          | Red-wing. Blackbird (39)  | American Crow (18)       |
| Tree Swallow (19)         | Red-wing. Blackbird (41) | American Crow (28)       | Cliff Swallow (22)        | Tree Swallow (15)        |
| Song Sparrow (18)         | Common Grackle (35)      | Tree Swallow (27)        | American Crow (21)        | American Goldfinch (10)  |
| American Goldfinch (13)   | American Crow (27)       | Ring-billed Gull (24)    | Tree Swallow (15)         | Black-cap. Chickadee (9) |
| Ring-billed Gull (10)     | American Goldfinch (18)  | Cliff Swallow (21)       | Ring-billed Gull (14)     | Common Grackle (9)       |
| Black-cap. Chickadee (10) | White-thr. Sparrow (17)  | Ruby-cr. Kinglet (18)    | Song Sparrow (12)         | Song Sparrow (8)         |
| American Crow (8)         | Ruby-cr. Kinglet (16)    | Song Sparrow (17)        | White-thr. Sparrow (11)   | American Robin (7)       |
| American Robin (7)        | Tree Swallow (15)        | American Goldfinch (15)  | Black-cap. Chickadee (10) | Ring-billed Gull (6)     |
|                           |                          |                          |                           | Northern Cardinal (6)    |

| 2010                      | 2011                       | 2012                      | 2013                      | 2014                      |
|---------------------------|----------------------------|---------------------------|---------------------------|---------------------------|
| Canada Goose (328)        | Canada Goose (143)         | Canada Goose (195)        | Canada Goose (262)        | Canada Goose (188)        |
| Red-wing. Blackbird (42)  | Red-wing. Blackbird (54)   | Red-wing. Blackbird (71)  | Red-wing. Blackbird (60)  | Red-wing. Blackbird (54)  |
| Cliff Swallow (23)        | Cedar Waxwing (28)         | American Crow (54)        | Ring-billed Gull (26)     | Cedar Waxwing (54)        |
| Cedar Waxwing (18)        | Ruby-cr. Kinglet (27)      | Black-cap. Chickadee (17) | American Crow (22)        | Ring-billed Gull (20)     |
| American Crow (17)        | White-thr. Sparrow (26)    | White-thr. Sparrow (16)   | Blue Jay (19)             | Song Sparrow (18)         |
| American Goldfinch (16)   | American Crow (20)         | Common Grackle (16)       | Black-cap. Chickadee (15) | American Robin (18)       |
| Tree Swallow (15)         | Yellow-rumped Warbler (18) | Ring-billed Gull (15)     | Song Sparrow (15)         | Black-cap. Chickadee (13) |
| Ring-billed Gull (13)     | Black-cap. Chickadee (17)  | Tree Swallow (14)         | White-thr. Sparrow (12)   | White-thr. Sparrow (13)   |
| Black-cap. Chickadee (13) | American Robin (14)        | Ruby-cr. Kinglet (14)     | American Goldfinch (11)   | Tree Swallow (11)         |
| Blue Jay (11)             | Dark-eyed Junco (13)       | Mallard (12)              | Common Grackle (10)       | Ruby-cr. Kinglet (11)     |



**Banding, Spring Week 7 (May 9 - 15):**

| 2005                      | 2006                      | 2007                       | 2008                       | 2009                      |
|---------------------------|---------------------------|----------------------------|----------------------------|---------------------------|
| Yellow Warbler (10)       | Red-wing. Blackbird (25)  | Red-wing. Blackbird (65)   | Red-wing. Blackbird (33)   | Red-wing. Blackbird (21)  |
| Red-wing. Blackbird (9)   | Common Grackle (14)       | Yellow-rumped Warbler (19) | White-thr. Sparrow (29)    | Common Grackle (12)       |
| American Goldfinch (7)    | American Goldfinch (8)    | American Goldfinch (18)    | Yellow-rumped Warbler (24) | Yellow Warbler (8)        |
| White-thr. Sparrow (6)    | White-thr. Sparrow (7)    | Yellow Warbler (16)        | Ruby-cr. Kinglet (20)      | American Goldfinch (8)    |
| Rose-breast. Grosbeak (3) | Yellow-rumped Warbler (5) | Ruby-cr. Kinglet (10)      | White-cr. Sparrow (15)     | Ruby-cr. Kinglet (7)      |
| Common Grackle (3)        | Yellow Warbler (3)        | Baltimore Oriole (8)       | American Goldfinch (6)     | White-thr. Sparrow (7)    |
| Baltimore Oriole (3)      | Baltimore Oriole (3)      | Nashville Warbler (5)      | Brown-head. Cowbird (5)    | Baltimore Oriole (7)      |
| Least Flycatcher (2)      |                           | Magnolia Warbler (5)       | Baltimore Oriole (5)       | Nashville Warbler (6)     |
| Ruby-cr. Kinglet (2)      |                           | White-thr. Sparrow (5)     | Common Yellowthroat (4)    | Common Yellowthroat (5)   |
| Gray Catbird (2)          |                           | Black-cap. Chickadee (4)   |                            | Yellow-rumped Warbler (5) |
|                           |                           | Lincoln's Sparrow (4)      |                            | White-cr. Sparrow (5)     |
|                           |                           | Common Grackle (4)         |                            |                           |

| 2010                       | 2011                       | 2012                       | 2013                       | 2014                       |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Yellow-rumped Warbler (19) | Red-wing. Blackbird (23)   | Yellow-rumped Warbler (41) | Red-wing. Blackbird (24)   | Yellow-rumped Warbler (45) |
| White-cr. Sparrow (11)     | Yellow-rumped Warbler (22) | Red-wing. Blackbird (19)   | Yellow-rumped Warbler (15) | American Goldfinch (26)    |
| American Goldfinch (10)    | Cedar Waxwing (9)          | Tennessee Warbler (16)     | Yellow Warbler (10)        | Ruby-cr. Kinglet (24)      |
| Red-wing. Blackbird (9)    | Common Yellowthroat (9)    | Yellow Warbler (13)        | White-thr. Sparrow (9)     | Magnolia Warbler (19)      |
| Yellow Warbler (7)         | Yellow Warbler (7)         | Ruby-cr. Kinglet (10)      | Nashville Warbler (6)      | Red-wing. Blackbird (17)   |
| White-thr. Sparrow (7)     | White-thr. Sparrow (7)     | Nashville Warbler (10)     | Common Yellowthroat (5)    | Northern Waterthrush (16)  |
| Ruby-cr. Kinglet (6)       | White-cr. Sparrow (7)      | Magnolia Warbler (8)       | Northern Waterthrush (4)   | Common Yellowthroat (16)   |
| American Robin (6)         | Magnolia Warbler (6)       | White-cr. Sparrow (8)      | Chipping Sparrow (4)       | Yellow Warbler (15)        |
| Common Grackle (5)         | Ruby-cr. Kinglet (5)       | Warbling Vireo (6)         | Common Grackle (4)         | Least Flycatcher (14)      |
| Gray Catbird (4)           | Lincoln's Sparrow (5)      | Gray Catbird (6)           |                            | Baltimore Oriole (11)      |
| Nashville Warbler (4)      |                            | Northern Waterthrush (6)   |                            |                            |
| Swamp Sparrow (4)          |                            | Lincoln's Sparrow (6)      |                            |                            |
|                            |                            | Baltimore Oriole (6)       |                            |                            |

**Observations, Spring Week 7 (May 9 - 15):**

| 2005                     | 2006                     | 2007                      | 2008                       | 2009                     |
|--------------------------|--------------------------|---------------------------|----------------------------|--------------------------|
| Ring-billed Gull (39)    | Ring-billed Gull (99)    | Red-wing. Blackbird (125) | Red-wing. Blackbird (72)   | Canada Goose (37)        |
| Red-wing. Blackbird (28) | Red-wing. Blackbird (50) | Tree Swallow (28)         | Canada Goose (39)          | Cliff Swallow (35)       |
| Tree Swallow (19)        | Cliff Swallow (37)       | Ring-billed Gull (24)     | Cliff Swallow (30)         | Red-wing. Blackbird (33) |
| American Crow (18)       | Mallard (30)             | American Goldfinch (20)   | Ring-billed Gull (21)      | Ring-billed Gull (18)    |
| Song Sparrow (12)        | Common Grackle (28)      | American Crow (19)        | American Crow (21)         | Tree Swallow (17)        |
| Canada Goose (11)        | American Crow (28)       | Yellow Warbler (18)       | White-thr. Sparrow (18)    | Common Grackle (14)      |
| American Goldfinch (11)  | Tree Swallow (25)        | Cliff Swallow (13)        | Yellow-rumped Warbler (16) | American Crow (11)       |
| Common Grackle (9)       | American Goldfinch (21)  | Common Grackle (13)       | American Goldfinch (15)    | Song Sparrow (10)        |
| White-thr. Sparrow (8)   | Song Sparrow (13)        | Canada Goose (13)         | Tree Swallow (15)          | American Goldfinch (9)   |
| Black-cap. Chickadee (6) | Yellow Warbler (12)      | Song Sparrow (13)         | Song Sparrow (12)          | Yellow Warbler (9)       |
| Yellow Warbler (6)       |                          |                           |                            |                          |

| 2010                       | 2011                       | 2012                       | 2013                       | 2014                       |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Canada Goose (46)          | Canada Goose (120)         | Canada Goose (128)         | Ring-billed Gull (81)      | Canada Goose (96)          |
| Red-wing. Blackbird (43)   | Red-wing. Blackbird (47)   | Red-wing. Blackbird (58)   | Canada Goose (58)          | Ring-billed Gull (84)      |
| Ring-billed Gull (31)      | Yellow-rumped Warbler (29) | Ring-billed Gull (43)      | Red-wing. Blackbird (56)   | Red-wing. Blackbird (51)   |
| Cedar Waxwing (23)         | Ring-billed Gull (22)      | American Crow (30)         | American Crow (24)         | Yellow-rumped Warbler (20) |
| Cliff Swallow (19)         | American Crow (17)         | Yellow Warbler (21)        | Yellow Warbler (14)        | Cedar Waxwing (18)         |
| American Crow (18)         | White-thr. Sparrow (14)    | Baltimore Oriole (18)      | Yellow-rumped Warbler (12) | Song Sparrow (16)          |
| Tree Swallow (15)          | Cedar Waxwing (10)         | Common Grackle (17)        | Song Sparrow (11)          | American Goldfinch (14)    |
| American Goldfinch (14)    | Tree Swallow (9)           | Yellow-rumped Warbler (16) | Black-cap. Chickadee (11)  | Black-cap. Chickadee (11)  |
| Yellow-rumped Warbler (13) | Black-cap. Chickadee (9)   | Snow Goose (14)            | Common Grackle (11)        | Yellow Warbler (11)        |
| Yellow Warbler (12)        | American Goldfinch (8)     | Black-cap. Chickadee (14)  | White-thr. Sparrow (9)     | Cliff Swallow (11)         |



**Banding, Spring Week 8 (May 16 - 22):**

| 2005                      | 2006                       | 2007                      | 2008                       | 2009                       |
|---------------------------|----------------------------|---------------------------|----------------------------|----------------------------|
| American Goldfinch (34)   | Red-wing. Blackbird (20)   | Red-wing. Blackbird (22)  | Yellow Warbler (24)        | Tennessee Warbler (36)     |
| Yellow Warbler (27)       | Yellow-rumped Warbler (13) | Tennessee Warbler (12)    | Red-wing. Blackbird (20)   | Yellow Warbler (29)        |
| Common Yellowthroat (11)  | Common Yellowthroat (11)   | American Goldfinch (11)   | Yellow-rumped Warbler (11) | Magnolia Warbler (26)      |
| Red-wing. Blackbird (11)  | Magnolia Warbler (10)      | Nashville Warbler (8)     | White-cr. Sparrow (10)     | Yellow-rumped Warbler (26) |
| Rose-breast. Grosbeak (9) | Gray Catbird (7)           | Yellow-rumped Warbler (6) | American Goldfinch (9)     | White-cr. Sparrow (20)     |
| Yellow-rumped Warbler (8) | Common Grackle (6)         | Ruby-cr. Kinglet (5)      | Common Yellowthroat (8)    | Common Yellowthroat (17)   |
| Common Grackle (6)        | Baltimore Oriole (6)       | Gray Catbird (5)          | Magnolia Warbler (7)       | Red-wing. Blackbird (16)   |
| Least Flycatcher (5)      | Yellow Warbler (5)         | Yellow Warbler (5)        | Baltimore Oriole (7)       | Northern Waterthrush (15)  |
| Ruby-cr. Kinglet (4)      | White-cr. Sparrow (5)      | Warbling Vireo (4)        | Gray Catbird (6)           | Wilson's Warbler (15)      |
| Cedar Waxwing (4)         | Lincoln's Sparrow (4)      | Common Yellowthroat (4)   | Rose-breast. Grosbeak (5)  | American Goldfinch (13)    |
|                           | White-thr. Sparrow (4)     | Magnolia Warbler (4)      |                            |                            |
|                           | Rose-breast. Grosbeak (4)  | Common Grackle (4)        |                            |                            |

| 2010                      | 2011                       | 2012                      | 2013                      | 2014                      |
|---------------------------|----------------------------|---------------------------|---------------------------|---------------------------|
| Red-wing. Blackbird (18)  | Yellow-rumped Warbler (48) | Tennessee Warbler (48)    | Magnolia Warbler (51)     | Magnolia Warbler (39)     |
| Yellow Warbler (12)       | Tennessee Warbler (23)     | Magnolia Warbler (18)     | Tennessee Warbler (38)    | Tennessee Warbler (25)    |
| American Goldfinch (12)   | Red-wing. Blackbird (13)   | Yellow Warbler (17)       | Yellow Warbler (25)       | Yellow Warbler (16)       |
| Cedar Waxwing (9)         | Common Yellowthroat (10)   | American Goldfinch (17)   | Northern Waterthrush (23) | Northern Waterthrush (15) |
| Northern Waterthrush (8)  | Northern Waterthrush (8)   | Northern Waterthrush (15) | White-cr. Sparrow (14)    | American Goldfinch (15)   |
| Common Yellowthroat (8)   | Magnolia Warbler (8)       | Common Yellowthroat (15)  | Red-wing. Blackbird (11)  | Common Yellowthroat (12)  |
| Yellow-rumped Warbler (8) | Yellow Warbler (8)         | Cedar Waxwing (9)         | Gray Catbird (10)         | Yellow-rumped Warbler (8) |
| Tennessee Warbler (6)     | Blackpoll Warbler (8)      | Red-wing. Blackbird (9)   | Common Yellowthroat (9)   | Red-wing. Blackbird (8)   |
| White-cr. Sparrow (6)     | American Redstart (7)      | Gray Catbird (7)          | Least Flycatcher (8)      | Wilson's Warbler (7)      |
| Gray Catbird (5)          | Baltimore Oriole (7)       | American Redstart (5)     | Nashville Warbler (5)     | Gray Catbird (6)          |
| Wilson's Warbler (5)      |                            | Common Grackle (5)        | Yellow-rumped Warbler (5) | Baltimore Oriole (6)      |
| Song Sparrow (5)          |                            |                           | Canada Warbler (5)        |                           |
| Baltimore Oriole (5)      |                            |                           | Lincoln's Sparrow (5)     |                           |

**Observations, Spring Week 8 (May 16 - 22):**

| 2005                     | 2006                       | 2007                     | 2008                     | 2009                     |
|--------------------------|----------------------------|--------------------------|--------------------------|--------------------------|
| Ring-billed Gull (48)    | Red-wing. Blackbird (36)   | Red-wing. Blackbird (57) | Red-wing. Blackbird (54) | Ring-billed Gull (79)    |
| Tree Swallow (21)        | American Crow (31)         | Greater Scaup (25)       | Yellow Warbler (17)      | Red-wing. Blackbird (36) |
| Red-wing. Blackbird (21) | Ring-billed Gull (23)      | Tree Swallow (22)        | Cliff Swallow (16)       | Cliff Swallow (22)       |
| Yellow Warbler (17)      | Mallard (19)               | American Crow (22)       | American Crow (16)       | American Crow (15)       |
| American Goldfinch (13)  | American Goldfinch (15)    | American Goldfinch (16)  | Tree Swallow (13)        | Yellow Warbler (14)      |
| Song Sparrow (12)        | Yellow Warbler (15)        | Yellow Warbler (16)      | Ring-billed Gull (12)    | Tree Swallow (14)        |
| Common Grackle (10)      | Common Grackle (14)        | Wood Duck (13)           | American Goldfinch (12)  | Tennessee Warbler (13)   |
| American Crow (9)        | Tree Swallow (13)          | Ring-billed Gull (11)    | Baltimore Oriole (10)    | Common Grackle (10)      |
| Canada Goose (6)         | Canada Goose (11)          | Canada Goose (9)         | Song Sparrow (9)         | American Goldfinch (10)  |
| Baltimore Oriole (6)     | Yellow-rumped Warbler (11) | Black-cap. Chickadee (9) | Common Grackle (9)       | Canada Goose (10)        |
|                          |                            | Song Sparrow (9)         |                          |                          |

| 2010                     | 2011                       | 2012                     | 2013                      | 2014                     |
|--------------------------|----------------------------|--------------------------|---------------------------|--------------------------|
| Ring-billed Gull (44)    | Red-wing. Blackbird (48)   | Red-wing. Blackbird (41) | Ring-billed Gull (53)     | Ring-billed Gull (55)    |
| Red-wing. Blackbird (41) | Yellow-rumped Warbler (26) | American Crow (25)       | Red-wing. Blackbird (51)  | Red-wing. Blackbird (44) |
| Cliff Swallow (38)       | American Crow (15)         | Cedar Waxwing (20)       | American Crow (27)        | Yellow Warbler (15)      |
| Tree Swallow (18)        | Ring-billed Gull (14)      | Tennessee Warbler (18)   | Yellow Warbler (20)       | Song Sparrow (13)        |
| American Goldfinch (14)  | Cedar Waxwing (13)         | Yellow Warbler (16)      | Cliff Swallow (15)        | Tennessee Warbler (13)   |
| American Crow (13)       | Yellow Warbler (12)        | American Goldfinch (13)  | Baltimore Oriole (15)     | Baltimore Oriole (12)    |
| Yellow Warbler (13)      | Baltimore Oriole (11)      | Common Grackle (11)      | Common Grackle (14)       | Common Yellowthroat (12) |
| Cedar Waxwing (13)       | Canada Goose (10)          | Tree Swallow (10)        | Black-cap. Chickadee (12) | American Goldfinch (11)  |
| Canada Goose (8)         | Tree Swallow (9)           | Baltimore Oriole (10)    | Canada Goose (11)         | American Crow (11)       |
| Common Grackle (8)       | American Goldfinch (9)     | Ring-billed Gull (9)     | American Goldfinch (10)   | Magnolia Warbler (10)    |

**Banding, Spring Week 9 (May 23 - 29):**

| 2005                       | 2006                     | 2007                      | 2008                      | 2009                      |
|----------------------------|--------------------------|---------------------------|---------------------------|---------------------------|
| American Goldfinch (20)    | Red-wing. Blackbird (21) | Blackpoll Warbler (34)    | Red-wing. Blackbird (21)  | Tennessee Warbler (44)    |
| Yellow-rumped Warbler (11) | Common Yellowthroat (13) | Red-wing. Blackbird (12)  | Wilson's Warbler (19)     | Blackpoll Warbler (25)    |
| Common Yellowthroat (9)    | Yellow Warbler (13)      | Cedar Waxwing (10)        | Blackpoll Warbler (17)    | American Goldfinch (18)   |
| Yellow Warbler (9)         | Wilson's Warbler (12)    | Northern Waterthrush (9)  | Cedar Waxwing (11)        | Magnolia Warbler (12)     |
| American Robin (6)         | Magnolia Warbler (11)    | Gray Catbird (8)          | Magnolia Warbler (11)     | Cedar Waxwing (10)        |
| Baltimore Oriole (6)       | American Goldfinch (9)   | American Goldfinch (8)    | Common Yellowthroat (10)  | Wilson's Warbler (9)      |
| Red-wing. Blackbird (5)    | Cedar Waxwing (8)        | Yellow Warbler (7)        | Yellow Warbler (9)        | Traill's Flycatcher (8)   |
| American Redstart (4)      | Northern Waterthrush (4) | Yellow-rumped Warbler (7) | Yellow-rumped Warbler (9) | Northern Waterthrush (7)  |
| Common Grackle (4)         | Common Grackle (4)       | Wilson's Warbler (7)      | Northern Waterthrush (8)  | Yellow-rumped Warbler (6) |
|                            |                          | Baltimore Oriole (7)      | American Goldfinch (8)    | Common Yellowthroat (4)   |
|                            |                          |                           |                           | Common Grackle (4)        |

| 2010                    | 2011                      | 2012                     | 2013                      | 2014                      |
|-------------------------|---------------------------|--------------------------|---------------------------|---------------------------|
| Cedar Waxwing (23)      | Tennessee Warbler (46)    | Cedar Waxwing (38)       | Northern Waterthrush (14) | Tennessee Warbler (100)   |
| American Goldfinch (13) | Blackpoll Warbler (31)    | Tennessee Warbler (30)   | Magnolia Warbler (14)     | Traill's Flycatcher (25)  |
| Red-wing. Blackbird (8) | Cedar Waxwing (24)        | Wilson's Warbler (16)    | Blackpoll Warbler (14)    | Cedar Waxwing (24)        |
| Baltimore Oriole (6)    | Traill's Flycatcher (17)  | American Goldfinch (14)  | Tennessee Warbler (11)    | Wilson's Warbler (24)     |
| Traill's Flycatcher (5) | Northern Waterthrush (15) | Magnolia Warbler (13)    | Traill's Flycatcher (10)  | Magnolia Warbler (21)     |
| Gray Catbird (4)        | Yellow Warbler (13)       | American Redstart (12)   | Wilson's Warbler (9)      | Northern Waterthrush (13) |
| Common Yellowthroat (4) | Magnolia Warbler (12)     | Traill's Flycatcher (11) | Common Yellowthroat (7)   | Red-wing. Blackbird (11)  |
| Yellow Warbler (4)      | Wilson's Warbler (8)      | Blackpoll Warbler (9)    | Gray Catbird (6)          | Common Yellowthroat (10)  |
| Blackpoll Warbler (4)   | Common Yellowthroat (7)   | Gray Catbird (6)         | Cedar Waxwing (6)         | Blackpoll Warbler (9)     |
| Song Sparrow (4)        | Canada Warbler (7)        | Northern Waterthrush (6) | Yellow Warbler (6)        | Common Grackle (9)        |
|                         | American Goldfinch (7)    |                          |                           |                           |

**Observations, Spring Week 9 (May 23 - 29):**

| 2005                     | 2006                     | 2007                     | 2008                     | 2009                     |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Ring-billed Gull (33)    | Ring-billed Gull (43)    | Red-wing. Blackbird (49) | Red-wing. Blackbird (41) | Ring-billed Gull (41)    |
| Red-wing. Blackbird (23) | Red-wing. Blackbird (38) | Tree Swallow (22)        | Cliff Swallow (32)       | Red-wing. Blackbird (28) |
| Tree Swallow (18)        | Canada Goose (32)        | American Crow (21)       | Ring-billed Gull (18)    | Cliff Swallow (21)       |
| Yellow Warbler (15)      | Mallard (26)             | Wood Duck (17)           | Yellow Warbler (17)      | American Crow (19)       |
| American Goldfinch (13)  | American Crow (23)       | Yellow Warbler (15)      | Tree Swallow (14)        | American Goldfinch (13)  |
| Song Sparrow (12)        | American Goldfinch (21)  | Cliff Swallow (13)       | American Crow (14)       | Tree Swallow (13)        |
| American Crow (11)       | Yellow Warbler (21)      | American Goldfinch (13)  | Canada Goose (13)        | Yellow Warbler (12)      |
| Cedar Waxwing (8)        | Cedar Waxwing (15)       | Canada Goose (11)        | American Goldfinch (10)  | Cedar Waxwing (11)       |
| Common Yellowthroat (8)  | Tree Swallow (14)        | Common Grackle (9)       | Cedar Waxwing (9)        | Blackpoll Warbler (11)   |
| Baltimore Oriole (8)     | Song Sparrow (11)        | Cedar Waxwing (9)        | Common Grackle (8)       | Common Grackle (9)       |
|                          |                          | Blackpoll Warbler (9)    |                          |                          |
|                          |                          | Baltimore Oriole (9)     |                          |                          |

| 2010                     | 2011                     | 2012                     | 2013                     | 2014                     |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Cliff Swallow (33)       | Red-wing. Blackbird (39) | Red-wing. Blackbird (32) | Red-wing. Blackbird (34) | Ring-billed Gull (129)   |
| Red-wing. Blackbird (23) | Cedar Waxwing (25)       | Cedar Waxwing (23)       | American Crow (18)       | Red-wing. Blackbird (34) |
| Cedar Waxwing (16)       | Tree Swallow (20)        | American Crow (18)       | Yellow Warbler (13)      | Cedar Waxwing (34)       |
| American Crow (15)       | Ring-billed Gull (17)    | Yellow Warbler (12)      | Tennessee Warbler (8)    | American Crow (29)       |
| Tree Swallow (14)        | Cliff Swallow (16)       | American Goldfinch (11)  | Common Yellowthroat (8)  | Tennessee Warbler (28)   |
| American Goldfinch (12)  | Blackpoll Warbler (15)   | Tennessee Warbler (10)   | Song Sparrow (8)         | Yellow Warbler (13)      |
| Ring-billed Gull (11)    | American Crow (15)       | Tree Swallow (9)         | Baltimore Oriole (8)     | Song Sparrow (12)        |
| Yellow Warbler (9)       | Yellow Warbler (15)      | Ring-billed Gull (9)     | Cliff Swallow (7)        | American Goldfinch (11)  |
| Mallard (8)              | Tennessee Warbler (14)   | Baltimore Oriole (8)     | Blackpoll Warbler (7)    | Common Grackle (11)      |
| Baltimore Oriole (8)     | American Goldfinch (11)  | Common Grackle (8)       | American Goldfinch (6)   | Common Yellowthroat (10) |

**Banding, Spring Week 10 (May 30 - June 5):**

| 2005                    | 2006                     | 2007                     | 2008                    | 2009                    |
|-------------------------|--------------------------|--------------------------|-------------------------|-------------------------|
| Cedar Waxwing (14)      | Cedar Waxwing (6)        | Blackpoll Warbler (10)   | Cedar Waxwing (17)      | Blackpoll Warbler (7)   |
| American Goldfinch (12) | Red-wing. Blackbird (4)  | Cedar Waxwing (7)        | Blackpoll Warbler (7)   | Traill's Flycatcher (4) |
| Common Grackle (4)      | Traill's Flycatcher (2)  | Red-wing. Blackbird (6)  | Red-wing. Blackbird (7) | Wilson's Warbler (4)    |
| Traill's Flycatcher (3) | Black-cap. Chickadee (2) | Common Yellowthroat (3)  | Traill's Flycatcher (6) | Red-eyed Vireo (2)      |
| Gray Catbird (2)        | Blackpoll Warbler (2)    | Magnolia Warbler (3)     | Wilson's Warbler (4)    | Cedar Waxwing (2)       |
| Wilson's Warbler (2)    | White-thr. Sparrow (2)   | American Goldfinch (3)   | Tennessee Warbler (3)   | Tennessee Warbler (2)   |
| Chipping Sparrow (2)    |                          | Traill's Flycatcher (2)  | American Robin (2)      | Common Yellowthroat (2) |
| Baltimore Oriole (2)    |                          | Northern Waterthrush (2) | Common Grackle (2)      | Magnolia Warbler (2)    |
|                         |                          |                          |                         | American Goldfinch (2)  |

| 2010                    | 2011                     | 2012                     | 2013                    | 2014                    |
|-------------------------|--------------------------|--------------------------|-------------------------|-------------------------|
| Cedar Waxwing (8)       | Cedar Waxwing (7)        | Cedar Waxwing (29)       | Traill's Flycatcher (4) | Tennessee Warbler (16)  |
| Red-wing. Blackbird (4) | Blackpoll Warbler (5)    | Blackpoll Warbler (7)    | Wilson's Warbler (4)    | Cedar Waxwing (11)      |
| Yellow Warbler (3)      | Northern Waterthrush (3) | Traill's Flycatcher (4)  | Gray Catbird (2)        | Common Grackle (10)     |
| Tree Swallow (2)        | Common Grackle (3)       | Wilson's Warbler (4)     | Song Sparrow (2)        | Traill's Flycatcher (7) |
| Magnolia Warbler (2)    | Traill's Flycatcher (2)  | Red-wing. Blackbird (4)  | Indigo Bunting (2)      | American Goldfinch (7)  |
| Baltimore Oriole (2)    | Gray Catbird (2)         | Least Flycatcher (2)     | Baltimore Oriole (2)    | Magnolia Warbler (3)    |
|                         | Yellow Warbler (2)       | Gray Catbird (2)         |                         | Wilson's Warbler (3)    |
|                         | Wilson's Warbler (2)     | Yellow Warbler (2)       |                         |                         |
|                         | Red-wing. Blackbird (2)  | Chest.-sided Warbler (2) |                         |                         |

**Observations, Spring Week 10 (May 30 - June 5):**

| 2005                     | 2006                     | 2007                     | 2008                     | 2009                     |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Red-wing. Blackbird (25) | Red-wing. Blackbird (26) | Red-wing. Blackbird (35) | Red-wing. Blackbird (36) | Red-wing. Blackbird (28) |
| Yellow Warbler (19)      | Mallard (16)             | American Crow (20)       | American Crow (14)       | Ring-billed Gull (14)    |
| Ring-billed Gull (19)    | Canada Goose (15)        | Tree Swallow (16)        | American Goldfinch (12)  | American Crow (13)       |
| Tree Swallow (17)        | Yellow Warbler (15)      | American Goldfinch (10)  | Tree Swallow (12)        | Tree Swallow (9)         |
| American Crow (16)       | Cedar Waxwing (13)       | Cedar Waxwing (9)        | Cedar Waxwing (11)       | Yellow Warbler (9)       |
| American Goldfinch (16)  | American Goldfinch (13)  | Yellow Warbler (9)       | Yellow Warbler (10)      | Cliff Swallow (8)        |
| Song Sparrow (13)        | Tree Swallow (10)        | Common Yellowthroat (6)  | Ring-billed Gull (9)     | Cedar Waxwing (7)        |
| Cedar Waxwing (12)       | Song Sparrow (10)        | Cliff Swallow (6)        | Cliff Swallow (9)        | Song Sparrow (7)         |
| Common Grackle (8)       | Ring-billed Gull (10)    | Song Sparrow (6)         | Song Sparrow (9)         | American Goldfinch (6)   |
| Baltimore Oriole (8)     | American Crow (9)        | Wood Duck (5)            | European Starling (8)    | Black-cap. Chickadee (5) |

| 2010                     | 2011                     | 2012                     | 2013                     | 2014                     |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Red-wing. Blackbird (22) | Canada Goose (36)        | Red-wing. Blackbird (32) | Red-wing. Blackbird (32) | Ring-billed Gull (39)    |
| Cedar Waxwing (13)       | Red-wing. Blackbird (32) | Cedar Waxwing (17)       | Cedar Waxwing (19)       | Red-wing. Blackbird (29) |
| Tree Swallow (10)        | Cedar Waxwing (26)       | American Crow (15)       | Yellow Warbler (13)      | Cedar Waxwing (28)       |
| Ring-billed Gull (9)     | Ring-billed Gull (25)    | Tree Swallow (8)         | Cliff Swallow (12)       | Song Sparrow (11)        |
| American Crow (8)        | American Crow (19)       | Yellow Warbler (8)       | American Crow (9)        | Yellow Warbler (10)      |
| Yellow Warbler (7)       | Yellow Warbler (10)      | Song Sparrow (8)         | Blue Jay (9)             | American Crow (10)       |
| Song Sparrow (7)         | Common Grackle (9)       | Canada Goose (8)         | Song Sparrow (8)         | Cliff Swallow (10)       |
| Baltimore Oriole (7)     | Cliff Swallow (8)        | Black-cap. Chickadee (8) | Baltimore Oriole (7)     | Tennessee Warbler (9)    |
| American Goldfinch (7)   | Tree Swallow (7)         | American Goldfinch (7)   | Common Yellowthroat (7)  | Common Grackle (8)       |
| Cliff Swallow (5)        | Common Yellowthroat (7)  | House Wren (6)           | Common Grackle (6)       | American Goldfinch (8)   |
|                          | Baltimore Oriole (7)     |                          | American Goldfinch (6)   |                          |

**Bandings, Spring Season (March 28 - June 5):**

| 2005                       | 2006                       | 2007                       | 2008                       | 2009                       |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| American Goldfinch (111)   | Red-wing. Blackbird (169)  | Red-wing. Blackbird (155)  | Red-wing. Blackbird (114)  | Tennessee Warbler (82)     |
| Red-wing. Blackbird (73)   | Common Grackle (59)        | Ruby-cr. Kinglet (52)      | Ruby-cr. Kinglet (92)      | Ruby-cr. Kinglet (73)      |
| Cedar Waxwing (59)         | Ruby-cr. Kinglet (58)      | American Goldfinch (51)    | White-thr. Sparrow (79)    | Red-wing. Blackbird (50)   |
| Yellow Warbler (47)        | Dark-eyed Junco (48)       | Blackpoll Warbler (47)     | Yellow-rumped Warbler (47) | American Goldfinch (47)    |
| Song Sparrow (30)          | White-thr. Sparrow (42)    | Yellow-rumped Warbler (32) | American Goldfinch (41)    | Yellow Warbler (43)        |
| White-thr. Sparrow (29)    | American Goldfinch (32)    | Yellow Warbler (29)        | Yellow Warbler (36)        | Magnolia Warbler (41)      |
| Yellow-rumped Warbler (25) | Common Yellowthroat (25)   | Common Grackle (18)        | White-cr. Sparrow (30)     | Blackpoll Warbler (39)     |
| Common Yellowthroat (22)   | Magnolia Warbler (22)      | Baltimore Oriole (18)      | Cedar Waxwing (29)         | Yellow-rumped Warbler (37) |
| Ruby-cr. Kinglet (20)      | Yellow-rumped Warbler (22) | Cedar Waxwing (17)         | Common Yellowthroat (25)   | White-thr. Sparrow (34)    |
| Common Grackle (20)        | Yellow Warbler (21)        | Magnolia Warbler (17)      | Blackpoll Warbler (24)     | Common Yellowthroat (28)   |
|                            |                            |                            | Wilson's Warbler (24)      | Wilson's Warbler (28)      |

| 2010                       | 2011                        | 2012                       | 2013                       | 2014                       |
|----------------------------|-----------------------------|----------------------------|----------------------------|----------------------------|
| Red-wing. Blackbird (85)   | Yellow-rumped Warbler (102) | Red-wing. Blackbird (116)  | Red-wing. Blackbird (83)   | Cedar Waxwing (232)        |
| Cedar Waxwing (72)         | Tennessee Warbler (71)      | Tennessee Warbler (94)     | Magnolia Warbler (66)      | Tennessee Warbler (142)    |
| American Goldfinch (45)    | Red-wing. Blackbird (70)    | Cedar Waxwing (77)         | Tennessee Warbler (49)     | Magnolia Warbler (82)      |
| Ruby-cr. Kinglet (36)      | White-thr. Sparrow (51)     | White-thr. Sparrow (57)    | Northern Waterthrush (43)  | Ruby-cr. Kinglet (71)      |
| Yellow-rumped Warbler (30) | Cedar Waxwing (50)          | Ruby-cr. Kinglet (54)      | Yellow Warbler (43)        | Red-wing. Blackbird (63)   |
| Song Sparrow (27)          | Blackpoll Warbler (45)      | American Goldfinch (51)    | Fox Sparrow (42)           | American Goldfinch (60)    |
| Yellow Warbler (26)        | Ruby-cr. Kinglet (43)       | Yellow-rumped Warbler (46) | White-thr. Sparrow (40)    | Yellow-rumped Warbler (56) |
| White-thr. Sparrow (22)    | Dark-eyed Junco (36)        | Magnolia Warbler (39)      | Ruby-cr. Kinglet (39)      | Northern Waterthrush (48)  |
| White-cr. Sparrow (21)     | American Robin (30)         | Yellow Warbler (37)        | Swamp Sparrow (26)         | American Robin (44)        |
| American Robin (17)        | Common Yellowthroat (30)    | Northern Waterthrush (28)  | Common Yellowthroat (23)   | Common Yellowthroat (40)   |
| Common Yellowthroat (17)   | Yellow Warbler (30)         |                            | Yellow-rumped Warbler (23) | White-thr. Sparrow (40)    |

**Observations, Spring Season (March 28 - June 5):**

| 2005                     | 2006                     | 2007                     | 2008                     | 2009                     |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Canada Goose (83)        | Canada Goose (401)       | Canada Goose (237)       | Canada Goose (190)       | Canada Goose (119)       |
| Red-wing. Blackbird (25) | Snow Goose (64)          | Snow Goose (88)          | Snow Goose (47)          | Snow Goose (48)          |
| Cedar Waxwing (20)       | Ring-billed Gull (52)    | Red-wing. Blackbird (62) | Red-wing. Blackbird (46) | Red-wing. Blackbird (34) |
| Ring-billed Gull (20)    | Red-wing. Blackbird (44) | American Crow (23)       | Ring-billed Gull (19)    | Ring-billed Gull (25)    |
| Song Sparrow (14)        | American Crow (26)       | Ring-billed Gull (15)    | American Crow (17)       | American Crow (17)       |
| Tree Swallow (14)        | Mallard (17)             | Tree Swallow (14)        | Cliff Swallow (11)       | American Robin (11)      |
| American Crow (14)       | Song Sparrow (14)        | Song Sparrow (11)        | Song Sparrow (10)        | Song Sparrow (10)        |
| American Goldfinch (11)  | Common Grackle (13)      | American Goldfinch (11)  | Tree Swallow (10)        | Cliff Swallow (10)       |
| American Robin (8)       | American Robin (13)      | American Robin (10)      | Common Grackle (8)       | Tree Swallow (9)         |
| Black-cap. Chickadee (8) | American Goldfinch (12)  | Black-cap. Chickadee (9) | American Goldfinch (8)   | Black-cap. Chickadee (8) |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Canada Goose (77)         | Canada Goose (157)        | Canada Goose (112)        | Canada Goose (126)        | Canada Goose (116)        |
| Red-wing. Blackbird (37)  | Snow Goose (56)           | Red-wing. Blackbird (49)  | Red-wing. Blackbird (48)  | Red-wing. Blackbird (44)  |
| American Crow (19)        | Red-wing. Blackbird (43)  | American Crow (25)        | Ring-billed Gull (23)     | Cedar Waxwing (44)        |
| Cedar Waxwing (17)        | American Crow (18)        | Ring-billed Gull (15)     | American Crow (15)        | Ring-billed Gull (42)     |
| Ring-billed Gull (13)     | Cedar Waxwing (17)        | American Robin (14)       | Black-cap. Chickadee (12) | American Robin (15)       |
| Cliff Swallow (12)        | Ring-billed Gull (16)     | Black-cap. Chickadee (13) | Song Sparrow (11)         | Song Sparrow (13)         |
| Tree Swallow (11)         | Bohemian Waxwing (12)     | Song Sparrow (11)         | Snow Goose (10)           | American Crow (11)        |
| Black-cap. Chickadee (10) | Black-cap. Chickadee (12) | Mallard (10)              | Blue Jay (7)              | Black-cap. Chickadee (10) |
| American Goldfinch (9)    | Dark-eyed Junco (11)      | Cedar Waxwing (10)        | American Robin (7)        | American Goldfinch (7)    |
| Song Sparrow (9)          | American Robin (10)       | Wood Duck (10)            | Common Grackle (7)        | Snow Goose (6)            |



**Banding, Fall Week 1 (August 1 - 7):**

| 2005                     | 2006                      | 2007                       | 2008                       | 2009                       |
|--------------------------|---------------------------|----------------------------|----------------------------|----------------------------|
| Song Sparrow (17)        | Song Sparrow (34)         | Song Sparrow (57)          | Yellow Warbler (24)        | Yellow Warbler (25)        |
| Black-cap. Chickadee (9) | Yellow Warbler (23)       | Yellow Warbler (27)        | Song Sparrow (21)          | Song Sparrow (25)          |
| Yellow Warbler (6)       | Baltimore Oriole (14)     | Baltimore Oriole (17)      | Baltimore Oriole (16)      | Rose-breast. Grosbeak (16) |
| American Robin (4)       | Gray Catbird (8)          | Rose-breast. Grosbeak (14) | Rose-breast. Grosbeak (15) | American Redstart (15)     |
| Gray Catbird (4)         | Rose-breast. Grosbeak (8) | House Wren (11)            | Gray Catbird (12)          | House Wren (13)            |
| Swamp Sparrow (4)        | Black-cap. Chickadee (6)  | Swamp Sparrow (10)         | Traill's Flycatcher (10)   | Cedar Waxwing (12)         |
| Tennessee Warbler (3)    | Downy Woodpecker (5)      | American Redstart (9)      | Black-cap. Chickadee (9)   | American Robin (11)        |
| White-thr. Sparrow (3)   | Traill's Flycatcher (5)   | Black-cap. Chickadee (7)   | Tennessee Warbler (9)      | White-thr. Sparrow (11)    |
|                          | Tennessee Warbler (5)     | Nashville Warbler (7)      | White-thr. Sparrow (8)     | Red-eyed Vireo (10)        |
|                          | House Wren (4)            | Cedar Waxwing (6)          | Common Yellowthroat (7)    | Gray Catbird (10)          |
|                          | American Robin (4)        | Common Yellowthroat (6)    |                            |                            |
|                          | Cedar Waxwing (4)         |                            |                            |                            |
|                          | Ovenbird (4)              |                            |                            |                            |
|                          | Swamp Sparrow (4)         |                            |                            |                            |
|                          | White-thr. Sparrow (4)    |                            |                            |                            |

| 2010                       | 2011                      | 2012                      | 2013                      | 2014                      |
|----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Song Sparrow (34)          | Yellow Warbler (52)       | Song Sparrow (56)         | Song Sparrow (95)         | American Redstart (29)    |
| Yellow Warbler (29)        | Song Sparrow (31)         | Yellow Warbler (31)       | Cedar Waxwing (56)        | Song Sparrow (26)         |
| American Redstart (22)     | American Redstart (20)    | Common Yellowthroat (28)  | Yellow Warbler (19)       | Gray Catbird (18)         |
| American Robin (17)        | Cedar Waxwing (14)        | American Redstart (23)    | Gray Catbird (13)         | Red-eyed Vireo (16)       |
| Cedar Waxwing (15)         | Nashville Warbler (12)    | Red-eyed Vireo (13)       | American Redstart (10)    | Black-cap. Chickadee (11) |
| Black-cap. Chickadee (13)  | Black-cap. Chickadee (10) | Cedar Waxwing (13)        | Red-eyed Vireo (9)        | American Robin (8)        |
| Rose-breast. Grosbeak (13) | American Robin (9)        | White-thr. Sparrow (11)   | Black-cap. Chickadee (8)  | Northern Waterthrush (7)  |
| Red-eyed Vireo (12)        | Common Yellowthroat (9)   | Black-cap. Chickadee (10) | Common Yellowthroat (8)   | Tennessee Warbler (7)     |
| Common Yellowthroat (11)   | Tennessee Warbler (8)     | Gray Catbird (10)         | Rose-breast. Grosbeak (8) | Yellow Warbler (7)        |
| Tennessee Warbler (10)     | Blk-thr. Blue Warbler (8) | Baltimore Oriole (8)      | Downy Woodpecker (6)      | Rose-breast. Grosbeak (7) |
|                            | Baltimore Oriole (8)      |                           | American Robin (6)        |                           |
|                            |                           |                           | Swamp Sparrow (6)         |                           |

**Observations, Fall Week 1 (August 1 - 7):**

| 2005                      | 2006                      | 2007                      | 2008                      | 2009                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Song Sparrow (21)         | Red-wing. Blackbird (120) | Red-wing. Blackbird (71)  | American Goldfinch (17)   | Common Grackle (42)       |
| Black-cap. Chickadee (18) | Song Sparrow (35)         | Song Sparrow (25)         | American Robin (16)       | Black-cap. Chickadee (14) |
| American Goldfinch (15)   | American Goldfinch (20)   | American Goldfinch (23)   | Red-wing. Blackbird (15)  | American Robin (14)       |
| Red-wing. Blackbird (10)  | Cedar Waxwing (18)        | Common Grackle (19)       | Song Sparrow (14)         | Cedar Waxwing (13)        |
| American Robin (10)       | Black-cap. Chickadee (15) | Black-cap. Chickadee (16) | American Crow (13)        | Song Sparrow (12)         |
| Yellow Warbler (8)        | American Robin (13)       | Cedar Waxwing (14)        | Black-cap. Chickadee (11) | American Goldfinch (12)   |
| Cedar Waxwing (6)         | Common Grackle (13)       | American Crow (13)        | Common Grackle (9)        | House Wren (8)            |
| American Crow (5)         | American Crow (12)        | American Robin (11)       | Cedar Waxwing (9)         | Yellow Warbler (7)        |
| Blue Jay (4)              | Yellow Warbler (10)       | Yellow Warbler (8)        | Gray Catbird (7)          | Red-wing. Blackbird (6)   |
| Common Grackle (4)        | European Starling (10)    | Baltimore Oriole (8)      | Blue Jay (7)              | Gray Catbird (6)          |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Cedar Waxwing (25)        | Red-wing. Blackbird (27)  | American Crow (21)        | Cedar Waxwing (37)        | American Robin (27)       |
| American Robin (22)       | Cedar Waxwing (24)        | American Goldfinch (21)   | Song Sparrow (37)         | Black-cap. Chickadee (20) |
| Black-cap. Chickadee (19) | Yellow Warbler (18)       | Cedar Waxwing (20)        | American Robin (29)       | American Goldfinch (16)   |
| Song Sparrow (16)         | Black-cap. Chickadee (18) | American Robin (18)       | American Crow (21)        | Song Sparrow (16)         |
| Common Grackle (13)       | American Robin (17)       | Black-cap. Chickadee (16) | American Goldfinch (18)   | Common Grackle (13)       |
| American Crow (12)        | Song Sparrow (14)         | Song Sparrow (13)         | Black-cap. Chickadee (16) | Blue Jay (12)             |
| American Goldfinch (9)    | Common Grackle (14)       | Red-wing. Blackbird (13)  | Blue Jay (10)             | Cedar Waxwing (11)        |
| Red-wing. Blackbird (9)   | American Goldfinch (13)   | Yellow Warbler (11)       | Common Grackle (9)        | American Crow (11)        |
| Indigo Bunting (8)        | American Crow (12)        | Common Yellowthroat (10)  | Gray Catbird (7)          | Red-wing. Blackbird (9)   |
| Yellow Warbler (7)        | Common Yellowthroat (8)   | Common Grackle (7)        | Red-wing. Blackbird (7)   | American Redstart (8)     |

**Banding, Fall Week 2 (August 8 - 14):**

| 2005                       | 2006                       | 2007                     | 2008                       | 2009                      |
|----------------------------|----------------------------|--------------------------|----------------------------|---------------------------|
| Yellow Warbler (19)        | Song Sparrow (78)          | Song Sparrow (20)        | American Redstart (21)     | Song Sparrow (32)         |
| Nashville Warbler (18)     | Baltimore Oriole (25)      | American Redstart (15)   | Baltimore Oriole (14)      | Yellow Warbler (18)       |
| Song Sparrow (17)          | Rose-breast. Grosbeak (17) | Traill's Flycatcher (10) | Traill's Flycatcher (13)   | Gray Catbird (11)         |
| American Redstart (13)     | Yellow Warbler (14)        | Downy Woodpecker (9)     | Red-eyed Vireo (12)        | White-thr. Sparrow (11)   |
| Indigo Bunting (13)        | Cedar Waxwing (6)          | Yellow Warbler (9)       | Song Sparrow (12)          | American Redstart (10)    |
| Rose-breast. Grosbeak (11) | Ovenbird (6)               | Red-eyed Vireo (8)       | Canada Warbler (10)        | Traill's Flycatcher (8)   |
| Red-eyed Vireo (7)         | American Redstart (6)      | Black-cap. Chickadee (7) | Rose-breast. Grosbeak (8)  | Common Yellowthroat (5)   |
| Tennessee Warbler (7)      | Canada Warbler (6)         | Gray Catbird (7)         | Black-cap. Chickadee (7)   | Rose-breast. Grosbeak (5) |
| Gray Catbird (6)           | Traill's Flycatcher (4)    | Cedar Waxwing (5)        | Ovenbird (7)               | Red-eyed Vireo (4)        |
| Swamp Sparrow (6)          | Northern Waterthrush (4)   | Nashville Warbler (5)    | Yellow-bel. Flycatcher (6) | House Wren (4)            |
| White-thr. Sparrow (6)     | Chest.-sided Warbler (4)   | Common Yellowthroat (5)  | American Robin (6)         | Chest.-sided Warbler (4)  |
| Baltimore Oriole (6)       | Indigo Bunting (4)         |                          |                            |                           |

| 2010                     | 2011                      | 2012                     | 2013                      | 2014                      |
|--------------------------|---------------------------|--------------------------|---------------------------|---------------------------|
| Song Sparrow (49)        | American Redstart (22)    | American Redstart (39)   | Song Sparrow (33)         | American Redstart (38)    |
| Common Yellowthroat (14) | Song Sparrow (16)         | Song Sparrow (37)        | American Redstart (22)    | Song Sparrow (20)         |
| American Redstart (14)   | Yellow Warbler (15)       | Traill's Flycatcher (15) | Cedar Waxwing (10)        | Gray Catbird (15)         |
| Yellow Warbler (10)      | Common Yellowthroat (10)  | Baltimore Oriole (11)    | Black-cap. Chickadee (9)  | American Robin (8)        |
| Red-eyed Vireo (9)       | Cedar Waxwing (7)         | Cedar Waxwing (10)       | Common Yellowthroat (9)   | Red-eyed Vireo (6)        |
| Indigo Bunting (8)       | Ovenbird (6)              | Common Yellowthroat (10) | Ovenbird (8)              | Black-cap. Chickadee (6)  |
| Cedar Waxwing (7)        | Tennessee Warbler (6)     | Red-eyed Vireo (9)       | Traill's Flycatcher (7)   | Cedar Waxwing (6)         |
| Tennessee Warbler (6)    | Traill's Flycatcher (5)   | Swainson's Thrush (9)    | Red-eyed Vireo (7)        | Tennessee Warbler (6)     |
| Downy Woodpecker (5)     | Baltimore Oriole (5)      | Yellow Warbler (9)       | Rose-breast. Grosbeak (7) | Common Yellowthroat (6)   |
| Traill's Flycatcher (5)  | Red-eyed Vireo (4)        | Gray Catbird (8)         | Canada Warbler (5)        | White-thr. Sparrow (6)    |
| Black-cap. Chickadee (5) | Black-cap. Chickadee (4)  |                          |                           | Rose-breast. Grosbeak (6) |
| Veery (5)                | Rose-breast. Grosbeak (4) |                          |                           |                           |
| Ovenbird (5)             |                           |                          |                           |                           |

**Observations, Fall Week 2 (August 8 - 14):**

| 2005                      | 2006                      | 2007                      | 2008                      | 2009                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| American Crow (27)        | Song Sparrow (47)         | American Crow (26)        | Common Grackle (23)       | Common Grackle (18)       |
| Red-wing. Blackbird (26)  | Red-wing. Blackbird (35)  | American Goldfinch (23)   | American Crow (17)        | American Crow (17)        |
| Black-cap. Chickadee (18) | American Goldfinch (22)   | Cedar Waxwing (18)        | Black-cap. Chickadee (15) | Black-cap. Chickadee (16) |
| American Goldfinch (15)   | American Crow (22)        | Song Sparrow (18)         | American Goldfinch (15)   | American Goldfinch (13)   |
| Song Sparrow (13)         | American Robin (18)       | American Robin (15)       | Cedar Waxwing (14)        | Song Sparrow (13)         |
| American Robin (10)       | Cedar Waxwing (17)        | Black-cap. Chickadee (15) | Blue Jay (12)             | Cedar Waxwing (11)        |
| Blue Jay (7)              | Baltimore Oriole (16)     | Common Grackle (14)       | American Robin (11)       | Canada Goose (9)          |
| Yellow Warbler (6)        | Black-cap. Chickadee (16) | Red-wing. Blackbird (11)  | Song Sparrow (9)          | American Robin (9)        |
| Nashville Warbler (6)     | Blue Jay (11)             | Ring-billed Gull (7)      | Canada Goose (7)          | House Wren (8)            |
| Ruby-th. Hummingbird (5)  | Common Grackle (10)       | Gray Catbird (6)          | Gray Catbird (6)          | Gray Catbird (8)          |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| American Crow (20)        | Red-wing. Blackbird (31)  | Common Grackle (69)       | Cedar Waxwing (30)        | American Robin (22)       |
| Black-cap. Chickadee (18) | Cedar Waxwing (24)        | American Goldfinch (24)   | Song Sparrow (22)         | Cedar Waxwing (16)        |
| Song Sparrow (13)         | Black-cap. Chickadee (18) | Cedar Waxwing (22)        | Black-cap. Chickadee (20) | Common Grackle (16)       |
| American Goldfinch (12)   | American Crow (17)        | Song Sparrow (18)         | American Goldfinch (18)   | American Goldfinch (16)   |
| Cedar Waxwing (10)        | American Robin (16)       | Black-cap. Chickadee (17) | American Robin (14)       | Black-cap. Chickadee (14) |
| Common Grackle (8)        | Song Sparrow (13)         | American Crow (16)        | American Crow (13)        | Blue Jay (11)             |
| American Robin (8)        | American Goldfinch (12)   | American Robin (15)       | Blue Jay (7)              | American Redstart (10)    |
| Gray Catbird (6)          | Yellow Warbler (10)       | Canada Goose (12)         | American Redstart (7)     | Song Sparrow (10)         |
| Northern Cardinal (6)     | Common Grackle (9)        | European Starling (10)    | Northern Cardinal (7)     | Red-eyed Vireo (8)        |
| Indigo Bunting (6)        | Common Yellowthroat (7)   | Baltimore Oriole (7)      | Gray Catbird (5)          | Red-wing. Blackbird (7)   |



**Banding, Fall Week 3 (August 15 - 21):**

| 2005                      | 2006                    | 2007                      | 2008                      | 2009                       |
|---------------------------|-------------------------|---------------------------|---------------------------|----------------------------|
| Song Sparrow (23)         | Song Sparrow (49)       | American Redstart (12)    | American Redstart (22)    | Song Sparrow (37)          |
| American Redstart (7)     | Baltimore Oriole (18)   | Song Sparrow (9)          | Magnolia Warbler (12)     | American Redstart (20)     |
| Magnolia Warbler (7)      | Magnolia Warbler (12)   | Common Yellowthroat (8)   | Song Sparrow (11)         | Blk-and-white Warbler (10) |
| Yellow Warbler (7)        | Ovenbird (8)            | Rose-breast. Grosbeak (8) | Chest.-sided Warbler (10) | Common Yellowthroat (10)   |
| Baltimore Oriole (7)      | Nashville Warbler (7)   | Yellow Warbler (6)        | Common Yellowthroat (9)   | Red-eyed Vireo (9)         |
| Canada Warbler (6)        | American Redstart (6)   | Red-eyed Vireo (5)        | Canada Warbler (9)        | Gray Catbird (9)           |
| Rose-breast. Grosbeak (6) | Common Yellowthroat (5) | Mourning Warbler (5)      | Baltimore Oriole (9)      | Traill's Flycatcher (8)    |
| Traill's Flycatcher (5)   | Traill's Flycatcher (4) | Black-cap. Chickadee (4)  | Ovenbird (7)              | Yellow Warbler (7)         |
| Black-cap. Chickadee (5)  | House Wren (4)          | House Wren (4)            | Yellow Warbler (7)        | Rose-breast. Grosbeak (7)  |
| Nashville Warbler (5)     | Gray Catbird (4)        | Swainson's Thrush (4)     | Nashville Warbler (6)     | American Goldfinch (7)     |
|                           | Yellow Warbler (4)      | Nashville Warbler (4)     |                           |                            |
|                           | Canada Warbler (4)      |                           |                           |                            |

| 2010                       | 2011                       | 2012                     | 2013                      | 2014                     |
|----------------------------|----------------------------|--------------------------|---------------------------|--------------------------|
| American Redstart (41)     | American Redstart (25)     | Common Yellowthroat (21) | American Redstart (29)    | American Redstart (13)   |
| Magnolia Warbler (37)      | Song Sparrow (22)          | American Redstart (19)   | Song Sparrow (22)         | Tennessee Warbler (9)    |
| Song Sparrow (27)          | Common Yellowthroat (10)   | Song Sparrow (14)        | Baltimore Oriole (10)     | Magnolia Warbler (9)     |
| Canada Warbler (16)        | Traill's Flycatcher (7)    | Magnolia Warbler (12)    | Tennessee Warbler (8)     | Ovenbird (8)             |
| Chest.-sided Warbler (13)  | Cedar Waxwing (6)          | Red-eyed Vireo (8)       | Common Yellowthroat (8)   | Song Sparrow (8)         |
| Blk-and-white Warbler (12) | Ovenbird (6)               | Northern Waterthrush (6) | Cedar Waxwing (7)         | American Robin (7)       |
| Common Yellowthroat (12)   | Yellow-bel. Flycatcher (5) | Mourning Warbler (6)     | Canada Warbler (7)        | Gray Catbird (7)         |
| Indigo Bunting (12)        | Tennessee Warbler (5)      | Swainson's Thrush (5)    | Traill's Flycatcher (6)   | Red-eyed Vireo (6)       |
| Tennessee Warbler (11)     | Yellow Warbler (5)         | Tennessee Warbler (5)    | Yellow Warbler (6)        | Northern Waterthrush (6) |
| Ovenbird (8)               | Black-cap. Chickadee (4)   | Black-cap. Chickadee (4) | Rose-breast. Grosbeak (6) | Common Yellowthroat (6)  |
|                            | Blk-and-white Warbler (4)  | Veery (4)                |                           |                          |
|                            | Nashville Warbler (4)      | Gray Catbird (4)         |                           |                          |
|                            | Magnolia Warbler (4)       | Ovenbird (4)             |                           |                          |

**Observations, Fall Week 3 (August 15 - 21):**

| 2005                      | 2006                      | 2007                      | 2008                      | 2009                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| American Crow (42)        | Song Sparrow (41)         | American Crow (54)        | American Crow (20)        | Black-cap. Chickadee (17) |
| Black-cap. Chickadee (15) | American Crow (27)        | American Goldfinch (24)   | Common Grackle (19)       | Cedar Waxwing (16)        |
| Song Sparrow (14)         | American Goldfinch (18)   | Black-cap. Chickadee (17) | Black-cap. Chickadee (16) | American Goldfinch (16)   |
| American Goldfinch (13)   | Bobolink (15)             | Tree Swallow (11)         | American Goldfinch (15)   | Red-wing. Blackbird (12)  |
| Common Grackle (11)       | Cedar Waxwing (15)        | Common Grackle (10)       | American Robin (13)       | Song Sparrow (12)         |
| American Robin (9)        | American Robin (13)       | Song Sparrow (10)         | Cedar Waxwing (12)        | American Crow (11)        |
| Red-wing. Blackbird (8)   | Black-cap. Chickadee (11) | American Robin (9)        | Blue Jay (8)              | American Robin (8)        |
| Blue Jay (6)              | Baltimore Oriole (11)     | Gray Catbird (8)          | Song Sparrow (7)          | House Wren (8)            |
| Gray Catbird (5)          | Blue Jay (10)             | Cedar Waxwing (8)         | Ruby-th. Hummingbird (6)  | Common Grackle (7)        |
| Baltimore Oriole (4)      | Common Grackle (10)       | Ring-billed Gull (7)      | Common Yellowthroat (6)   | Ring-billed Gull (6)      |
|                           |                           |                           |                           | Gray Catbird (6)          |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| American Crow (24)        | Cedar Waxwing (29)        | Common Grackle (186)      | Cedar Waxwing (41)        | Common Grackle (36)       |
| Common Grackle (24)       | Black-cap. Chickadee (28) | Canada Goose (46)         | American Goldfinch (31)   | American Robin (28)       |
| Black-cap. Chickadee (18) | Song Sparrow (17)         | Cedar Waxwing (26)        | Black-cap. Chickadee (21) | American Goldfinch (19)   |
| American Goldfinch (13)   | American Crow (17)        | American Goldfinch (22)   | Song Sparrow (19)         | American Crow (17)        |
| Cedar Waxwing (12)        | American Robin (13)       | American Robin (21)       | American Crow (18)        | Tree Swallow (17)         |
| American Redstart (11)    | American Goldfinch (12)   | American Crow (17)        | American Robin (15)       | Cedar Waxwing (15)        |
| Song Sparrow (10)         | American Redstart (11)    | Black-cap. Chickadee (17) | Canada Goose (15)         | Red-wing. Blackbird (14)  |
| Blue Jay (7)              | Common Yellowthroat (10)  | Song Sparrow (13)         | Blue Jay (10)             | Black-cap. Chickadee (13) |
| American Robin (7)        | Red-eyed Vireo (6)        | Blue Jay (10)             | American Redstart (9)     | Blue Jay (11)             |
| Magnolia Warbler (7)      | Ruby-th. Hummingbird (6)  | Baltimore Oriole (8)      | Ruby-th. Hummingbird (8)  | Broad-winged Hawk (11)    |
|                           |                           |                           | Baltimore Oriole (8)      |                           |

**Banding, Fall Week 4 (August 22 - 28):**

| 2005                      | 2006                      | 2007                      | 2008                      | 2009                       |
|---------------------------|---------------------------|---------------------------|---------------------------|----------------------------|
| Magnolia Warbler (48)     | Magnolia Warbler (39)     | Magnolia Warbler (24)     | Magnolia Warbler (19)     | Song Sparrow (30)          |
| Nashville Warbler (16)    | Song Sparrow (27)         | American Redstart (14)    | American Redstart (17)    | American Redstart (18)     |
| Song Sparrow (13)         | Northern Waterthrush (20) | Red-eyed Vireo (11)       | Common Yellowthroat (14)  | Common Yellowthroat (16)   |
| Baltimore Oriole (13)     | American Redstart (12)    | Song Sparrow (9)          | Nashville Warbler (11)    | Red-eyed Vireo (14)        |
| Common Yellowthroat (8)   | Ovenbird (10)             | Wilson's Warbler (8)      | Song Sparrow (8)          | Black-cap. Chickadee (11)  |
| Tennessee Warbler (7)     | Tennessee Warbler (10)    | Least Flycatcher (6)      | Tennessee Warbler (6)     | Magnolia Warbler (11)      |
| Gray Catbird (6)          | Nashville Warbler (9)     | House Wren (5)            | Mourning Warbler (6)      | Ovenbird (8)               |
| Ovenbird (6)              | Wilson's Warbler (9)      | Northern Waterthrush (5)  | Wilson's Warbler (6)      | Blk-and-white Warbler (8)  |
| Blk-and-white Warbler (6) | Common Yellowthroat (7)   | Nashville Warbler (5)     | Veery (5)                 | Yellow-bel. Flycatcher (7) |
| American Redstart (6)     | American Goldfinch (7)    | Traill's Flycatcher (4)   | Ovenbird (5)              | Cedar Waxwing (7)          |
| Chest.-sided Warbler (6)  |                           | Common Yellowthroat (4)   | Blk-thr. Blue Warbler (5) |                            |
| Rose-breast. Grosbeak (6) |                           | Blk-thr. Blue Warbler (4) | Baltimore Oriole (5)      |                            |
|                           |                           | Canada Warbler (4)        |                           |                            |

| 2010                     | 2011                      | 2012                       | 2013                       | 2014                        |
|--------------------------|---------------------------|----------------------------|----------------------------|-----------------------------|
| Magnolia Warbler (44)    | Magnolia Warbler (43)     | Magnolia Warbler (36)      | Tennessee Warbler (74)     | Tennessee Warbler (56)      |
| American Redstart (22)   | American Redstart (31)    | American Redstart (28)     | Magnolia Warbler (45)      | Magnolia Warbler (40)       |
| Red-eyed Vireo (14)      | Tennessee Warbler (23)    | Tennessee Warbler (21)     | Common Yellowthroat (19)   | Northern Waterthrush (18)   |
| Tennessee Warbler (10)   | Chest.-sided Warbler (15) | Song Sparrow (16)          | American Redstart (19)     | Common Yellowthroat (16)    |
| Song Sparrow (10)        | Ovenbird (12)             | Common Yellowthroat (15)   | Northern Waterthrush (17)  | Yellow-bel. Flycatcher (15) |
| Ovenbird (7)             | Common Yellowthroat (11)  | Rose-breast. Grosbeak (15) | Song Sparrow (17)          | American Redstart (15)      |
| Northern Waterthrush (7) | Nashville Warbler (10)    | Red-eyed Vireo (9)         | Yellow-rumped Warbler (13) | Nashville Warbler (13)      |
| Chest.-sided Warbler (5) | Song Sparrow (9)          | Ovenbird (9)               | American Goldfinch (12)    | Song Sparrow (13)           |
| Wilson's Warbler (5)     | Indigo Bunting (9)        | Indigo Bunting (9)         | Ovenbird (10)              | Red-eyed Vireo (11)         |
| Black-cap. Chickadee (4) | Black-cap. Chickadee (6)  | Black-cap. Chickadee (6)   | Cape May Warbler (10)      | Least Flycatcher (10)       |
| Gray Catbird (4)         | Blk-thr. Blue Warbler (6) | Gray Catbird (6)           | Baltimore Oriole (10)      |                             |
| Common Yellowthroat (4)  |                           |                            |                            |                             |
| Canada Warbler (4)       |                           |                            |                            |                             |
| Indigo Bunting (4)       |                           |                            |                            |                             |

**Observations, Fall Week 4 (August 22 - 28):**

| 2005                      | 2006                      | 2007                      | 2008                      | 2009                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Common Grackle (82)       | Common Grackle (49)       | American Crow (85)        | Common Grackle (28)       | American Crow (22)        |
| Black-cap. Chickadee (18) | American Crow (41)        | American Goldfinch (23)   | American Crow (26)        | Black-cap. Chickadee (20) |
| American Crow (18)        | Song Sparrow (33)         | Black-cap. Chickadee (17) | Blue Jay (15)             | Cedar Waxwing (20)        |
| Magnolia Warbler (13)     | American Goldfinch (22)   | Cedar Waxwing (13)        | Black-cap. Chickadee (15) | American Goldfinch (16)   |
| Blue Jay (12)             | Cedar Waxwing (19)        | Song Sparrow (10)         | American Robin (11)       | Song Sparrow (11)         |
| Song Sparrow (9)          | Red-wing. Blackbird (17)  | Common Grackle (9)        | American Goldfinch (10)   | Gray Catbird (8)          |
| American Goldfinch (8)    | Blue Jay (13)             | Blue Jay (7)              | Song Sparrow (8)          | American Robin (8)        |
| American Robin (7)        | Black-cap. Chickadee (12) | House Wren (6)            | Cedar Waxwing (7)         | Red-wing. Blackbird (7)   |
| Baltimore Oriole (6)      | Bobolink (12)             | Red-eyed Vireo (5)        | Common Yellowthroat (6)   | American Redstart (7)     |
| Gray Catbird (5)          | Magnolia Warbler (10)     | American Redstart (5)     | Gray Catbird (5)          | Common Grackle (7)        |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| American Crow (27)        | Cedar Waxwing (25)        | Common Grackle (115)      | Cedar Waxwing (40)        | American Robin (30)       |
| Black-cap. Chickadee (23) | Red-wing. Blackbird (19)  | Canada Goose (73)         | American Goldfinch (39)   | American Goldfinch (25)   |
| Common Grackle (20)       | Black-cap. Chickadee (17) | Cedar Waxwing (31)        | Black-cap. Chickadee (24) | American Crow (22)        |
| American Goldfinch (14)   | American Crow (17)        | American Goldfinch (20)   | American Robin (14)       | Cedar Waxwing (21)        |
| Magnolia Warbler (10)     | Common Grackle (16)       | Black-cap. Chickadee (18) | American Crow (14)        | Black-cap. Chickadee (19) |
| American Robin (9)        | American Goldfinch (14)   | Blue Jay (15)             | Tennessee Warbler (14)    | Common Grackle (14)       |
| Blue Jay (8)              | American Robin (14)       | American Robin (15)       | Blue Jay (12)             | Tennessee Warbler (14)    |
| Canada Goose (7)          | American Redstart (10)    | Song Sparrow (14)         | Song Sparrow (11)         | Blue Jay (12)             |
| American Redstart (6)     | Blue Jay (8)              | American Crow (11)        | Common Grackle (10)       | Red-eyed Vireo (9)        |
| Gray Catbird (6)          | Magnolia Warbler (8)      | Red-wing. Blackbird (8)   | Magnolia Warbler (9)      | Magnolia Warbler (9)      |
| Cedar Waxwing (6)         |                           |                           |                           |                           |
| Song Sparrow (6)          |                           |                           |                           |                           |

**Banding, Fall Week 5 (August 29 - September 4):**

| 2005                     | 2006                      | 2007                      | 2008                       | 2009                       |
|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| Magnolia Warbler (53)    | Magnolia Warbler (21)     | Magnolia Warbler (19)     | Magnolia Warbler (62)      | Magnolia Warbler (31)      |
| Nashville Warbler (28)   | Song Sparrow (16)         | American Redstart (14)    | Wilson's Warbler (22)      | American Redstart (26)     |
| Red-eyed Vireo (27)      | Common Yellowthroat (12)  | Red-eyed Vireo (13)       | Common Yellowthroat (19)   | Song Sparrow (10)          |
| American Redstart (26)   | American Redstart (10)    | Wilson's Warbler (9)      | Blackpoll Warbler (16)     | Common Yellowthroat (8)    |
| Song Sparrow (24)        | Red-eyed Vireo (8)        | Common Yellowthroat (7)   | American Redstart (15)     | Blk-thr. Blue Warbler (8)  |
| Common Yellowthroat (13) | Northern Waterthrush (8)  | House Wren (6)            | Red-eyed Vireo (14)        | Yellow-bel. Flycatcher (6) |
| Black-cap. Chickadee (9) | Tennessee Warbler (7)     | Song Sparrow (6)          | Ovenbird (12)              | Black-cap. Chickadee (6)   |
| Wilson's Warbler (9)     | Nashville Warbler (7)     | Blk-thr. Blue Warbler (5) | Nashville Warbler (10)     | Wilson's Warbler (5)       |
| Indigo Bunting (8)       | Wilson's Warbler (6)      | Northern Waterthrush (4)  | Northern Waterthrush (8)   | Indigo Bunting (5)         |
| Ovenbird (7)             | Rose-breast. Grosbeak (5) | Blackpoll Warbler (4)     | Yellow-bel. Flycatcher (7) | House Wren (4)             |
|                          |                           |                           | Song Sparrow (7)           | Gray Catbird (4)           |
|                          |                           |                           |                            | Cedar Waxwing (4)          |
|                          |                           |                           |                            | Northern Waterthrush (4)   |
|                          |                           |                           |                            | Canada Warbler (4)         |

| 2010                       | 2011                       | 2012                     | 2013                     | 2014                       |
|----------------------------|----------------------------|--------------------------|--------------------------|----------------------------|
| Magnolia Warbler (23)      | Magnolia Warbler (79)      | Magnolia Warbler (31)    | Tennessee Warbler (87)   | Tennessee Warbler (47)     |
| Northern Waterthrush (17)  | Tennessee Warbler (52)     | Common Yellowthroat (11) | Magnolia Warbler (53)    | Magnolia Warbler (40)      |
| Tennessee Warbler (17)     | American Redstart (26)     | Red-eyed Vireo (10)      | American Redstart (24)   | Red-eyed Vireo (23)        |
| Common Yellowthroat (17)   | Nashville Warbler (22)     | American Redstart (10)   | Common Yellowthroat (20) | Common Yellowthroat (12)   |
| Song Sparrow (16)          | Northern Waterthrush (15)  | White-thr. Sparrow (10)  | Red-eyed Vireo (13)      | Ovenbird (10)              |
| Blk-thr. Blue Warbler (10) | Wilson's Warbler (15)      | Purple Finch (9)         | Cape May Warbler (12)    | American Redstart (10)     |
| Blk-and-white Warbler (8)  | Yellow-bel. Flycatcher (8) | Northern Waterthrush (8) | American Goldfinch (9)   | Blackpoll Warbler (8)      |
| American Redstart (8)      | Common Yellowthroat (8)    | Tennessee Warbler (8)    | Song Sparrow (8)         | American Goldfinch (8)     |
| Indigo Bunting (8)         | Ovenbird (7)               | Chipping Sparrow (8)     | Indigo Bunting (7)       | Yellow-bel. Flycatcher (7) |
| Red-eyed Vireo (7)         | Chest.-sided Warbler (7)   | Swainson's Thrush (7)    | Ovenbird (6)             | Veery (7)                  |
|                            | Indigo Bunting (7)         |                          | Nashville Warbler (6)    | Gray Catbird (7)           |

**Observations, Fall Week 5 (August 29 - September 4):**

| 2005                      | 2006                      | 2007                      | 2008                      | 2009                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Common Grackle (137)      | Common Grackle (205)      | American Crow (132)       | Common Grackle (60)       | Canada Goose (24)         |
| American Crow (27)        | American Crow (71)        | American Goldfinch (20)   | Canada Goose (53)         | Black-cap. Chickadee (22) |
| Black-cap. Chickadee (21) | Song Sparrow (23)         | Black-cap. Chickadee (17) | American Crow (33)        | American Crow (18)        |
| American Goldfinch (12)   | American Goldfinch (19)   | Cedar Waxwing (12)        | Black-cap. Chickadee (20) | Cedar Waxwing (16)        |
| Blue Jay (12)             | Black-cap. Chickadee (17) | Common Grackle (10)       | Magnolia Warbler (14)     | American Goldfinch (12)   |
| Magnolia Warbler (12)     | Blue Jay (16)             | American Robin (6)        | Blue Jay (13)             | Common Grackle (12)       |
| European Starling (11)    | Bobolink (9)              | Blue Jay (6)              | American Goldfinch (12)   | American Redstart (8)     |
| Cedar Waxwing (11)        | Cedar Waxwing (8)         | Song Sparrow (6)          | Cedar Waxwing (10)        | Blue Jay (8)              |
| Song Sparrow (9)          | White-thr. Sparrow (8)    | Red-eyed Vireo (5)        | Common Yellowthroat (8)   | Gray Catbird (7)          |
| Nashville Warbler (7)     | Magnolia Warbler (8)      | Gray Catbird (5)          | American Robin (8)        | Magnolia Warbler (7)      |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Common Grackle (184)      | Canada Goose (36)         | Common Grackle (130)      | American Goldfinch (48)   | American Robin (46)       |
| American Goldfinch (29)   | Cedar Waxwing (32)        | Canada Goose (28)         | Cedar Waxwing (33)        | American Crow (43)        |
| Black-cap. Chickadee (27) | American Crow (23)        | Black-cap. Chickadee (19) | American Crow (29)        | American Goldfinch (30)   |
| American Crow (21)        | Black-cap. Chickadee (23) | American Goldfinch (19)   | Tennessee Warbler (25)    | Cedar Waxwing (23)        |
| Cedar Waxwing (19)        | Magnolia Warbler (17)     | American Crow (18)        | Black-cap. Chickadee (16) | Blue Jay (20)             |
| Blue Jay (13)             | American Goldfinch (15)   | Blue Jay (17)             | American Robin (12)       | Black-cap. Chickadee (19) |
| American Robin (12)       | Tennessee Warbler (10)    | Cedar Waxwing (13)        | Blue Jay (12)             | Canada Goose (11)         |
| Canada Goose (10)         | American Redstart (10)    | Ring-billed Gull (10)     | Magnolia Warbler (11)     | Magnolia Warbler (11)     |
| Song Sparrow (9)          | American Robin (8)        | White-thr. Sparrow (10)   | Common Yellowthroat (9)   | Tennessee Warbler (10)    |
| Rock Pigeon (7)           | Nashville Warbler (6)     | American Robin (10)       | Song Sparrow (7)          | Red-eyed Vireo (10)       |
| Common Yellowthroat (7)   |                           |                           |                           |                           |

**Banding, Fall Week 6 (September 5 - 11):**

| 2005                       | 2006                      | 2007                    | 2008                        | 2009                      |
|----------------------------|---------------------------|-------------------------|-----------------------------|---------------------------|
| Nashville Warbler (20)     | Magnolia Warbler (39)     | White-thr. Sparrow (21) | Magnolia Warbler (109)      | White-thr. Sparrow (18)   |
| Magnolia Warbler (20)      | Common Grackle (33)       | American Goldfinch (20) | Nashville Warbler (22)      | Magnolia Warbler (10)     |
| Common Yellowthroat (19)   | Common Yellowthroat (27)  | Wilson's Warbler (17)   | Wilson's Warbler (20)       | Song Sparrow (10)         |
| White-thr. Sparrow (18)    | Song Sparrow (21)         | Red-eyed Vireo (16)     | Tennessee Warbler (16)      | American Redstart (7)     |
| Song Sparrow (13)          | Nashville Warbler (18)    | American Redstart (10)  | Common Yellowthroat (16)    | Common Yellowthroat (6)   |
| Yellow Palm Warbler (9)    | White-thr. Sparrow (13)   | Common Yellowthroat (9) | Red-eyed Vireo (14)         | Indigo Bunting (6)        |
| Gray Catbird (8)           | Ovenbird (9)              | Song Sparrow (7)        | White-thr. Sparrow (13)     | Red-eyed Vireo (5)        |
| Ovenbird (6)               | Tennessee Warbler (9)     | Gray Catbird (5)        | American Redstart (11)      | Blk-thr. Blue Warbler (5) |
| American Redstart (6)      | Wilson's Warbler (9)      | Nashville Warbler (5)   | Blackpoll Warbler (11)      | Black-cap. Chickadee (4)  |
| Blk-thr. Green Warbler (6) | Gray Catbird (8)          | Magnolia Warbler (5)    | Blk-thr. Green Warbler (11) |                           |
| American Goldfinch (6)     | American Redstart (8)     |                         | Song Sparrow (11)           |                           |
|                            | Blackpoll Warbler (8)     |                         | American Goldfinch (11)     |                           |
|                            | Yellow-rumped Warbler (8) |                         |                             |                           |

| 2010                      | 2011                    | 2012                    | 2013                      | 2014                     |
|---------------------------|-------------------------|-------------------------|---------------------------|--------------------------|
| Magnolia Warbler (74)     | Magnolia Warbler (52)   | Magnolia Warbler (44)   | Magnolia Warbler (70)     | American Goldfinch (44)  |
| Nashville Warbler (47)    | Tennessee Warbler (37)  | Swainson's Thrush (24)  | Tennessee Warbler (36)    | Magnolia Warbler (27)    |
| West. Palm Warbler (37)   | Nashville Warbler (22)  | Blackpoll Warbler (21)  | American Redstart (18)    | Red-eyed Vireo (26)      |
| American Redstart (32)    | Wilson's Warbler (18)   | Tennessee Warbler (20)  | American Goldfinch (13)   | Tennessee Warbler (12)   |
| Common Yellowthroat (24)  | Red-eyed Vireo (11)     | Wilson's Warbler (14)   | Wilson's Warbler (11)     | Gray Catbird (11)        |
| Red-eyed Vireo (20)       | American Redstart (10)  | Song Sparrow (14)       | Common Yellowthroat (10)  | American Redstart (11)   |
| Tennessee Warbler (20)    | White-thr. Sparrow (9)  | American Goldfinch (13) | Indigo Bunting (8)        | White-thr. Sparrow (10)  |
| Wilson's Warbler (18)     | Indigo Bunting (9)      | American Redstart (12)  | Blackpoll Warbler (7)     | Northern Waterthrush (8) |
| Northern Waterthrush (17) | Blackpoll Warbler (8)   | Gray Catbird (11)       | Red-eyed Vireo (6)        | Black-cap. Chickadee (7) |
| Blackpoll Warbler (14)    | Cedar Waxwing (7)       | Nashville Warbler (11)  | Cedar Waxwing (5)         | Ovenbird (6)             |
|                           | Common Yellowthroat (7) |                         | Ovenbird (5)              | Common Yellowthroat (6)  |
|                           |                         |                         | Rose-breast. Grosbeak (5) | Song Sparrow (6)         |

**Observations, Fall Week 6 (September 5 - 11):**

| 2005                      | 2006                      | 2007                      | 2008                      | 2009                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Common Grackle (425)      | American Crow (179)       | American Crow (74)        | American Crow (83)        | Canada Goose (43)         |
| American Crow (63)        | Common Grackle (111)      | American Goldfinch (25)   | Common Grackle (42)       | American Crow (31)        |
| Black-cap. Chickadee (26) | Blue Jay (22)             | Cedar Waxwing (20)        | Cedar Waxwing (33)        | Cedar Waxwing (25)        |
| American Goldfinch (19)   | Black-cap. Chickadee (22) | Black-cap. Chickadee (15) | Canada Goose (29)         | Black-cap. Chickadee (23) |
| White-thr. Sparrow (17)   | American Goldfinch (21)   | Canada Goose (14)         | Magnolia Warbler (23)     | Common Grackle (21)       |
| Blue Jay (16)             | Song Sparrow (20)         | Blue Jay (14)             | Black-cap. Chickadee (21) | American Goldfinch (16)   |
| Song Sparrow (10)         | Cedar Waxwing (14)        | White-thr. Sparrow (11)   | American Robin (20)       | Blue Jay (13)             |
| Nashville Warbler (10)    | Magnolia Warbler (11)     | Common Grackle (10)       | American Goldfinch (16)   | American Robin (13)       |
| Canada Goose (9)          | White-thr. Sparrow (10)   | Song Sparrow (8)          | Blue Jay (13)             | White-thr. Sparrow (10)   |
| Common Yellowthroat (8)   | Common Yellowthroat (9)   | European Starling (7)     | Common Yellowthroat (8)   | Song Sparrow (10)         |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| American Crow (39)        | Canada Goose (65)         | Common Grackle (319)      | American Crow (49)        | American Goldfinch (34)   |
| Black-cap. Chickadee (21) | Broad-winged Hawk (44)    | Canada Goose (46)         | American Goldfinch (35)   | American Robin (27)       |
| Blue Jay (18)             | American Crow (33)        | American Goldfinch (30)   | Cedar Waxwing (20)        | American Crow (24)        |
| Cedar Waxwing (13)        | Black-cap. Chickadee (26) | American Crow (22)        | Black-cap. Chickadee (18) | Black-cap. Chickadee (18) |
| Magnolia Warbler (13)     | American Goldfinch (20)   | Black-cap. Chickadee (18) | Red-wing. Blackbird (15)  | Cedar Waxwing (16)        |
| American Goldfinch (12)   | Cedar Waxwing (17)        | Blue Jay (16)             | Magnolia Warbler (15)     | Canada Goose (16)         |
| American Robin (11)       | Magnolia Warbler (14)     | White-thr. Sparrow (14)   | Blue Jay (14)             | Blue Jay (14)             |
| West. Palm Warbler (10)   | Tennessee Warbler (12)    | Magnolia Warbler (11)     | European Starling (12)    | Red-eyed Vireo (9)        |
| White-thr. Sparrow (10)   | Blue Jay (9)              | Song Sparrow (8)          | Canada Goose (11)         | Gray Catbird (8)          |
| Common Grackle (9)        | Song Sparrow (8)          | Gray Catbird (8)          | Tennessee Warbler (11)    | Magnolia Warbler (8)      |



**Banding, Fall Week 7 (September 12 - 18):**

| 2005                       | 2006                       | 2007                      | 2008                    | 2009                     |
|----------------------------|----------------------------|---------------------------|-------------------------|--------------------------|
| White-thr. Sparrow (44)    | Yellow-rumped Warbler (49) | White-thr. Sparrow (32)   | Magnolia Warbler (36)   | Song Sparrow (34)        |
| American Goldfinch (40)    | Nashville Warbler (23)     | Magnolia Warbler (14)     | White-thr. Sparrow (20) | White-thr. Sparrow (31)  |
| Nashville Warbler (38)     | Tennessee Warbler (20)     | Gray Catbird (10)         | Nashville Warbler (19)  | Magnolia Warbler (12)    |
| Magnolia Warbler (37)      | Ruby-cr. Kinglet (19)      | Song Sparrow (9)          | Tennessee Warbler (18)  | Nashville Warbler (10)   |
| Red-eyed Vireo (35)        | Magnolia Warbler (18)      | Nashville Warbler (8)     | Song Sparrow (10)       | Indigo Bunting (10)      |
| Yellow Palm Warbler (31)   | White-thr. Sparrow (18)    | Blk-thr. Blue Warbler (5) | Blue Jay (9)            | Common Yellowthroat (7)  |
| Song Sparrow (23)          | Song Sparrow (16)          | Wilson's Warbler (5)      | Common Yellowthroat (9) | Blackpoll Warbler (7)    |
| Common Yellowthroat (14)   | Common Yellowthroat (15)   | Black-cap. Chickadee (4)  | Ruby-cr. Kinglet (8)    | Swamp Sparrow (7)        |
| Yellow-rumped Warbler (14) | American Goldfinch (14)    | Common Yellowthroat (4)   | American Redstart (8)   | Black-cap. Chickadee (5) |
| Swainson's Thrush (13)     | Red-eyed Vireo (10)        | Chipping Sparrow (4)      | Red-eyed Vireo (7)      | Gray Catbird (5)         |
| Tennessee Warbler (13)     |                            | American Goldfinch (4)    | Blackpoll Warbler (7)   | Tennessee Warbler (5)    |
|                            |                            |                           | American Goldfinch (7)  | Lincoln's Sparrow (5)    |

| 2010                       | 2011                     | 2012                        | 2013                      | 2014                     |
|----------------------------|--------------------------|-----------------------------|---------------------------|--------------------------|
| Magnolia Warbler (46)      | Magnolia Warbler (38)    | Swainson's Thrush (66)      | Magnolia Warbler (84)     | Magnolia Warbler (94)    |
| Yellow-rumped Warbler (27) | Tennessee Warbler (28)   | Magnolia Warbler (59)       | Tennessee Warbler (17)    | Nashville Warbler (26)   |
| White-thr. Sparrow (25)    | Nashville Warbler (19)   | White-thr. Sparrow (53)     | White-thr. Sparrow (15)   | Red-eyed Vireo (23)      |
| Nashville Warbler (22)     | Blackpoll Warbler (15)   | Common Yellowthroat (18)    | Cape May Warbler (14)     | Tennessee Warbler (14)   |
| American Goldfinch (17)    | White-thr. Sparrow (13)  | Blk-thr. Green Warbler (15) | American Goldfinch (14)   | Gray Catbird (13)        |
| Red-eyed Vireo (15)        | American Redstart (12)   | Nashville Warbler (13)      | Red-eyed Vireo (13)       | American Redstart (13)   |
| Tennessee Warbler (11)     | Common Yellowthroat (10) | Song Sparrow (13)           | Swainson's Thrush (12)    | White-thr. Sparrow (13)  |
| Swainson's Thrush (9)      | Indigo Bunting (10)      | Gray Catbird (12)           | American Redstart (12)    | Wilson's Warbler (12)    |
| Black-cap. Chickadee (8)   | Gray Catbird (8)         | Blackpoll Warbler (12)      | Nashville Warbler (8)     | American Goldfinch (11)  |
| Common Yellowthroat (8)    | Wilson's Warbler (8)     | American Goldfinch (12)     | Golden-cr. Kinglet (7)    | Common Yellowthroat (10) |
| American Redstart (8)      |                          |                             | Blk-thr. Blue Warbler (7) |                          |
| Blk-thr. Blue Warbler (8)  |                          |                             | Song Sparrow (7)          |                          |

**Observations, Fall Week 7 (September 12 - 18):**

| 2005                      | 2006                       | 2007                      | 2008                      | 2009                      |
|---------------------------|----------------------------|---------------------------|---------------------------|---------------------------|
| Common Grackle (366)      | American Crow (244)        | American Crow (139)       | American Crow (86)        | Canada Goose (81)         |
| American Crow (45)        | Common Grackle (66)        | White-thr. Sparrow (32)   | Canada Goose (42)         | European Starling (25)    |
| White-thr. Sparrow (29)   | American Goldfinch (33)    | Blue Jay (27)             | Cedar Waxwing (29)        | American Robin (25)       |
| Black-cap. Chickadee (25) | Blue Jay (23)              | American Goldfinch (19)   | Red-wing. Blackbird (24)  | Cedar Waxwing (24)        |
| American Goldfinch (23)   | Black-cap. Chickadee (21)  | Black-cap. Chickadee (15) | Common Grackle (19)       | American Crow (21)        |
| Canada Goose (22)         | Song Sparrow (18)          | Canada Goose (14)         | Black-cap. Chickadee (17) | White-thr. Sparrow (19)   |
| Blue Jay (10)             | Yellow-rumped Warbler (17) | Common Grackle (14)       | Blue Jay (14)             | Black-cap. Chickadee (19) |
| Nashville Warbler (9)     | American Robin (16)        | Cedar Waxwing (12)        | American Goldfinch (13)   | American Goldfinch (18)   |
| Cedar Waxwing (9)         | White-thr. Sparrow (14)    | Song Sparrow (8)          | Magnolia Warbler (9)      | Blue Jay (17)             |
| Red-eyed Vireo (8)        | Ruby-cr. Kinglet (14)      | Broad-winged Hawk (7)     | White-thr. Sparrow (8)    | Red-wing. Blackbird (15)  |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                     |
|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| American Crow (85)        | Canada Goose (122)        | Blue Jay (54)             | Common Grackle (80)       | European Starling (175)  |
| Canada Goose (46)         | American Crow (53)        | Canada Goose (46)         | American Crow (76)        | Canada Goose (137)       |
| Common Grackle (32)       | Blue Jay (24)             | White-thr. Sparrow (42)   | European Starling (75)    | Common Grackle (108)     |
| Blue Jay (32)             | Black-cap. Chickadee (20) | American Goldfinch (26)   | Canada Goose (53)         | American Crow (75)       |
| Black-cap. Chickadee (26) | Cedar Waxwing (13)        | Common Grackle (21)       | Red-wing. Blackbird (33)  | Ring-billed Gull (63)    |
| American Goldfinch (19)   | Magnolia Warbler (13)     | American Crow (21)        | American Goldfinch (26)   | Broad-winged Hawk (50)   |
| White-thr. Sparrow (17)   | White-thr. Sparrow (11)   | Black-cap. Chickadee (20) | Cedar Waxwing (20)        | Red-wing. Blackbird (31) |
| European Starling (11)    | Red-wing. Blackbird (8)   | Swainson's Thrush (16)    | Blue Jay (19)             | Blue Jay (29)            |
| American Robin (11)       | Tennessee Warbler (8)     | American Robin (16)       | Magnolia Warbler (18)     | American Robin (25)      |
| Cedar Waxwing (10)        | American Goldfinch (8)    | Magnolia Warbler (12)     | Black-cap. Chickadee (15) | American Goldfinch (23)  |

**Banding, Fall Week 8 (September 19 - 25):**

| 2005                       | 2006                        | 2007                     | 2008                        | 2009                       |
|----------------------------|-----------------------------|--------------------------|-----------------------------|----------------------------|
| White-thr. Sparrow (86)    | Yellow-rumped Warbler (169) | White-thr. Sparrow (60)  | Yellow-rumped Warbler (170) | White-thr. Sparrow (62)    |
| Yellow-rumped Warbler (76) | Ruby-cr. Kinglet (42)       | American Goldfinch (17)  | White-thr. Sparrow (50)     | Song Sparrow (28)          |
| Ruby-cr. Kinglet (46)      | Magnolia Warbler (16)       | West. Palm Warbler (16)  | Ruby-cr. Kinglet (24)       | Magnolia Warbler (25)      |
| Red-eyed Vireo (33)        | Nashville Warbler (15)      | Ruby-cr. Kinglet (13)    | Nashville Warbler (20)      | Common Yellowthroat (13)   |
| Song Sparrow (27)          | White-thr. Sparrow (14)     | Song Sparrow (11)        | Tennessee Warbler (16)      | Gray Catbird (10)          |
| Magnolia Warbler (22)      | Blk-thr. Green Warbler (11) | Nashville Warbler (10)   | Song Sparrow (13)           | Nashville Warbler (10)     |
| Nashville Warbler (19)     | Song Sparrow (10)           | Black-cap. Chickadee (7) | Magnolia Warbler (10)       | Blk-thr. Blue Warbler (10) |
| Golden-cr. Kinglet (12)    | Common Yellowthroat (6)     | Swamp Sparrow (7)        | Golden-cr. Kinglet (8)      | Indigo Bunting (10)        |
| Chipping Sparrow (12)      | Lincoln's Sparrow (5)       | Gray Catbird (6)         | Common Yellowthroat (8)     | Tennessee Warbler (7)      |
| Swainson's Thrush (10)     | Red-eyed Vireo (4)          | Cedar Waxwing (6)        | Blue Jay (7)                | American Goldfinch (7)     |
|                            | Golden-cr. Kinglet (4)      |                          |                             |                            |
|                            | Scarlet Tanager (4)         |                          |                             |                            |

| 2010                       | 2011                       | 2012                     | 2013                      | 2014                       |
|----------------------------|----------------------------|--------------------------|---------------------------|----------------------------|
| Yell.-rumped Warbler (881) | Magnolia Warbler (28)      | White-thr. Sparrow (60)  | White-thr. Sparrow (23)   | White-thr. Sparrow (66)    |
| White-thr. Sparrow (85)    | Tennessee Warbler (23)     | Blue Jay (24)            | Magnolia Warbler (19)     | Magnolia Warbler (42)      |
| Nashville Warbler (53)     | Ruby-cr. Kinglet (18)      | Swainson's Thrush (20)   | Song Sparrow (19)         | Ruby-cr. Kinglet (21)      |
| Ruby-cr. Kinglet (20)      | Nashville Warbler (18)     | Ruby-cr. Kinglet (15)    | Tennessee Warbler (18)    | Blue Jay (17)              |
| Tennessee Warbler (20)     | White-thr. Sparrow (15)    | Gray-cheeked Thrush (10) | Golden-cr. Kinglet (14)   | Swainson's Thrush (16)     |
| Blue Jay (18)              | Common Yellowthroat (13)   | Song Sparrow (9)         | Red-eyed Vireo (12)       | Nashville Warbler (15)     |
| Black-cap. Chickadee (17)  | Blackpoll Warbler (12)     | Nashville Warbler (8)    | Ruby-cr. Kinglet (12)     | Golden-cr. Kinglet (14)    |
| Magnolia Warbler (17)      | Chipping Sparrow (11)      | Magnolia Warbler (7)     | American Redstart (11)    | Blk-thr. Blue Warbler (12) |
| Song Sparrow (16)          | Yellow-rumped Warbler (10) | Black-cap. Chickadee (6) | Nashville Warbler (9)     | Yellow-rumped Warbler (12) |
| Dark-eyed Junco (16)       | Song Sparrow (10)          | Brown Creeper (5)        | Gray Catbird (6)          | Red-eyed Vireo (10)        |
|                            |                            | Golden-cr. Kinglet (5)   | Blk-thr. Blue Warbler (6) |                            |

**Observations, Fall Week 8 (September 19 - 25):**

| 2005                       | 2006                       | 2007                      | 2008                       | 2009                      |
|----------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| Canada Goose (365)         | American Crow (244)        | American Crow (138)       | Canada Goose (448)         | Canada Goose (1166)       |
| Common Grackle (334)       | Canada Goose (156)         | Canada Goose (133)        | American Crow (144)        | American Crow (81)        |
| American Crow (57)         | Common Grackle (84)        | Common Grackle (49)       | Yellow-rumped Warbler (46) | Cedar Waxwing (51)        |
| White-thr. Sparrow (54)    | Yellow-rumped Warbler (76) | White-thr. Sparrow (41)   | Red-wing. Blackbird (36)   | Common Grackle (50)       |
| Blue Jay (26)              | American Robin (32)        | American Robin (28)       | White-thr. Sparrow (29)    | White-thr. Sparrow (37)   |
| Yellow-rumped Warbler (22) | Ruby-cr. Kinglet (30)      | Cedar Waxwing (21)        | Blue Jay (23)              | American Robin (37)       |
| Black-cap. Chickadee (21)  | Rusty Blackbird (30)       | Black-cap. Chickadee (19) | Cedar Waxwing (22)         | Blue Jay (26)             |
| American Goldfinch (20)    | Blue Jay (24)              | Blue Jay (18)             | American Robin (17)        | Red-wing. Blackbird (21)  |
| Red-wing. Blackbird (19)   | Red-wing. Blackbird (20)   | American Goldfinch (18)   | Black-cap. Chickadee (16)  | American Goldfinch (21)   |
| American Robin (18)        | White-thr. Sparrow (18)    | Red-wing. Blackbird (15)  | American Goldfinch (14)    | Black-cap. Chickadee (16) |
| Song Sparrow (18)          |                            |                           |                            |                           |

| 2010                        | 2011                      | 2012                      | 2013                      | 2014                      |
|-----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Yellow-rumped Warbler (239) | Canada Goose (147)        | Canada Goose (93)         | Canada Goose (283)        | Canada Goose (601)        |
| Canada Goose (126)          | Ring-billed Gull (44)     | Blue Jay (75)             | American Crow (72)        | Common Grackle (198)      |
| American Crow (97)          | American Crow (44)        | White-thr. Sparrow (64)   | Red-wing. Blackbird (71)  | European Starling (124)   |
| Blue Jay (77)               | Blue Jay (24)             | Red-wing. Blackbird (50)  | White-thr. Sparrow (28)   | White-thr. Sparrow (57)   |
| White-thr. Sparrow (51)     | Red-wing. Blackbird (20)  | American Robin (38)       | Blue Jay (25)             | Red-wing. Blackbird (44)  |
| Red-wing. Blackbird (33)    | Cedar Waxwing (18)        | American Crow (31)        | Black-cap. Chickadee (22) | Blue Jay (40)             |
| European Starling (31)      | Black-cap. Chickadee (17) | Black-cap. Chickadee (20) | American Goldfinch (19)   | American Crow (39)        |
| Black-cap. Chickadee (26)   | American Robin (16)       | American Goldfinch (19)   | Song Sparrow (19)         | American Robin (30)       |
| American Robin (16)         | European Starling (16)    | Cedar Waxwing (9)         | American Robin (13)       | Black-cap. Chickadee (16) |
| American Goldfinch (14)     | White-thr. Sparrow (15)   | Ring-billed Gull (8)      | European Starling (13)    | Ring-billed Gull (12)     |



**Banding, Fall Week 9 (September 26 - October 2):**

| 2005                       | 2006                        | 2007                       | 2008                        | 2009                       |
|----------------------------|-----------------------------|----------------------------|-----------------------------|----------------------------|
| White-thr. Sparrow (104)   | Yellow-rumped Warbler (241) | White-thr. Sparrow (96)    | Yellow-rumped Warbler (688) | White-thr. Sparrow (100)   |
| Ruby-cr. Kinglet (89)      | Ruby-cr. Kinglet (114)      | Ruby-cr. Kinglet (45)      | Ruby-cr. Kinglet (111)      | Song Sparrow (50)          |
| Black-cap. Chickadee (38)  | White-thr. Sparrow (57)     | White-cr. Sparrow (22)     | White-thr. Sparrow (74)     | Ruby-cr. Kinglet (45)      |
| Yellow-rumped Warbler (21) | White-cr. Sparrow (27)      | Black-cap. Chickadee (16)  | Nashville Warbler (36)      | Blue-headed Vireo (21)     |
| Song Sparrow (18)          | Golden-cr. Kinglet (17)     | Song Sparrow (15)          | Song Sparrow (24)           | Yellow-rumped Warbler (21) |
| Dark-eyed Junco (17)       | Song Sparrow (13)           | American Goldfinch (15)    | Blue-headed Vireo (18)      | White-cr. Sparrow (14)     |
| Golden-cr. Kinglet (11)    | Nashville Warbler (10)      | Swamp Sparrow (13)         | American Goldfinch (12)     | Nashville Warbler (13)     |
| Nashville Warbler (10)     | Gray Catbird (8)            | Yellow-rumped Warbler (12) | Tennessee Warbler (11)      | Magnolia Warbler (11)      |
| Blk-thr. Blue Warbler (10) | Magnolia Warbler (8)        | Blue-headed Vireo (8)      | Magnolia Warbler (11)       | Hermit Thrush (8)          |
| White-cr. Sparrow (6)      | Cedar Waxwing (6)           | American Robin (6)         | Dark-eyed Junco (10)        | Blk-thr. Blue Warbler (8)  |
|                            |                             | West. Palm Warbler (6)     |                             | Swamp Sparrow (8)          |
|                            |                             | Dark-eyed Junco (6)        |                             |                            |

| 2010                        | 2011                       | 2012                       | 2013                       | 2014                       |
|-----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Yellow-rumped Warbler (750) | Ruby-cr. Kinglet (67)      | White-thr. Sparrow (112)   | White-thr. Sparrow (55)    | White-thr. Sparrow (88)    |
| Ruby-cr. Kinglet (82)       | White-thr. Sparrow (49)    | Yellow-rumped Warbler (84) | Ruby-cr. Kinglet (54)      | Yellow-rumped Warbler (84) |
| White-thr. Sparrow (70)     | Yellow-rumped Warbler (33) | Ruby-cr. Kinglet (67)      | Yellow-rumped Warbler (24) | Ruby-cr. Kinglet (45)      |
| Nashville Warbler (26)      | Song Sparrow (30)          | Swainson's Thrush (21)     | Song Sparrow (21)          | Golden-cr. Kinglet (32)    |
| Black-cap. Chickadee (15)   | Tennessee Warbler (22)     | Song Sparrow (19)          | Dark-eyed Junco (10)       | Blue Jay (23)              |
| American Goldfinch (14)     | Nashville Warbler (22)     | Golden-cr. Kinglet (14)    | Golden-cr. Kinglet (9)     | Dark-eyed Junco (23)       |
| Magnolia Warbler (11)       | Golden-cr. Kinglet (20)    | Nashville Warbler (11)     | Nashville Warbler (8)      | Magnolia Warbler (20)      |
| Golden-cr. Kinglet (10)     | Chipping Sparrow (12)      | Black-cap. Chickadee (10)  | American Goldfinch (8)     | Song Sparrow (14)          |
| Common Grackle (10)         | Blue Jay (7)               | Blue Jay (9)               | Swamp Sparrow (7)          | Nashville Warbler (12)     |
| Blue Jay (9)                | Gray Catbird (7)           | White-cr. Sparrow (9)      | Red-eyed Vireo (6)         | American Goldfinch (12)    |
| Tennessee Warbler (9)       |                            |                            |                            |                            |
| Song Sparrow (9)            |                            |                            |                            |                            |

**Observations, Fall Week 9 (September 26 - October 2):**

| 2005                      | 2006                       | 2007                      | 2008                        | 2009                      |
|---------------------------|----------------------------|---------------------------|-----------------------------|---------------------------|
| Canada Goose (494)        | Canada Goose (251)         | Canada Goose (433)        | Canada Goose (310)          | Canada Goose (758)        |
| Common Grackle (150)      | American Crow (126)        | American Crow (106)       | American Crow (206)         | Common Grackle (80)       |
| White-thr. Sparrow (88)   | Yellow-rumped Warbler (76) | Red-wing. Blackbird (75)  | Yellow-rumped Warbler (155) | American Robin (68)       |
| American Crow (74)        | Ruby-cr. Kinglet (42)      | White-thr. Sparrow (60)   | American Robin (34)         | White-thr. Sparrow (68)   |
| Blue Jay (34)             | White-thr. Sparrow (32)    | Common Grackle (56)       | Ruby-cr. Kinglet (33)       | American Crow (47)        |
| Black-cap. Chickadee (29) | American Robin (31)        | American Robin (42)       | Red-wing. Blackbird (32)    | European Starling (35)    |
| Ruby-cr. Kinglet (28)     | Blue Jay (19)              | Blue Jay (28)             | White-thr. Sparrow (27)     | Blue Jay (27)             |
| American Robin (28)       | White-cr. Sparrow (18)     | Black-cap. Chickadee (22) | Common Grackle (27)         | Song Sparrow (26)         |
| Red-wing. Blackbird (21)  | Black-cap. Chickadee (16)  | Ruby-cr. Kinglet (15)     | Blue Jay (18)               | Cedar Waxwing (24)        |
| American Goldfinch (18)   | Song Sparrow (15)          | American Goldfinch (15)   | Cedar Waxwing (17)          | Black-cap. Chickadee (21) |

| 2010                        | 2011                       | 2012                       | 2013                       | 2014                       |
|-----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Canada Goose (1147)         | Canada Goose (2361)        | Canada Goose (407)         | Canada Goose (612)         | Canada Goose (518)         |
| Yellow-rumped Warbler (303) | Red-wing. Blackbird (101)  | Red-wing. Blackbird (278)  | American Crow (66)         | European Starling (74)     |
| White-thr. Sparrow (103)    | American Crow (94)         | European Starling (222)    | White-thr. Sparrow (37)    | Red-wing. Blackbird (68)   |
| Blue Jay (94)               | American Robin (41)        | Common Grackle (110)       | American Robin (29)        | White-thr. Sparrow (62)    |
| Red-wing. Blackbird (91)    | Blue Jay (40)              | White-thr. Sparrow (104)   | Ruby-cr. Kinglet (26)      | Common Grackle (60)        |
| American Crow (87)          | Black-cap. Chickadee (28)  | American Robin (93)        | Ring-billed Gull (26)      | American Crow (48)         |
| Ruby-cr. Kinglet (40)       | White-thr. Sparrow (26)    | Blue Jay (65)              | Blue Jay (20)              | American Robin (37)        |
| Black-cap. Chickadee (28)   | Snow Goose (25)            | Yellow-rumped Warbler (48) | Black-cap. Chickadee (18)  | Yellow-rumped Warbler (37) |
| American Robin (25)         | Ruby-cr. Kinglet (24)      | American Crow (38)         | Song Sparrow (18)          | Blue Jay (28)              |
| Common Grackle (25)         | Yellow-rumped Warbler (21) | Black-cap. Chickadee (28)  | Yellow-rumped Warbler (15) | Ring-billed Gull (21)      |
|                             |                            |                            |                            | Black-cap. Chickadee (21)  |

**Banding, Fall Week 10 (October 3 - 9):**

| 2005                       | 2006                       | 2007                       | 2008                        | 2009                       |
|----------------------------|----------------------------|----------------------------|-----------------------------|----------------------------|
| White-thr. Sparrow (67)    | Ruby-cr. Kinglet (115)     | Ruby-cr. Kinglet (98)      | Yellow-rumped Warbler (650) | Ruby-cr. Kinglet (159)     |
| Ruby-cr. Kinglet (66)      | Yellow-rumped Warbler (40) | American Robin (54)        | Ruby-cr. Kinglet (126)      | White-thr. Sparrow (103)   |
| Black-cap. Chickadee (54)  | White-thr. Sparrow (31)    | White-thr. Sparrow (54)    | White-thr. Sparrow (100)    | Yellow-rumped Warbler (70) |
| Dark-eyed Junco (34)       | American Robin (28)        | Black-cap. Chickadee (52)  | Song Sparrow (32)           | White-cr. Sparrow (46)     |
| Yellow-rumped Warbler (30) | White-cr. Sparrow (17)     | Yellow-rumped Warbler (46) | American Robin (28)         | Hermit Thrush (37)         |
| Song Sparrow (25)          | Song Sparrow (11)          | Dark-eyed Junco (44)       | Dark-eyed Junco (23)        | Song Sparrow (33)          |
| Golden-cr. Kinglet (14)    | Hermit Thrush (10)         | White-cr. Sparrow (35)     | Nashville Warbler (21)      | American Robin (22)        |
| Swamp Sparrow (12)         | Golden-cr. Kinglet (7)     | Song Sparrow (18)          | White-cr. Sparrow (19)      | Dark-eyed Junco (21)       |
| American Goldfinch (10)    | Swamp Sparrow (7)          | American Goldfinch (16)    | Golden-cr. Kinglet (14)     | Blue-headed Vireo (15)     |
| Nashville Warbler (8)      | Blue-headed Vireo (6)      | Swamp Sparrow (10)         | Hermit Thrush (12)          | Golden-cr. Kinglet (10)    |
|                            | Winter Wren (6)            |                            |                             |                            |

| 2010                        | 2011                       | 2012                        | 2013                       | 2014                       |
|-----------------------------|----------------------------|-----------------------------|----------------------------|----------------------------|
| Yellow-rumped Warbler (605) | White-thr. Sparrow (64)    | Yellow-rumped Warbler (170) | Ruby-cr. Kinglet (185)     | Ruby-cr. Kinglet (81)      |
| Dark-eyed Junco (127)       | Ruby-cr. Kinglet (59)      | Ruby-cr. Kinglet (165)      | White-thr. Sparrow (78)    | White-thr. Sparrow (79)    |
| Ruby-cr. Kinglet (96)       | Yellow-rumped Warbler (31) | White-thr. Sparrow (158)    | Yellow-rumped Warbler (36) | Yellow-rumped Warbler (34) |
| White-thr. Sparrow (63)     | Golden-cr. Kinglet (24)    | Dark-eyed Junco (80)        | American Robin (34)        | Dark-eyed Junco (14)       |
| Golden-cr. Kinglet (33)     | Hermit Thrush (14)         | Hermit Thrush (39)          | Golden-cr. Kinglet (25)    | Nashville Warbler (11)     |
| White-cr. Sparrow (22)      | Song Sparrow (12)          | White-cr. Sparrow (35)      | Song Sparrow (22)          | Blue Jay (9)               |
| Hermit Thrush (18)          | White-cr. Sparrow (10)     | Golden-cr. Kinglet (21)     | Dark-eyed Junco (19)       | Song Sparrow (8)           |
| Song Sparrow (10)           | Nashville Warbler (8)      | American Robin (19)         | Hermit Thrush (16)         | Black-cap. Chickadee (6)   |
| Black-cap. Chickadee (8)    | Brown Creeper (7)          | Song Sparrow (19)           | Blue Jay (12)              | Golden-cr. Kinglet (6)     |
| Blue-headed Vireo (6)       | Dark-eyed Junco (7)        | Common Grackle (19)         | Nashville Warbler (10)     | White-cr. Sparrow (6)      |

**Observations, Fall Week 10 (October 3 - 9):**

| 2005                      | 2006                       | 2007                      | 2008                        | 2009                       |
|---------------------------|----------------------------|---------------------------|-----------------------------|----------------------------|
| Canada Goose (1250)       | Canada Goose (376)         | Canada Goose (901)        | Canada Goose (428)          | Canada Goose (258)         |
| Common Grackle (142)      | American Robin (99)        | American Robin (116)      | Yellow-rumped Warbler (178) | American Robin (154)       |
| American Crow (115)       | American Crow (67)         | American Crow (106)       | American Robin (108)        | White-thr. Sparrow (103)   |
| White-thr. Sparrow (112)  | Red-wing. Blackbird (57)   | White-thr. Sparrow (38)   | American Crow (106)         | European Starling (75)     |
| American Robin (100)      | Ruby-cr. Kinglet (49)      | Red-wing. Blackbird (37)  | Common Grackle (85)         | Red-wing. Blackbird (61)   |
| Ruby-cr. Kinglet (69)     | White-thr. Sparrow (25)    | European Starling (32)    | White-thr. Sparrow (57)     | White-cr. Sparrow (43)     |
| Red-wing. Blackbird (60)  | Yellow-rumped Warbler (25) | Ruby-cr. Kinglet (30)     | Red-wing. Blackbird (50)    | American Crow (40)         |
| Black-cap. Chickadee (46) | Blue Jay (23)              | Dark-eyed Junco (29)      | Ruby-cr. Kinglet (49)       | Ruby-cr. Kinglet (37)      |
| Golden-cr. Kinglet (35)   | Common Grackle (22)        | Black-cap. Chickadee (26) | Blue Jay (18)               | Common Grackle (24)        |
| Dark-eyed Junco (29)      | Black-cap. Chickadee (17)  | White-cr. Sparrow (20)    | Black-cap. Chickadee (17)   | Yellow-rumped Warbler (24) |

| 2010                        | 2011                       | 2012                       | 2013                      | 2014                       |
|-----------------------------|----------------------------|----------------------------|---------------------------|----------------------------|
| Canada Goose (1396)         | Canada Goose (928)         | Common Grackle (525)       | Canada Goose (350)        | Canada Goose (439)         |
| Yellow-rumped Warbler (294) | Red-wing. Blackbird (261)  | Canada Goose (407)         | Common Grackle (188)      | Red-wing. Blackbird (122)  |
| American Crow (220)         | American Robin (79)        | Red-wing. Blackbird (270)  | American Robin (109)      | White-thr. Sparrow (81)    |
| Red-wing. Blackbird (217)   | American Crow (70)         | European Starling (251)    | American Crow (65)        | Common Grackle (73)        |
| American Robin (114)        | White-thr. Sparrow (51)    | White-thr. Sparrow (141)   | Ruby-cr. Kinglet (54)     | American Robin (62)        |
| White-thr. Sparrow (70)     | Pine Siskin (50)           | American Robin (137)       | White-thr. Sparrow (44)   | European Starling (58)     |
| Dark-eyed Junco (69)        | Blue Jay (34)              | Dark-eyed Junco (73)       | Blue Jay (35)             | American Crow (43)         |
| Ruby-cr. Kinglet (47)       | Black-cap. Chickadee (32)  | Yellow-rumped Warbler (69) | European Starling (30)    | Ruby-cr. Kinglet (31)      |
| European Starling (45)      | Ruby-cr. Kinglet (23)      | American Crow (60)         | Red-wing. Blackbird (22)  | Yellow-rumped Warbler (28) |
| Blue Jay (39)               | Yellow-rumped Warbler (21) | Ruby-cr. Kinglet (55)      | Black-cap. Chickadee (16) | Blue Jay (21)              |

**Banding, Fall Week 11 (October 10 - 16):**

| 2005                       | 2006                      | 2007                      | 2008                        | 2009                      |
|----------------------------|---------------------------|---------------------------|-----------------------------|---------------------------|
| American Robin (34)        | American Robin (82)       | Ruby-cr. Kinglet (145)    | Yellow-rumped Warbler (209) | American Robin (51)       |
| Dark-eyed Junco (32)       | Ruby-cr. Kinglet (71)     | American Robin (80)       | American Robin (103)        | Dark-eyed Junco (46)      |
| Ruby-cr. Kinglet (26)      | Golden-cr. Kinglet (15)   | Black-cap. Chickadee (34) | Dark-eyed Junco (53)        | Hermit Thrush (34)        |
| Black-cap. Chickadee (15)  | Hermit Thrush (14)        | Dark-eyed Junco (29)      | Ruby-cr. Kinglet (34)       | Ruby-cr. Kinglet (33)     |
| Yellow-rumped Warbler (12) | White-thr. Sparrow (13)   | White-thr. Sparrow (25)   | Song Sparrow (32)           | White-thr. Sparrow (32)   |
| Hermit Thrush (11)         | Yellow-rumped Warbler (6) | Hermit Thrush (21)        | White-thr. Sparrow (26)     | Black-cap. Chickadee (15) |
| White-thr. Sparrow (10)    | Song Sparrow (6)          | White-cr. Sparrow (18)    | Pine Siskin (14)            | Song Sparrow (12)         |
| Song Sparrow (9)           | Blue Jay (5)              | Song Sparrow (17)         | Hermit Thrush (13)          | White-cr. Sparrow (9)     |
| Golden-cr. Kinglet (7)     | Dark-eyed Junco (5)       | Am. Tree Sparrow (10)     | Common Grackle (8)          | Swamp Sparrow (6)         |
| White-cr. Sparrow (7)      | Orange-cr. Warbler (4)    | Fox Sparrow (10)          | White-cr. Sparrow (7)       | Blue-headed Vireo (3)     |

| 2010                       | 2011                       | 2012                       | 2013                       | 2014                       |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Dark-eyed Junco (158)      | Yellow-rumped Warbler (30) | Ruby-cr. Kinglet (56)      | Ruby-cr. Kinglet (61)      | White-thr. Sparrow (127)   |
| Black-cap. Chickadee (139) | White-thr. Sparrow (21)    | White-thr. Sparrow (55)    | White-thr. Sparrow (61)    | Ruby-cr. Kinglet (95)      |
| Yellow-rumped Warbler (88) | Ruby-cr. Kinglet (11)      | Dark-eyed Junco (43)       | American Robin (32)        | Hermit Thrush (38)         |
| American Robin (51)        | Dark-eyed Junco (9)        | Hermit Thrush (32)         | Golden-cr. Kinglet (30)    | Dark-eyed Junco (37)       |
| Hermit Thrush (43)         | Hermit Thrush (8)          | American Robin (29)        | Dark-eyed Junco (21)       | Yellow-rumped Warbler (29) |
| White-thr. Sparrow (41)    | Song Sparrow (6)           | Yellow-rumped Warbler (21) | Yellow-rumped Warbler (13) | Swamp Sparrow (12)         |
| Ruby-cr. Kinglet (32)      | Swamp Sparrow (5)          | Fox Sparrow (12)           | Song Sparrow (12)          | Golden-cr. Kinglet (10)    |
| Golden-cr. Kinglet (23)    | Blue Jay (2)               | Purple Finch (10)          | Fox Sparrow (11)           | Fox Sparrow (9)            |
| Song Sparrow (15)          | Black-cap. Chickadee (2)   | Black-cap. Chickadee (8)   | Hermit Thrush (9)          | Black-cap. Chickadee (8)   |
| Fox Sparrow (13)           |                            | Golden-cr. Kinglet (8)     |                            | White-cr. Sparrow (8)      |
|                            |                            | Song Sparrow (8)           |                            |                            |

**Observations, Fall Week 11 (October 10 - 16):**

| 2005                      | 2006                      | 2007                      | 2008                       | 2009                      |
|---------------------------|---------------------------|---------------------------|----------------------------|---------------------------|
| Canada Goose (544)        | American Robin (419)      | Canada Goose (800)        | American Robin (260)       | American Robin (403)      |
| American Robin (318)      | Canada Goose (233)        | American Robin (347)      | Red-wing. Blackbird (176)  | Canada Goose (169)        |
| Common Grackle (124)      | Red-wing. Blackbird (132) | Red-wing. Blackbird (202) | Canada Goose (175)         | Red-wing. Blackbird (153) |
| American Crow (114)       | American Crow (131)       | American Crow (110)       | American Crow (154)        | American Crow (113)       |
| Red-wing. Blackbird (50)  | Ruby-cr. Kinglet (41)     | European Starling (56)    | Common Grackle (82)        | White-thr. Sparrow (63)   |
| Dark-eyed Junco (49)      | Cedar Waxwing (31)        | Ruby-cr. Kinglet (38)     | Yellow-rumped Warbler (59) | European Starling (53)    |
| White-thr. Sparrow (45)   | Mallard (27)              | White-thr. Sparrow (36)   | European Starling (49)     | Dark-eyed Junco (34)      |
| Ruby-cr. Kinglet (44)     | European Starling (27)    | Dark-eyed Junco (22)      | White-thr. Sparrow (26)    | Black-cap. Chickadee (18) |
| Black-cap. Chickadee (25) | White-thr. Sparrow (21)   | Common Grackle (20)       | Ruby-cr. Kinglet (21)      | White-cr. Sparrow (18)    |
| Golden-cr. Kinglet (23)   | Blue Jay (21)             | Black-cap. Chickadee (18) | Pine Siskin (21)           | Ruby-cr. Kinglet (15)     |

| 2010                       | 2011                      | 2012                      | 2013                     | 2014                       |
|----------------------------|---------------------------|---------------------------|--------------------------|----------------------------|
| American Robin (431)       | Canada Goose (306)        | Common Grackle (377)      | Canada Goose (191)       | Canada Goose (285)         |
| Red-wing. Blackbird (424)  | Red-wing. Blackbird (219) | Red-wing. Blackbird (347) | American Robin (157)     | Red-wing. Blackbird (167)  |
| Canada Goose (194)         | American Robin (87)       | Canada Goose (297)        | Red-wing. Blackbird (99) | White-thr. Sparrow (94)    |
| American Crow (88)         | American Crow (37)        | American Robin (213)      | European Starling (84)   | American Robin (78)        |
| Dark-eyed Junco (71)       | Blue Jay (27)             | European Starling (133)   | American Crow (72)       | European Starling (45)     |
| White-thr. Sparrow (57)    | White-thr. Sparrow (21)   | American Crow (84)        | Common Grackle (69)      | Common Grackle (38)        |
| Black-cap. Chickadee (54)  | European Starling (19)    | White-thr. Sparrow (58)   | White-thr. Sparrow (47)  | American Crow (33)         |
| Yellow-rumped Warbler (51) | Black-cap. Chickadee (12) | Dark-eyed Junco (45)      | Ring-billed Gull (37)    | Ruby-cr. Kinglet (32)      |
| Common Grackle (33)        | Pine Siskin (11)          | Ruby-cr. Kinglet (20)     | Blue Jay (26)            | Yellow-rumped Warbler (22) |
| European Starling (26)     | Yellow-rumped Warbler (8) | Black-cap. Chickadee (19) | Ruby-cr. Kinglet (22)    | Dark-eyed Junco (18)       |

**Banding, Fall Week 12 (October 17 - 23):**

| 2005                      | 2006                      | 2007                      | 2008                       | 2009                      |
|---------------------------|---------------------------|---------------------------|----------------------------|---------------------------|
| American Robin (47)       | American Robin (146)      | Ruby-cr. Kinglet (73)     | American Robin (101)       | Dark-eyed Junco (109)     |
| Black-cap. Chickadee (37) | Ruby-cr. Kinglet (66)     | American Robin (68)       | Dark-eyed Junco (54)       | American Robin (96)       |
| Dark-eyed Junco (22)      | Golden-cr. Kinglet (28)   | Dark-eyed Junco (38)      | White-thr. Sparrow (15)    | White-thr. Sparrow (35)   |
| American Goldfinch (11)   | White-thr. Sparrow (19)   | Black-cap. Chickadee (21) | Song Sparrow (13)          | Black-cap. Chickadee (31) |
| Am. Tree Sparrow (9)      | Dark-eyed Junco (15)      | White-thr. Sparrow (21)   | Yellow-rumped Warbler (11) | Red-wing. Blackbird (30)  |
| Fox Sparrow (5)           | Am. Tree Sparrow (14)     | Am. Tree Sparrow (16)     | Black-cap. Chickadee (9)   | Song Sparrow (12)         |
| Song Sparrow (5)          | Song Sparrow (13)         | Song Sparrow (16)         | Ruby-cr. Kinglet (5)       | Fox Sparrow (9)           |
| Ruby-cr. Kinglet (4)      | Hermit Thrush (8)         | Fox Sparrow (9)           | Am. Tree Sparrow (5)       | Ruby-cr. Kinglet (8)      |
| Hermit Thrush (4)         | Yellow-rumped Warbler (6) | Golden-cr. Kinglet (5)    |                            | Am. Tree Sparrow (7)      |
| White-thr. Sparrow (3)    |                           | American Goldfinch (5)    |                            | Golden-cr. Kinglet (6)    |

| 2010                       | 2011                    | 2012                      | 2013                      | 2014                      |
|----------------------------|-------------------------|---------------------------|---------------------------|---------------------------|
| American Robin (191)       | White-thr. Sparrow (27) | Black-cap. Chickadee (62) | American Robin (68)       | Dark-eyed Junco (97)      |
| Dark-eyed Junco (134)      | Dark-eyed Junco (24)    | Dark-eyed Junco (47)      | Ruby-cr. Kinglet (28)     | Ruby-cr. Kinglet (65)     |
| Black-cap. Chickadee (132) | Ruby-cr. Kinglet (18)   | American Robin (45)       | White-thr. Sparrow (15)   | White-thr. Sparrow (62)   |
| Ruby-cr. Kinglet (25)      | Golden-cr. Kinglet (15) | Ruby-cr. Kinglet (41)     | Golden-cr. Kinglet (12)   | American Robin (32)       |
| White-thr. Sparrow (25)    | Song Sparrow (15)       | Fox Sparrow (25)          | Hermit Thrush (11)        | Hermit Thrush (25)        |
| Hermit Thrush (21)         | American Robin (8)      | White-thr. Sparrow (20)   | Common Grackle (8)        | Am. Tree Sparrow (23)     |
| Song Sparrow (16)          | Red-wing. Blackbird (8) | Golden-cr. Kinglet (15)   | Dark-eyed Junco (6)       | Fox Sparrow (15)          |
| Am. Tree Sparrow (13)      | Am. Tree Sparrow (6)    | Hermit Thrush (14)        | Yellow-rumped Warbler (3) | Black-cap. Chickadee (14) |
| Fox Sparrow (12)           |                         | Am. Tree Sparrow (12)     | Am. Tree Sparrow (3)      | Golden-cr. Kinglet (12)   |
| Red-wing. Blackbird (10)   |                         | Red-wing. Blackbird (10)  | Song Sparrow (3)          | Song Sparrow (11)         |

**Observations, Fall Week 12 (October 17 - 23):**

| 2005                      | 2006                      | 2007                      | 2008                      | 2009                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Canada Goose (260)        | American Robin (322)      | Canada Goose (946)        | Canada Goose (283)        | Red-wing. Blackbird (334) |
| American Robin (240)      | Red-wing. Blackbird (174) | American Robin (333)      | Red-wing. Blackbird (276) | American Robin (321)      |
| Common Grackle (133)      | European Starling (169)   | Red-wing. Blackbird (220) | American Robin (264)      | Canada Goose (166)        |
| American Crow (101)       | American Crow (152)       | American Crow (179)       | American Crow (197)       | American Crow (103)       |
| Red-wing. Blackbird (98)  | Canada Goose (78)         | Common Grackle (108)      | Common Grackle (105)      | Dark-eyed Junco (37)      |
| European Starling (92)    | White-thr. Sparrow (24)   | European Starling (38)    | Ring-billed Gull (58)     | Black-cap. Chickadee (26) |
| Dark-eyed Junco (57)      | Cedar Waxwing (23)        | Dark-eyed Junco (37)      | Dark-eyed Junco (36)      | European Starling (26)    |
| Black-cap. Chickadee (24) | Ruby-cr. Kinglet (21)     | Ruby-cr. Kinglet (20)     | European Starling (28)    | White-thr. Sparrow (23)   |
| Ring-billed Gull (23)     | Mallard (17)              | White-thr. Sparrow (17)   | Black-cap. Chickadee (22) | Common Grackle (18)       |
| Mourning Dove (22)        | Blue Jay (14)             | Black-cap. Chickadee (15) | White-thr. Sparrow (14)   | Blue Jay (10)             |
| White-thr. Sparrow (22)   |                           |                           |                           |                           |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| American Robin (552)      | Canada Goose (682)        | Canada Goose (1159)       | American Robin (392)      | Canada Goose (328)        |
| Canada Goose (425)        | Red-wing. Blackbird (306) | Red-wing. Blackbird (265) | Red-wing. Blackbird (326) | American Robin (185)      |
| Red-wing. Blackbird (349) | American Robin (217)      | American Robin (207)      | European Starling (251)   | Red-wing. Blackbird (135) |
| European Starling (167)   | American Crow (107)       | American Crow (130)       | Canada Goose (170)        | American Crow (94)        |
| American Crow (135)       | European Starling (24)    | Common Grackle (80)       | Common Grackle (63)       | Common Grackle (72)       |
| Dark-eyed Junco (69)      | Black-cap. Chickadee (22) | European Starling (59)    | American Crow (53)        | European Starling (72)    |
| Black-cap. Chickadee (51) | White-thr. Sparrow (21)   | Dark-eyed Junco (44)      | Ring-billed Gull (28)     | Dark-eyed Junco (53)      |
| White-thr. Sparrow (33)   | Blue Jay (18)             | White-thr. Sparrow (27)   | White-thr. Sparrow (18)   | White-thr. Sparrow (53)   |
| Common Grackle (32)       | Dark-eyed Junco (14)      | Black-cap. Chickadee (25) | Black-cap. Chickadee (16) | Ruby-cr. Kinglet (17)     |
| Mallard (22)              | Mallard (9)               | Mallard (20)              | Ruby-cr. Kinglet (16)     | Blue Jay (16)             |



**Banding, Fall Week 13 (October 24 - 30):**

| 2005                      | 2006                   | 2007                      | 2008                   | 2009                      |
|---------------------------|------------------------|---------------------------|------------------------|---------------------------|
| Dark-eyed Junco (79)      | American Robin (34)    | American Robin (99)       | American Robin (95)    | Dark-eyed Junco (175)     |
| Black-cap. Chickadee (31) | Am. Tree Sparrow (15)  | Black-cap. Chickadee (15) | Dark-eyed Junco (94)   | Am. Tree Sparrow (54)     |
| Fox Sparrow (20)          | Ruby-cr. Kinglet (14)  | Am. Tree Sparrow (8)      | Ruby-cr. Kinglet (9)   | Black-cap. Chickadee (44) |
| American Robin (18)       | Dark-eyed Junco (9)    | Fox Sparrow (5)           | Am. Tree Sparrow (6)   | White-thr. Sparrow (22)   |
| Am. Tree Sparrow (15)     | Song Sparrow (8)       | Song Sparrow (4)          | Song Sparrow (5)       | Fox Sparrow (17)          |
| Golden-cr. Kinglet (6)    | White-thr. Sparrow (8) | Dark-eyed Junco (4)       | Fox Sparrow (3)        | American Robin (9)        |
| White-thr. Sparrow (5)    | Golden-cr. Kinglet (2) |                           | White-thr. Sparrow (3) | Song Sparrow (9)          |
| American Goldfinch (4)    |                        |                           | Purple Finch (3)       | Ruby-cr. Kinglet (4)      |
|                           |                        |                           | Hermit Thrush (2)      | Golden-cr. Kinglet (3)    |
|                           |                        |                           |                        | Swamp Sparrow (3)         |

| 2010                      | 2011                     | 2012                      | 2013                     | 2014                     |
|---------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| American Robin (125)      | American Robin (53)      | Black-cap. Chickadee (28) | American Robin (91)      | Am. Tree Sparrow (80)    |
| Black-cap. Chickadee (87) | Am. Tree Sparrow (32)    | Golden-cr. Kinglet (19)   | Am. Tree Sparrow (8)     | American Robin (71)      |
| Dark-eyed Junco (66)      | Dark-eyed Junco (12)     | American Robin (19)       | White-thr. Sparrow (7)   | Dark-eyed Junco (71)     |
| Am. Tree Sparrow (37)     | White-thr. Sparrow (10)  | Am. Tree Sparrow (19)     | Song Sparrow (4)         | White-thr. Sparrow (25)  |
| Fox Sparrow (22)          | Red-wing. Blackbird (9)  | Dark-eyed Junco (18)      | Blue Jay (3)             | Fox Sparrow (19)         |
| White-thr. Sparrow (22)   | Ruby-cr. Kinglet (7)     | Fox Sparrow (10)          | Black-cap. Chickadee (3) | Ruby-cr. Kinglet (17)    |
| American Goldfinch (22)   | Golden-cr. Kinglet (4)   | White-thr. Sparrow (10)   | Golden-cr. Kinglet (3)   | Hermit Thrush (12)       |
| Ruby-cr. Kinglet (9)      | Song Sparrow (4)         | American Goldfinch (8)    | Hermit Thrush (3)        | Golden-cr. Kinglet (8)   |
| Hermit Thrush (3)         | Black-cap. Chickadee (3) | Northern Cardinal (5)     | Dark-eyed Junco (3)      | Song Sparrow (8)         |
|                           | Northern Cardinal (3)    | Ruby-cr. Kinglet (4)      | Ruby-cr. Kinglet (2)     | Black-cap. Chickadee (7) |

**Observations, Fall Week 13 (October 24 - 30):**

| 2005                         | 2006                      | 2007                      | 2008                      | 2009                      |
|------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Canada Goose (404)           | Red-wing. Blackbird (150) | Canada Goose (1670)       | American Robin (259)      | Red-wing. Blackbird (465) |
| Unidentified Scaup sp. (169) | American Crow (144)       | Red-wing. Blackbird (700) | Red-wing. Blackbird (211) | American Robin (174)      |
| American Crow (115)          | American Robin (136)      | American Robin (234)      | American Crow (174)       | American Crow (143)       |
| American Robin (106)         | European Starling (104)   | American Crow (167)       | European Starling (131)   | Canada Goose (91)         |
| Dark-eyed Junco (63)         | Canada Goose (72)         | Mallard (139)             | Canada Goose (80)         | Dark-eyed Junco (71)      |
| Red-wing. Blackbird (60)     | Cedar Waxwing (27)        | Common Grackle (81)       | Dark-eyed Junco (48)      | Mallard (33)              |
| Common Grackle (40)          | Blue Jay (14)             | European Starling (63)    | Common Grackle (25)       | Black-cap. Chickadee (29) |
| Mourning Dove (36)           | Black-cap. Chickadee (14) | Black-cap. Chickadee (16) | Black-cap. Chickadee (15) | White-thr. Sparrow (22)   |
| Black-cap. Chickadee (34)    | Mallard (11)              | American Goldfinch (13)   | Ring-billed Gull (9)      | Am. Tree Sparrow (16)     |
| Ring-billed Gull (20)        | White-thr. Sparrow (11)   | Dark-eyed Junco (10)      | Blue Jay (8)              | European Starling (15)    |

| 2010                      | 2011                      | 2012                      | 2013                      | 2014                      |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| American Robin (550)      | Canada Goose (486)        | Canada Goose (1206)       | American Robin (248)      | American Robin (776)      |
| Canada Goose (331)        | Red-wing. Blackbird (461) | Ring-billed Gull (255)    | European Starling (221)   | Canada Goose (565)        |
| Red-wing. Blackbird (305) | American Robin (275)      | Red-wing. Blackbird (254) | Red-wing. Blackbird (218) | Red-wing. Blackbird (246) |
| American Crow (208)       | American Crow (239)       | American Robin (196)      | Canada Goose (215)        | European Starling (90)    |
| European Starling (117)   | European Starling (46)    | American Crow (115)       | American Crow (32)        | American Crow (80)        |
| Dark-eyed Junco (57)      | Mallard (23)              | European Starling (91)    | Black-cap. Chickadee (14) | Common Grackle (58)       |
| Black-cap. Chickadee (35) | Dark-eyed Junco (17)      | Common Grackle (59)       | Blue Jay (13)             | Dark-eyed Junco (43)      |
| Mallard (31)              | Black-cap. Chickadee (16) | Mallard (46)              | White-thr. Sparrow (9)    | Snow Goose (36)           |
| White-thr. Sparrow (22)   | Blue Jay (15)             | Black-cap. Chickadee (34) | Dark-eyed Junco (8)       | Am. Tree Sparrow (30)     |
| Blue Jay (15)             | Common Grackle (11)       | Mourning Dove (25)        | Ring-billed Gull (5)      | White-thr. Sparrow (23)   |

**Banding, Fall Season (August 1 - October 30):**

| 2005                        | 2006                        | 2007                       | 2008                         | 2009                        |
|-----------------------------|-----------------------------|----------------------------|------------------------------|-----------------------------|
| White-thr. Sparrow (354)    | Yellow-rumped Warbler (522) | Ruby-cr. Kinglet (376)     | Yellow-rumped Warbler (1732) | White-thr. Sparrow (428)    |
| Ruby-cr. Kinglet (245)      | Ruby-cr. Kinglet (444)      | American Robin (318)       | American Robin (346)         | Dark-eyed Junco (361)       |
| Black-cap. Chickadee (222)  | American Robin (302)        | White-thr. Sparrow (318)   | Ruby-cr. Kinglet (319)       | Song Sparrow (322)          |
| Song Sparrow (215)          | Song Sparrow (302)          | Song Sparrow (198)         | White-thr. Sparrow (317)     | Ruby-cr. Kinglet (257)      |
| Magnolia Warbler (192)      | White-thr. Sparrow (187)    | Black-cap. Chickadee (172) | Magnolia Warbler (264)       | American Robin (200)        |
| Dark-eyed Junco (191)       | Magnolia Warbler (157)      | Dark-eyed Junco (127)      | Dark-eyed Junco (236)        | Black-cap. Chickadee (135)  |
| Nashville Warbler (164)     | Nashville Warbler (98)      | American Goldfinch (94)    | Song Sparrow (199)           | Yellow-rumped Warbler (106) |
| Yellow-rumped Warbler (157) | Common Yellowthroat (77)    | White-cr. Sparrow (80)     | Nashville Warbler (158)      | American Redstart (104)     |
| American Robin (119)        | Golden-cr. Kinglet (73)     | American Redstart (77)     | American Redstart (99)       | Magnolia Warbler (103)      |
| Red-eyed Vireo (117)        | Baltimore Oriole (62)       | Magnolia Warbler (74)      | Common Yellowthroat (93)     | Hermit Thrush (86)          |

| 2010                         | 2011                        | 2012                        | 2013                        | 2014                        |
|------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Yellow-rumped Warbler (2359) | Magnolia Warbler (252)      | White-thr. Sparrow (506)    | Ruby-cr. Kinglet (347)      | White-thr. Sparrow (484)    |
| Dark-eyed Junco (509)        | White-thr. Sparrow (216)    | Ruby-cr. Kinglet (353)      | Magnolia Warbler (284)      | Ruby-cr. Kinglet (327)      |
| Black-cap. Chickadee (440)   | Tennessee Warbler (208)     | Yellow-rumped Warbler (292) | Song Sparrow (267)          | Magnolia Warbler (279)      |
| American Robin (394)         | Ruby-cr. Kinglet (180)      | Song Sparrow (217)          | White-thr. Sparrow (263)    | Dark-eyed Junco (242)       |
| White-thr. Sparrow (351)     | Song Sparrow (170)          | Magnolia Warbler (203)      | Tennessee Warbler (249)     | Tennessee Warbler (168)     |
| Ruby-cr. Kinglet (271)       | American Redstart (150)     | Dark-eyed Junco (198)       | American Robin (236)        | Yellow-rumped Warbler (164) |
| Magnolia Warbler (260)       | Nashville Warbler (141)     | Swainson's Thrush (176)     | American Redstart (146)     | American Robin (144)        |
| Song Sparrow (219)           | Yellow-rumped Warbler (108) | Black-cap. Chickadee (171)  | Yellow-rumped Warbler (108) | American Redstart (138)     |
| Nashville Warbler (161)      | Common Yellowthroat (80)    | American Redstart (139)     | Golden-cr. Kinglet (101)    | Song Sparrow (136)          |
| American Redstart (149)      | American Robin (79)         | American Robin (130)        | Cedar Waxwing (91)          | Red-eyed Vireo (126)        |

**Observations, Fall Season (August 1 - October 30):**

| 2005                      | 2006                       | 2007                      | 2008                       | 2009                      |
|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| Canada Goose (241)        | American Crow (112)        | Canada Goose (378)        | Canada Goose (143)         | Canada Goose (213)        |
| Common Grackle (151)      | Canada Goose (91)          | Red-wing. Blackbird (103) | American Crow (97)         | American Robin (95)       |
| American Robin (64)       | American Robin (86)        | American Crow (102)       | American Robin (79)        | Red-wing. Blackbird (86)  |
| American Crow (61)        | Red-wing. Blackbird (55)   | American Robin (89)       | Red-wing. Blackbird (64)   | American Crow (50)        |
| White-thr. Sparrow (29)   | Common Grackle (46)        | Common Grackle (31)       | Common Grackle (41)        | White-thr. Sparrow (28)   |
| Red-wing. Blackbird (27)  | European Starling (27)     | White-thr. Sparrow (19)   | Yellow-rumped Warbler (35) | Common Grackle (23)       |
| Black-cap. Chickadee (24) | Song Sparrow (21)          | American Goldfinch (19)   | European Starling (19)     | Black-cap. Chickadee (20) |
| Dark-eyed Junco (16)      | Yellow-rumped Warbler (17) | Black-cap. Chickadee (18) | Black-cap. Chickadee (16)  | European Starling (18)    |
| Blue Jay (15)             | Blue Jay (17)              | European Starling (17)    | Blue Jay (14)              | Cedar Waxwing (17)        |
| American Goldfinch (15)   | Cedar Waxwing (17)         | Mallard (13)              | White-thr. Sparrow (14)    | Dark-eyed Junco (13)      |

| 2010                       | 2011                      | 2012                      | 2013                      | 2014                      |
|----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Canada Goose (284)         | Canada Goose (396)        | Canada Goose (294)        | Canada Goose (147)        | Canada Goose (223)        |
| American Robin (136)       | Red-wing. Blackbird (113) | Common Grackle (154)      | American Robin (81)       | American Robin (106)      |
| Red-wing. Blackbird (112)  | American Robin (61)       | Red-wing. Blackbird (116) | Red-wing. Blackbird (63)  | Red-wing. Blackbird (66)  |
| American Crow (82)         | American Crow (59)        | American Robin (76)       | European Starling (53)    | Common Grackle (54)       |
| Yellow-rumped Warbler (70) | Black-cap. Chickadee (21) | European Starling (60)    | American Crow (45)        | European Starling (50)    |
| European Starling (32)     | Cedar Waxwing (17)        | American Crow (45)        | Common Grackle (34)       | American Crow (41)        |
| Common Grackle (31)        | Blue Jay (16)             | White-thr. Sparrow (37)   | American Goldfinch (20)   | White-thr. Sparrow (31)   |
| White-thr. Sparrow (29)    | White-thr. Sparrow (12)   | Blue Jay (25)             | Cedar Waxwing (20)        | Blue Jay (19)             |
| Black-cap. Chickadee (29)  | European Starling (10)    | Ring-billed Gull (23)     | Black-cap. Chickadee (18) | Black-cap. Chickadee (17) |
| Blue Jay (27)              | American Goldfinch (10)   | Black-cap. Chickadee (21) | Blue Jay (17)             | American Goldfinch (16)   |



## Appendix D: Species Occurrence Summaries

This section summarizes observation and banding data on a weekly (spring and fall) or monthly (summer and winter) basis for all 210 species observed at MBO between November 2004 and October 2014. Species are organized according to the latest taxonomic revisions by the American Ornithologists' Union (AOU 2015). Selected species accounts feature some supplementary analysis.

Most species accounts begin with a table providing an overview of spring and fall occurrence by year. It identifies the first and last day of occurrence in each season, as well as the date of the peak count, the number of days spanned by first and last observations, number of days on which the species was observed (and percentage of the season), date of the season's high count, and total number of individuals recorded. Mean values for the ten-year period are presented for all categories, calculated as the average date / span / days / high count among years in which the species was observed, and as the average total over ten years counting years with no observations as zeroes.

This section is typically followed by two tables which provide the mean daily count of individuals for each period of the year (tables are omitted if they contain no records). During spring and fall migration monitoring, this is usually the total divided by 7, since those seasons have had almost complete coverage; during summer and winter (and owl banding) the totals are divided by the number of days of observation or banding in each period. Numbers above 0.1 are rounded to one decimal place, and those below 0.1 are rounded to two decimal places to permit distinction among rare records. For each season, the peak is shown in bold red, unless numbers across the season are too similar to identify a distinct peak (usually for rare species). Time periods are defined as follows:

### WINTER:

Nov: October 31 – November 30 (of the year BEFORE that listed in the row header)

Dec: December 1 – 31 (of the year BEFORE that listed in the row header)

Jan: January 1 – 31

Feb: February 1 – 28

Mar: March 1 – 27

### SPRING:

S1: March 28 – April 3

S6: May 2 – 8

S2: April 4 – 10

S7: May 9 – 15

S3: April 11 – 17

S8: May 16 – 22

S4: April 18 – 24

S9: May 23 – 29

S5: April 25 – May 1

S10: May 30 – June 5

### SUMMER:

Jun: June 6 – 30

July: July 1 – 31

### FALL:

F1: August 1 – 7

F8: September 19 – 25

F2: August 8 – 14

F9: September 26 – October 2

F3: August 15 – 21

F10: October 3 – 9

F4: August 22 – 28

F11: October 10 – 16

F5: August 29 – September 4

F12: October 17 – 23

F6: September 5 – 11

F13: October 24 – 30

F7: September 12 – 18

For species that have been banded, another two tables (or one, if not banded in both winter/spring and summer/fall) summarize the number of individuals banded per period, and otherwise following the same approach as the observation tables. A brief paragraph follows the tables for each species, highlighting key points such as seasonal patterns, trends over time, and notable occurrences. Supplementary analysis highlighting trends over time or results of additional research is provided for 27 of the most common species.

**GWFG: Greater White-fronted Goose / Oie rieuse (*Anser albifrons*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |        |      |       | Sep 21 | Sep 21 | Sep 21 | 1    | 1 (1%) | 1    | 1     |
| 2014     | Apr 24 | Apr 24 | Apr 24 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| Mean     | Apr 24 | Apr 24 | Apr 24 | 1    | 1 (1%) | 1    | 0.1   | Sep 21 | Sep 21 | Sep 21 | 1    | 1 (1%) | 1    | 0.1   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|----|----|----|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    | 0.1  |    |    |    |    |    |     | 0.01   |
| Mean     |     |     |     |     |     |        |    |    |    | 0.01 |    |    |    |    |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8   | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|----|------|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2006     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2007     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2008     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2009     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2010     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2011     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2012     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2013     |     |     |        |    |    |    |    |    |    |    | 0.1  |    |     |     |     |     | 0.01  |
| 2014     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| Mean     |     |     |        |    |    |    |    |    |    |    | 0.01 |    |     |     |     |     | <0.01 |

Only two Greater White-fronted Geese have been observed to date at MBO, one in September 2013 and another the next spring in April 2014. Both were associated with flocks of Canada Geese.

**SNGO: Snow Goose / Oie des neiges (*Chen caerulescens*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 5  | Apr 5  | Apr 9  | 5    | 2 (3%)  | 250  | 320   | Oct 10 | Oct 23 | Oct 23 | 14   | 3 (3%) | 110  | 171   |
| 2006     | Apr 7  | May 6  | May 7  | 31   | 4 (6%)  | 3800 | 4450  | Oct 6  | Oct 28 | Oct 28 | 23   | 3 (3%) | 32   | 34    |
| 2007     | Apr 14 | Apr 19 | May 3  | 20   | 5 (7%)  | 4500 | 6135  |        |        |        |      |        |      |       |
| 2008     | Apr 4  | May 5  | May 5  | 32   | 9 (13%) | 1050 | 3299  | Oct 22 | Oct 22 | Oct 22 | 1    | 1 (1%) | 20   | 20    |
| 2009     | Mar 28 | Mar 28 | May 3  | 37   | 7 (10%) | 1300 | 3305  | Sep 15 | Oct 3  | Oct 3  | 19   | 5 (5%) | 150  | 225   |
| 2010     | Apr 3  | Apr 3  | Apr 3  | 1    | 1 (1%)  | 220  | 220   | Oct 2  | Oct 3  | Oct 26 | 25   | 3 (3%) | 71   | 78    |
| 2011     | Apr 1  | Apr 1  | Apr 29 | 29   | 7 (10%) | 3250 | 3916  | Oct 1  | Oct 2  | Oct 2  | 2    | 2 (2%) | 135  | 178   |
| 2012     | Apr 25 | May 12 | May 12 | 18   | 2 (3%)  | 100  | 188   | Oct 17 | Oct 28 | Oct 28 | 12   | 3 (3%) | 22   | 27    |
| 2013     | Mar 31 | Apr 10 | Apr 21 | 22   | 5 (7%)  | 260  | 675   | Oct 2  | Oct 4  | Oct 5  | 4    | 4 (4%) | 22   | 25    |
| 2014     | Apr 2  | Apr 25 | Apr 25 | 24   | 5 (7%)  | 150  | 435   | Oct 21 | Oct 28 | Oct 28 | 8    | 3 (3%) | 250  | 360   |
| Mean     | Apr 5  | Apr 17 | Apr 26 | 22   | 5 (7%)  | 1488 | 2294  | Oct 7  | Oct 15 | Oct 18 | 12   | 3 (3%) | 90   | 112   |

| Observed | Nov  | Dec | Jan | Feb | Mar  | Winter | S1    | S2   | S3    | S4    | S5   | S6    | S7   | S8 | S9 | S10 | Spring |
|----------|------|-----|-----|-----|------|--------|-------|------|-------|-------|------|-------|------|----|----|-----|--------|
| 2005     |      |     |     |     |      |        |       | 53.3 |       |       |      |       |      |    |    |     | 5.4    |
| 2006     |      |     |     |     |      |        |       | 62.5 |       |       |      | 582.1 |      |    |    |     | 64.5   |
| 2007     |      | 0.9 |     |     |      | 0.1    |       |      | 27.9  | 791.4 |      | 57.1  |      |    |    |     | 87.6   |
| 2008     | 0.1  |     |     |     |      | 0.04   |       | 20.3 | 162.1 | 138.9 |      | 150.0 |      |    |    |     | 47.1   |
| 2009     |      |     |     |     |      |        | 185.7 | 7.2  | 95.7  | 155.7 | 28.6 | 0.3   |      |    |    |     | 47.9   |
| 2010     |      |     |     |     |      |        | 31.4  |      |       |       |      |       |      |    |    |     | 3.1    |
| 2011     |      |     |     |     |      |        | 501.4 | 36.4 |       | 21.4  | 0.1  |       |      |    |    |     | 55.9   |
| 2012     |      |     |     |     | 12.6 | 2.5    |       |      |       |       | 12.6 |       | 14.3 |    |    |     | 2.7    |
| 2013     |      |     |     |     |      |        | 7.1   | 83.6 |       | 5.7   |      |       |      |    |    |     | 9.6    |
| 2014     | 17.8 |     |     |     |      | 3.1    | 3.3   |      | 14.3  | 23.6  | 21.4 |       |      |    |    |     | 6.4    |
| Mean     | 0.9  | 0.1 |     |     | 0.7  | 0.4    | 82.3  | 25.7 | 30.0  | 115.3 | 6.3  | 79.0  | 1.4  |    |    |     | 33.5   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7   | F8 | F9   | F10  | F11  | F12  | F13  | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|------|----|------|------|------|------|------|------|
| 2005     |     |     |        |    |    |    |    |    |    |      |    |      |      | 10.2 | 15.7 |      | 1.9  |
| 2006     |     |     |        |    |    |    |    |    |    |      |    |      | 0.1  | 0.1  |      | 4.6  | 0.4  |
| 2007     |     |     |        |    |    |    |    |    |    |      |    |      |      |      |      |      |      |
| 2008     |     |     |        |    |    |    |    |    |    |      |    |      |      |      | 2.9  |      | 0.2  |
| 2009     |     |     |        |    |    |    |    |    |    | 10.0 |    | 0.7  | 21.4 |      |      |      | 2.5  |
| 2010     |     |     |        |    |    |    |    |    |    |      |    | 0.1  | 10.1 |      |      | 0.9  | 0.9  |
| 2011     |     |     |        |    |    |    |    |    |    |      |    | 25.4 |      |      |      |      | 2.0  |
| 2012     |     |     |        |    |    |    |    |    |    |      |    |      |      |      | 0.7  | 3.1  | 0.3  |
| 2013     |     |     |        |    |    |    |    |    |    |      |    | 0.1  | 3.4  |      |      |      | 0.3  |
| 2014     |     |     |        |    |    |    |    |    |    |      |    |      |      |      | 15.7 | 35.7 | 4.0  |
| Mean     |     |     |        |    |    |    |    |    |    | 1.0  |    | 2.7  | 3.6  | 0.9  | 3.5  | 4.4  | 1.2  |

Snow Goose is a regular spring and fall migrant at MBO, with a few late observations trickling into early winter in three years, and an early flock observed near the end of winter in another. To date, all sightings have been of individuals or flocks flying past MBO, and all are believed to be Greater Snow Geese. Spring numbers are always much higher than those in fall, reflecting the large flocks that stage in eastern Ontario and southern Quebec prior to heading on to the arctic. Timing of migration is highly variable from year to year, with the spring peak ranging from week 1 to 7, and the fall peak from week 9 to 13. Spring numbers have been significantly lower since 2010, except for 2011.

**ROGO: Ross's Goose / Oie de Ross (*Anser rossii*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2013     | May 12 | May 12 | May 12 | 1    | 1 (1%) | 1    | 1     |       |      |      |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| Mean     | May 12 | May 12 | May 12 | 1    | 1 (1%) | 1    | 0.1   |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7   | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|------|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  |    |    |     | 0.01   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.01 |    |    |     | <0.01  |

Only one Ross's Goose has been observed at MBO, in May 2013, flying low and initially detected by its distinctive high-pitched call.

**ATBR: Atlantic Brant / Bernache cravant (forme à ventre foncé) (*Branta bernicla bernicla*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2006     | May 21 | May 21 | May 21 | 1    | 1 (1%) | 10   | 10    |       |      |      |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| Mean     | May 21 | May 21 | May 21 | 1    | 1 (1%) | 10   | 1.0   |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    | 1.4 |    |     | 0.1    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1 |    |     | 0.01   |

Only one flock of Brant has been observed at MBO, flying past MBO in May 2006.

**CACG: Cackling Goose / Bernache de Hutchins (*Branta hutchinsii*)**

| Observed | First | Peak  | Last  | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|-------|-------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |       |       |      |        |      |       | Oct 22 | Oct 22 | Oct 22 | 1    | 1 (1%) | 1    | 1     |
| 2006     |       |       |       |      |        |      |       | Oct 10 | Oct 10 | Oct 10 | 1    | 1 (1%) | 1    | 1     |
| 2007     |       |       |       |      |        |      |       | Oct 24 | Oct 29 | Oct 29 | 6    | 2 (2%) | 6    | 9     |
| 2008     | May 2 | May 5 | May 5 | 4    | 2 (3%) | 3    | 5     | Sep 22 | Sep 22 | Sep 22 | 1    | 1 (1%) | 1    | 1     |
| 2009     |       |       |       |      |        |      |       | Sep 19 | Sep 19 | Oct 25 | 37   | 5 (5%) | 1    | 5     |
| 2010     | May 4 | May 4 | May 4 | 1    | 1 (1%) | 1    | 1     | Oct 26 | Oct 26 | Oct 26 | 1    | 1 (1%) | 10   | 10    |
| 2011     |       |       |       |      |        |      |       | Oct 10 | Oct 10 | Oct 15 | 6    | 3 (3%) | 1    | 3     |
| 2012     | May 9 | May 9 | May 9 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2013     |       |       |       |      |        |      |       | Aug 18 | Aug 18 | Oct 29 | 73   | 3 (3%) | 4    | 6     |
| 2014     |       |       |       |      |        |      |       | Oct 11 | Oct 11 | Oct 28 | 18   | 2 (2%) | 3    | 5     |
| Mean     | May 5 | May 6 | May 6 | 2    | 1 (2%) | 2    | 0.7   | Oct 4  | Oct 5  | Oct 19 | 16   | 2 (2%) | 3    | 4.1   |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7   | S8 | S9 | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|----|----|----|----|----|------|------|----|----|-----|--------|
| 2005     |      |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2006     |      |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2007     |      |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2008     | 0.1  |     |     |     |     | 0.04   |    |    |    |    |    | 0.7  |      |    |    |     | 0.07   |
| 2009     |      |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2010     | 0.05 |     |     |     |     | 0.02   |    |    |    |    |    | 0.1  |      |    |    |     | 0.01   |
| 2011     |      |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2012     |      |     |     |     |     |        |    |    |    |    |    |      | 0.1  |    |    |     | 0.01   |
| 2013     |      |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2014     |      |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| Mean     | 0.02 |     |     |     |     | 0.01   |    |    |    |    |    | 0.09 | 0.01 |    |    |     | 0.01   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3   | F4 | F5 | F6 | F7   | F8   | F9   | F10 | F11 | F12  | F13 | Fall |
|----------|-----|-----|--------|----|----|------|----|----|----|------|------|------|-----|-----|------|-----|------|
| 2005     |     |     |        |    |    |      |    |    |    |      |      |      |     |     | 0.1  |     | 0.01 |
| 2006     |     |     |        |    |    |      |    |    |    |      |      |      |     | 0.1 |      |     | 0.01 |
| 2007     |     |     |        |    |    |      |    |    |    |      |      |      |     |     |      | 1.3 | 0.10 |
| 2008     |     |     |        |    |    |      |    |    |    |      | 0.1  |      |     |     |      |     | 0.01 |
| 2009     |     |     |        |    |    |      |    |    |    |      | 0.3  | 0.3  |     |     |      | 0.1 | 0.05 |
| 2010     |     |     |        |    |    |      |    |    |    |      |      |      |     |     |      | 1.4 | 0.1  |
| 2011     |     |     |        |    |    |      |    |    |    |      |      |      |     | 0.4 |      |     | 0.03 |
| 2012     |     |     |        |    |    |      |    |    |    |      |      |      |     |     |      |     |      |
| 2013     |     |     |        |    |    | 0.6  |    |    |    | 0.1  |      |      |     |     |      | 0.1 | 0.07 |
| 2014     |     |     |        |    |    |      |    |    |    |      |      |      |     | 0.4 |      | 0.3 | 0.05 |
| Mean     |     |     |        |    |    | 0.06 |    |    |    | 0.01 | 0.04 | 0.03 |     | 0.1 | 0.01 | 0.3 | 0.05 |

Cackling Goose is an uncommon but annual species at MBO, with fall observations in 9 of 10 years, spring sightings in 3 years, and early winter records in two years. All Cackling Geese have been observed flying past, in mixed flocks with Canada Geese. All spring observations have occurred within a one-week span from May 2 to 9, while the majority of fall observations are between late September and end of October.

**CANG: Canada Goose / Bernache du Canada (*Branta canadensis*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High  | Total |
|----------|--------|--------|-------|------|----------|------|-------|--------|--------|--------|------|----------|-------|-------|
| 2005     | Apr 5  | May 2  | Jun 3 | 60   | 56 (95%) | 633  | 4898  | Sep 3  | Oct 8  | Oct 30 | 58   | 48 (55%) | 5100  | 21175 |
| 2006     | Mar 28 | Apr 22 | Jun 4 | 69   | 68 (99%) | 1600 | 27698 | Aug 6  | Oct 5  | Oct 30 | 86   | 64 (70%) | 580   | 8321  |
| 2007     | Mar 28 | Mar 31 | Jun 5 | 70   | 68 (97%) | 2007 | 16620 | Aug 16 | Oct 28 | Oct 30 | 76   | 54 (59%) | 2510  | 34409 |
| 2008     | Mar 28 | Apr 23 | Jun 4 | 69   | 63 (90%) | 2150 | 13331 | Aug 4  | Sep 21 | Oct 30 | 88   | 65 (71%) | 1120  | 13026 |
| 2009     | Mar 28 | May 3  | Jun 5 | 70   | 67 (97%) | 1025 | 8237  | Aug 9  | Sep 19 | Oct 30 | 83   | 68 (75%) | 4329  | 19414 |
| 2010     | Mar 28 | May 4  | Jun 5 | 70   | 60 (86%) | 1727 | 5357  | Aug 13 | Oct 3  | Oct 30 | 79   | 59 (65%) | 6268  | 25819 |
| 2011     | Mar 29 | Apr 4  | Jun 5 | 69   | 68 (97%) | 784  | 11013 | Aug 11 | Oct 1  | Oct 30 | 81   | 72 (79%) | 10300 | 35991 |
| 2012     | Mar 28 | Mar 28 | Jun 5 | 70   | 66 (94%) | 710  | 7870  | Aug 6  | Oct 17 | Oct 30 | 86   | 79 (87%) | 2343  | 26761 |
| 2013     | Mar 28 | Mar 31 | Jun 5 | 70   | 69 (99%) | 1200 | 8855  | Aug 2  | Sep 26 | Oct 30 | 90   | 70 (77%) | 1002  | 13388 |
| 2014     | Apr 2  | Apr 15 | Jun 4 | 64   | 61 (90%) | 900  | 7915  | Aug 11 | Sep 19 | Oct 30 | 81   | 65 (71%) | 1998  | 20332 |
| Mean     | Mar 29 | Apr 16 | Jun 4 | 68   | 65 (94%) | 1274 | 11179 | Aug 11 | Oct 2  | Oct 30 | 81   | 64 (71%) | 3555  | 21864 |

| Observed | Nov   | Dec   | Jan | Feb | Mar   | Winter | S1     | S2    | S3    | S4    | S5    | S6    | S7    | S8   | S9   | S10  | Spring |
|----------|-------|-------|-----|-----|-------|--------|--------|-------|-------|-------|-------|-------|-------|------|------|------|--------|
| 2005     | 46.0  | 30.0  |     |     |       | 17.4   |        | 240.7 | 65.6  | 91.7  | 102.4 | 219.3 | 11.1  | 5.6  | 6.1  | 6.6  | 83.0   |
| 2006     | 7.0   | 8.9   |     |     | 20.0  | 7.2    | 715.0  | 853.8 | 751.1 | 898.6 | 541.0 | 250.7 | 9.7   | 11.3 | 32.4 | 15.1 | 401.4  |
| 2007     | 137.9 | 875.7 | 3.7 | 2.2 | 0.6   | 189.2  | 1098.9 | 178.3 | 198.4 | 321.6 | 109.1 | 430.7 | 13.3  | 9.3  | 11.0 | 3.7  | 237.4  |
| 2008     | 172.8 |       |     |     |       | 57.6   | 3.4    | 174.1 | 439.6 | 561.1 | 203.3 | 458.6 | 39.4  | 8.1  | 13.4 | 3.3  | 190.4  |
| 2009     | 42.9  | 140.0 |     |     | 109.4 | 60.0   | 292.6  | 112.5 | 88.3  | 150.9 | 200.7 | 292.4 | 37.4  | 9.7  | 5.7  | 2.6  | 119.4  |
| 2010     | 117.7 | 236.8 |     |     | 171.2 | 100.9  | 179.1  | 60.9  | 11.4  | 48.4  | 79.1  | 328.0 | 45.7  | 8.4  | 2.9  | 1.3  | 76.5   |
| 2011     | 524.8 |       |     |     | 18.0  | 145.7  | 454.4  | 509.6 | 52.1  | 146.6 | 95.6  | 142.9 | 119.7 | 9.9  | 7.0  | 35.6 | 157.3  |
| 2012     | 176.5 | 31.0  |     |     | 967.4 | 269.0  | 297.7  | 162.3 | 100.7 | 158.1 | 68.6  | 195.3 | 128.0 | 2.4  | 3.6  | 7.6  | 112.4  |
| 2013     | 124.4 | 4.9   |     |     | 13.4  | 25.4   | 297.0  | 236.1 | 100.7 | 110.1 | 182.7 | 261.7 | 57.7  | 11.1 | 5.1  | 2.6  | 126.5  |
| 2014     | 299.6 | 7.5   |     |     |       | 52.7   | 25.7   | 90.3  | 246.4 | 372.3 | 101.4 | 187.9 | 95.9  | 4.4  | 6.6  | 4.2  | 116.4  |
| Mean     | 157.4 | 163.7 | 0.3 | 0.2 | 109.2 | 88.2   | 379.4  | 255.6 | 205.4 | 288.8 | 168.4 | 276.7 | 55.8  | 8.0  | 9.4  | 8.4  | 163.2  |

| Observed | Jun | Jul | Summer | F1  | F2   | F3   | F4   | F5   | F6   | F7    | F8     | F9     | F10    | F11   | F12    | F13    | Fall  |
|----------|-----|-----|--------|-----|------|------|------|------|------|-------|--------|--------|--------|-------|--------|--------|-------|
| 2005     | 1.3 |     | 0.6    |     |      |      |      | 4.6  | 8.6  | 22.3  | 364.9  | 493.5  | 1250.2 | 544.2 | 259.6  | 404.1  | 240.6 |
| 2006     |     |     |        | 0.4 | 1.1  | 2.0  | 2.4  | 4.4  | 3.7  | 7.4   | 156.3  | 250.9  | 376.4  | 233.4 | 77.7   | 72.4   | 91.4  |
| 2007     | 1.6 |     | 0.8    |     |      | 4.4  | 1.0  | 0.6  | 13.6 | 13.7  | 132.6  | 433.1  | 901.0  | 800.0 | 945.7  | 1669.9 | 378.1 |
| 2008     | 0.6 |     | 0.3    | 0.4 | 6.9  | 0.1  | 4.4  | 53.0 | 28.6 | 42.4  | 447.9  | 310.3  | 428.1  | 175.0 | 283.4  | 80.3   | 143.1 |
| 2009     |     |     |        |     | 8.9  | 5.4  | 3.6  | 24.3 | 42.7 | 80.6  | 1166.4 | 757.7  | 257.6  | 168.9 | 166.1  | 91.3   | 213.3 |
| 2010     |     |     |        |     | 0.7  |      | 7.1  | 10.0 | 5.9  | 46.1  | 125.9  | 1147.0 | 1396.0 | 194.0 | 425.0  | 330.7  | 283.7 |
| 2011     | 2.7 |     | 1.1    |     | 1.0  | 1.4  | 5.3  | 35.6 | 65.3 | 122.4 | 147.3  | 2361.0 | 928.0  | 306.3 | 682.1  | 485.9  | 395.5 |
| 2012     | 2.5 |     | 1.2    | 4.9 | 11.7 | 45.7 | 73.0 | 27.6 | 45.6 | 45.6  | 93.0   | 407.1  | 406.6  | 296.7 | 1159.1 | 1206.4 | 294.1 |
| 2013     | 0.7 |     | 0.3    | 3.6 | 0.7  | 14.6 | 1.7  | 6.7  | 11.4 | 53.3  | 282.9  | 612.1  | 349.7  | 190.7 | 170.0  | 215.1  | 147.1 |
| 2014     | 1.3 |     | 0.6    |     | 0.4  | 0.3  | 2.4  | 11.3 | 15.7 | 137.1 | 601.4  | 518.4  | 439.3  | 285.0 | 328.0  | 565.1  | 223.4 |
| Mean     | 1.0 |     | 0.5    | 0.9 | 3.1  | 7.4  | 10.1 | 17.8 | 24.1 | 57.1  | 351.8  | 732.5  | 664.9  | 316.2 | 449.7  | 512.1  | 241.1 |

Due to the large flocks observed migrating past MBO in both spring and fall, Canada Goose outnumbers all other species recorded by a wide margin (nearly 335,000 individuals counted over ten years). Spring migration typically begins in late March and continues through to around mid-May, while fall migration begins around mid-September and often lasts into December. Small numbers are typically observed during the breeding season. The spring peak varies from week 1 to 6, although in every year except 2006 there was a swell in numbers from week 5 to 6 representing the final big push of northward migration. Similarly, the fall peak has ranged over a six-week period, from week 8 to 13. Spring numbers were particularly high in 2006 and low in 2005 and 2010; to a certain extent the season totals reflect the length of time that large flocks linger in the region, making daily flights back and forth past MBO (rather than reflecting true differences in abundance from year to year). The daily movements of staging geese apply to fall as well, but the peak size of flocks varies somewhat more, from 376 in 2006 to 2361 in 2011.



**TUSW: Tundra Swan / Cygne siffleur (*Cygnus columbianus*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       | Sep 19 | Sep 19 | Sep 19 | 1    | 1 (1%) | 1    | 1     |
| 2012     |       |      |      |      |        |      |       | Sep 24 | Sep 24 | Sep 24 | 1    | 1 (1%) | 1    | 1     |
| 2013     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| Mean     |       |      |      |      |        |      |       | Sep 21 | Sep 21 | Sep 21 | 1    | 1 (1%) | 1    | 0.2   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8   | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|----|------|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2006     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2007     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2008     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2009     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2010     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2011     |     |     |        |    |    |    |    |    |    |    | 0.1  |    |     |     |     |     | 0.01  |
| 2012     |     |     |        |    |    |    |    |    |    |    | 0.1  |    |     |     |     |     | 0.01  |
| 2013     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| 2014     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |     |     |       |
| Mean     |     |     |        |    |    |    |    |    |    |    | 0.03 |    |     |     |     |     | <0.01 |

Tundra Swan has been observed at MBO only twice; both sightings were of lone birds flying past in week 8 of fall, in 2011 and 2012.

# WODU: Wood Duck / Canard branchu (*Aix sponsa*)

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | May 23 | Jun 2 | 59   | 56 (95%) | 14   | 258   | Aug 2 | Oct 1  | Oct 30 | 90   | 45 (51%) | 11   | 233   |
| 2006     | Mar 30 | May 24 | Jun 5 | 68   | 67 (97%) | 30   | 558   | Aug 3 | Oct 23 | Oct 30 | 89   | 65 (71%) | 28   | 307   |
| 2007     | Apr 2  | May 24 | Jun 5 | 65   | 62 (89%) | 33   | 578   | Aug 1 | Oct 28 | Oct 30 | 91   | 36 (40%) | 22   | 110   |
| 2008     | Apr 8  | Apr 29 | Jun 2 | 56   | 55 (79%) | 13   | 317   | Aug 1 | Oct 7  | Oct 7  | 68   | 16 (18%) | 5    | 26    |
| 2009     | Mar 28 | Apr 2  | Jun 4 | 69   | 67 (97%) | 21   | 394   | Aug 6 | Aug 7  | Oct 28 | 84   | 25 (27%) | 7    | 67    |
| 2010     | Mar 28 | Apr 14 | Jun 2 | 67   | 65 (93%) | 16   | 457   | Aug 7 | Oct 3  | Oct 30 | 85   | 41 (45%) | 14   | 169   |
| 2011     | Apr 4  | Apr 7  | Jun 5 | 63   | 63 (90%) | 26   | 472   | Aug 1 | Sep 22 | Oct 29 | 90   | 62 (68%) | 21   | 267   |
| 2012     | Mar 28 | Apr 18 | Jun 4 | 69   | 67 (96%) | 22   | 666   | Aug 7 | Oct 20 | Oct 29 | 84   | 53 (58%) | 34   | 288   |
| 2013     | Apr 5  | Apr 15 | Jun 4 | 61   | 59 (84%) | 15   | 410   | Aug 1 | Sep 13 | Oct 20 | 81   | 40 (44%) | 24   | 134   |
| 2014     | Apr 9  | Apr 18 | Jun 3 | 56   | 55 (81%) | 15   | 323   | Aug 1 | Oct 11 | Oct 24 | 85   | 57 (63%) | 18   | 213   |
| Mean     | Apr 2  | Apr 26 | Jun 3 | 63   | 62 (90%) | 20   | 443   | Aug 3 | Oct 1  | Oct 25 | 85   | 44 (49%) | 18   | 181   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1  | S2   | S3   | S4   | S5   | S6   | S7   | S8   | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|-----|------|------|------|------|------|------|------|------|-----|--------|
| 2005     |     |     |     |     |     |        |     | 4.7  | 4.0  | 5.2  | 4.7  | 4.3  | 2.3  | 3.1  | 5.9  | 5.8 | 4.4    |
| 2006     | 1.0 |     |     |     |     | 0.2    | 5.1 | 10.0 | 9.9  | 7.4  | 6.3  | 7.1  | 11.0 | 9.7  | 10.0 | 4.6 | 8.1    |
| 2007     | 0.2 |     |     |     |     | 0.07   | 3.0 | 7.7  | 5.4  | 6.4  | 7.6  | 9.9  | 7.9  | 13.0 | 16.9 | 4.9 | 8.3    |
| 2008     |     |     |     |     |     |        |     | 0.7  | 3.1  | 8.3  | 7.7  | 7.1  | 4.6  | 7.3  | 4.3  | 2.1 | 4.5    |
| 2009     |     |     |     |     | 0.2 | 0.08   | 8.9 | 4.2  | 6.1  | 10.1 | 7.9  | 5.1  | 5.3  | 3.1  | 3.1  | 3.0 | 5.7    |
| 2010     | 0.1 |     |     |     | 2.3 | 0.5    | 7.6 | 8.3  | 8.3  | 11.7 | 9.1  | 8.1  | 6.3  | 2.4  | 2.1  | 1.3 | 6.5    |
| 2011     | 0.1 |     |     |     |     | 0.03   |     | 13.0 | 9.7  | 9.7  | 5.4  | 6.3  | 7.0  | 5.1  | 4.7  | 6.4 | 6.7    |
| 2012     |     |     |     |     | 2.8 | 0.6    | 8.9 | 9.3  | 12.1 | 14.3 | 11.6 | 10.7 | 14.0 | 8.6  | 4.4  | 1.3 | 9.5    |
| 2013     |     |     |     |     |     |        |     | 5.9  | 6.3  | 11.6 | 10.1 | 7.0  | 6.3  | 4.4  | 4.6  | 2.4 | 5.9    |
| 2014     |     |     |     |     |     |        |     | 0.4  | 6.0  | 8.7  | 7.9  | 5.3  | 4.6  | 4.4  | 5.4  | 4.0 | 4.8    |
| Mean     | 0.2 |     |     |     | 0.6 | 0.2    | 3.8 | 6.4  | 7.1  | 9.4  | 7.8  | 7.1  | 6.9  | 6.1  | 6.1  | 3.5 | 6.5    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     | 1.5 | 0.5 | 1.0    | 1.0 | 0.7 | 0.1 | 0.1 | 0.3 | 0.9 | 2.3 | 3.0 | 3.7 | 5.0 | 7.7 | 4.6 | 6.3 | 2.6  |
| 2006     | 2.8 | 0.3 | 1.4    | 2.1 | 0.3 | 1.6 | 1.3 | 2.7 | 5.0 | 1.1 | 2.0 | 5.1 | 4.0 | 5.7 | 6.6 | 6.3 | 3.4  |
| 2007     | 1.6 | 0.2 | 0.9    | 0.4 | 0.7 | 1.3 | 1.4 | 1.1 | 0.3 | 1.1 | 1.6 | 0.6 | 0.3 | 0.6 | 1.4 | 4.9 | 1.2  |
| 2008     | 0.2 | 0.2 | 0.2    | 0.3 | 0.9 | 0.6 | 0.6 |     | 0.1 | 0.1 | 0.4 |     | 0.7 |     |     |     | 0.3  |
| 2009     | 2.0 |     | 0.9    | 1.1 | 2.1 | 0.7 | 0.6 | 1.9 |     | 0.1 | 0.6 | 0.9 | 0.1 | 0.1 | 0.4 | 0.9 | 0.7  |
| 2010     |     |     |        | 0.1 |     | 0.7 | 0.3 |     | 0.1 | 1.6 | 0.4 | 3.3 | 4.9 | 4.0 | 5.3 | 3.4 | 1.9  |
| 2011     | 2.7 |     | 1.1    | 4.4 | 2.9 | 2.1 | 4.9 | 1.9 | 1.7 |     | 4.3 | 4.1 | 4.9 | 1.9 | 4.7 | 0.4 | 2.9  |
| 2012     |     |     |        | 0.4 | 0.9 | 1.3 | 1.1 | 1.3 | 1.3 | 4.3 | 3.1 | 2.3 | 2.9 | 7.4 | 7.7 | 7.1 | 3.2  |
| 2013     | 1.3 | 0.3 | 0.7    | 1.0 | 1.3 | 1.3 | 0.7 | 1.0 | 1.4 | 5.1 | 3.0 | 1.9 | 1.4 | 0.1 | 0.9 |     | 1.5  |
| 2014     | 0.7 | 0.3 | 0.4    | 2.6 | 3.0 | 5.0 | 4.7 | 3.7 | 2.9 | 0.6 | 0.4 | 1.9 | 1.4 | 3.6 | 0.1 | 0.6 | 2.3  |
| Mean     | 1.5 | 0.2 | 0.8    | 1.4 | 1.3 | 1.5 | 1.6 | 1.4 | 1.4 | 1.6 | 1.9 | 2.3 | 2.5 | 3.0 | 3.2 | 3.0 | 2.0  |

| Banded | Jun | Jul | Summer | F1 | F2  | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|-----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    | 3   |    |    |    |    |    |    |    |     |     |     |     | 3    |
| 2012   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2013   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        |    | 0.3 |    |    |    |    |    |    |    |     |     |     |     | 0.3  |

Wood Duck is the most common breeding species of waterfowl at MBO, although scarce to absent in some summers, likely related to lower water levels in the ponds. Wood Ducks are always back by the second week of spring, and in five of ten years were present already in the first week (in three of those in fact, the first arrivals were spotted in later winter). Spring counts most commonly peak in week 4, with some migrants presumably continuing onward from MBO, and local residents perhaps somewhat less conspicuous as breeding begins. In five of ten years, Wood Ducks have been observed in every week of fall, and in three others they have missed only one week. Although the peak counts within a given season have ranged from early August to late October, the overall pattern shows a clearer pattern with numbers gradually increasing to a modest peak in mid-late October – though some years (e.g., 2008-09, 2013-14) are clear exceptions; again, water levels on site are likely a big factor driving seasonal occurrence of Wood Ducks. Wood Ducks have only been banded at MBO on one occasion, when three juveniles were opportunistically captured in early August 2011.

**GADW: Gadwall / Canard chipeau (*Anas strepera*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |          |      |       |       |      |      |      |        |      |       |
| 2006     | May 23 | May 25 | May 25 | 3    | 2 (3%)   | 2    | 3     |       |      |      |      |        |      |       |
| 2007     |        |        |        |      |          |      |       |       |      |      |      |        |      |       |
| 2008     | May 23 | May 23 | May 30 | 8    | 6 (9%)   | 2    | 12    |       |      |      |      |        |      |       |
| 2009     | Apr 23 | May 8  | May 8  | 16   | 2 (3%)   | 5    | 8     |       |      |      |      |        |      |       |
| 2010     |        |        |        |      |          |      |       |       |      |      |      |        |      |       |
| 2011     |        |        |        |      |          |      |       |       |      |      |      |        |      |       |
| 2012     |        |        |        |      |          |      |       |       |      |      |      |        |      |       |
| 2013     | Apr 29 | Apr 29 | May 30 | 32   | 8 (11%)  | 2    | 9     |       |      |      |      |        |      |       |
| 2014     | May 20 | May 22 | Jun 2  | 14   | 11 (16%) | 3    | 19    |       |      |      |      |        |      |       |
| Mean     | May 11 | May 15 | May 25 | 15   | 6 (8%)   | 3    | 5.1   |       |      |      |      |        |      |       |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5   | S6   | S7   | S8  | S9  | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|----|----|----|------|------|------|------|-----|-----|-----|--------|
| 2005     |      |     |     |     |     |        |    |    |    |      |      |      |      |     |     |     |        |
| 2006     |      |     |     |     |     |        |    |    |    |      |      |      |      |     | 0.4 |     | 0.04   |
| 2007     |      |     |     |     |     |        |    |    |    |      |      |      |      |     |     |     |        |
| 2008     |      |     |     |     |     |        |    |    |    |      |      |      |      |     | 1.4 | 0.3 | 0.2    |
| 2009     |      |     |     |     |     |        |    |    |    | 0.4  |      | 0.7  |      |     |     |     | 0.1    |
| 2010     |      |     |     |     |     |        |    |    |    |      |      |      |      |     |     |     |        |
| 2011     | 0.1  |     |     |     |     | 0.03   |    |    |    |      |      |      |      |     |     |     |        |
| 2012     |      |     |     |     |     |        |    |    |    |      |      |      |      |     |     |     |        |
| 2013     |      |     |     |     |     |        |    |    |    |      | 0.3  |      | 0.1  | 0.6 | 0.1 | 0.1 | 0.1    |
| 2014     |      |     |     |     |     |        |    |    |    |      |      |      |      | 0.7 | 1.3 | 0.8 | 0.3    |
| Mean     | 0.01 |     |     |     |     | <0.01  |    |    |    | 0.04 | 0.03 | 0.07 | 0.01 | 0.1 | 0.3 | 0.1 | 0.07   |

Gadwall is an irregular spring migrant at MBO, with observations in five of ten years; to date there has been only one sighting in another season, a lone individual in the first period of winter. Each spring that Gadwalls have been recorded, there were at least two individuals stopping over for a period of 3 to 32 days; although they lingered until the final week of spring in three of five years, none yet have been observed breeding or staying into summer.

**AMWI: American Wigeon / Canard d'Amérique (*Anas americana*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2006     | Apr 30 | Apr 30 | Apr 30 | 1    | 1 (1%) | 2    | 2     |       |      |      |      |        |      |       |
| 2007     | Apr 9  | Apr 9  | Apr 9  | 1    | 1 (1%) | 2    | 2     |       |      |      |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2009     | Apr 2  | Apr 2  | Apr 2  | 1    | 1 (1%) | 2    | 2     |       |      |      |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2011     | May 8  | May 8  | May 8  | 1    | 1 (1%) | 2    | 2     |       |      |      |      |        |      |       |
| 2012     | Mar 31 | Mar 31 | Mar 31 | 1    | 1 (1%) | 1    | 1     |       |      |      |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2014     | May 18 | May 20 | May 20 | 3    | 2 (3%) | 2    | 3     |       |      |      |      |        |      |       |
| Mean     | Apr 21 | Apr 21 | Apr 21 | 1    | 1 (2%) | 2    | 1.2   |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar  | Winter | S1   | S2   | S3 | S4 | S5   | S6   | S7 | S8   | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|------|--------|------|------|----|----|------|------|----|------|----|-----|--------|
| 2005     |     |     |     |     |      |        |      |      |    |    |      |      |    |      |    |     |        |
| 2006     |     |     |     |     |      |        |      |      |    |    | 0.3  |      |    |      |    |     | 0.03   |
| 2007     |     |     |     |     |      |        |      | 0.3  |    |    |      |      |    |      |    |     | 0.03   |
| 2008     |     |     |     |     |      |        |      |      |    |    |      |      |    |      |    |     |        |
| 2009     |     |     |     |     |      |        |      | 0.3  |    |    |      |      |    |      |    |     | 0.03   |
| 2010     |     |     |     |     |      |        |      |      |    |    |      |      |    |      |    |     |        |
| 2011     |     |     |     |     |      |        |      |      |    |    |      | 0.3  |    |      |    |     | 0.03   |
| 2012     |     |     |     |     | 0.2  | 0.04   | 0.1  |      |    |    |      |      |    |      |    |     | 0.01   |
| 2013     |     |     |     |     |      |        |      |      |    |    |      |      |    |      |    |     |        |
| 2014     |     |     |     |     |      |        |      |      |    |    |      |      |    | 0.4  |    |     | 0.04   |
| Mean     |     |     |     |     | 0.01 | <0.01  | 0.05 | 0.03 |    |    | 0.03 | 0.03 |    | 0.04 |    |     | 0.02   |

Similar to Gadwall, American Wigeon is an irregular spring visitor to MBO, with a lone winter record. Where the two species differ considerably is that Gadwalls tend to stop over at MBO for a short to moderate period, whereas in five of the six spring seasons with American Wigeon observations, they were limited to a single day. Although three of the six spring records have occurred in the first two weeks of the season, the remainder have been scattered between weeks 5 and 8.

**ABDU: American Black Duck / Canard noir (*Anas rubripes*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days  | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|---------|------|-------|
| 2005     | Apr 20 | May 2  | May 2  | 13   | 4 (7%)   | 4    | 9     | Oct 8  | Oct 8  | Oct 11 | 4    | 2 (2%)  | 8    | 16    |
| 2006     | Apr 19 | Apr 19 | Jun 1  | 44   | 16 (23%) | 4    | 40    | Aug 7  | Oct 26 | Oct 26 | 81   | 4 (4%)  | 4    | 8     |
| 2007     | Apr 2  | Apr 3  | May 26 | 55   | 8 (11%)  | 14   | 34    | Oct 24 | Oct 30 | Oct 30 | 7    | 5 (5%)  | 10   | 20    |
| 2008     | Apr 17 | Apr 17 | May 13 | 27   | 6 (9%)   | 2    | 11    | Aug 26 | Sep 18 | Sep 20 | 26   | 3 (3%)  | 3    | 5     |
| 2009     |        |        |        |      |          |      |       | Aug 23 | Aug 23 | Oct 28 | 67   | 2 (2%)  | 2    | 3     |
| 2010     | Apr 28 | Apr 28 | Apr 28 | 1    | 1 (1%)   | 5    | 5     | Oct 4  | Oct 4  | Oct 27 | 24   | 3 (3%)  | 1    | 3     |
| 2011     |        |        |        |      |          |      |       | Oct 2  | Oct 2  | Oct 2  | 1    | 1 (1%)  | 1    | 1     |
| 2012     | Apr 12 | Apr 12 | Apr 12 | 1    | 1 (1%)   | 2    | 2     | Aug 3  | Oct 17 | Oct 30 | 89   | 9 (10%) | 8    | 36    |
| 2013     | Apr 9  | Apr 10 | May 5  | 27   | 4 (6%)   | 11   | 23    | Aug 15 | Aug 16 | Aug 16 | 2    | 2 (2%)  | 4    | 5     |
| 2014     | Apr 22 | Apr 22 | May 7  | 16   | 2 (3%)   | 2    | 4     | Oct 12 | Oct 28 | Oct 28 | 17   | 2 (2%)  | 2    | 3     |
| Mean     | Apr 16 | Apr 17 | May 8  | 23   | 5 (8%)   | 6    | 13    | Sep 11 | Oct 2  | Oct 12 | 32   | 3 (4%)  | 4    | 10    |

| Observed | Nov  | Dec | Jan | Feb | Mar  | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8   | S9  | S10  | Spring |
|----------|------|-----|-----|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|------|-----|------|--------|
| 2005     |      |     |     |     |      |        |     |     |     | 0.5 | 0.3 | 0.6 |     |      |     |      | 0.2    |
| 2006     |      |     |     |     |      |        |     |     |     | 0.7 | 1.4 | 0.6 | 1.1 | 0.1  | 1.1 | 0.6  | 0.6    |
| 2007     | 0.1  | 2.1 |     |     |      | 0.4    | 3.3 |     | 0.7 | 0.3 |     | 0.3 |     | 0.1  | 0.1 |      | 0.5    |
| 2008     | 0.8  |     |     |     |      | 0.2    |     |     | 0.3 | 0.7 | 0.3 |     | 0.3 |      |     |      | 0.2    |
| 2009     |      |     |     |     |      |        |     |     |     |     |     |     |     |      |     |      |        |
| 2010     |      |     |     |     |      |        |     |     |     |     | 0.7 |     |     |      |     |      | 0.07   |
| 2011     | 0.1  |     |     |     |      | 0.03   |     |     |     |     |     |     |     |      |     |      |        |
| 2012     | 0.1  |     |     |     | 0.4  | 0.1    |     |     | 0.3 |     |     |     |     |      |     |      | 0.03   |
| 2013     |      |     |     |     |      |        |     | 2.4 | 0.7 |     |     | 0.1 |     |      |     |      | 0.3    |
| 2014     |      |     |     |     |      |        |     |     |     | 0.3 |     | 0.3 |     |      |     |      | 0.06   |
| Mean     | 0.10 | 0.3 |     |     | 0.02 | 0.07   | 0.4 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.03 | 0.1 | 0.06 | 0.2    |

| Observed | Jun | Jul  | Summer | F1   | F2   | F3   | F4   | F5 | F6 | F7   | F8   | F9   | F10 | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|------|------|------|------|----|----|------|------|------|-----|-----|-----|-----|------|
| 2005     |     |      |        |      |      |      |      |    |    |      |      |      | 1.3 | 1.3 |     |     | 0.2  |
| 2006     |     | 0.4  | 0.2    | 0.1  |      |      |      |    |    |      |      |      | 0.3 |     | 0.1 | 0.6 | 0.09 |
| 2007     |     |      |        |      |      |      |      |    |    |      |      |      |     |     |     | 2.9 | 0.2  |
| 2008     |     |      |        |      |      |      | 0.1  |    |    | 0.4  | 0.1  |      |     |     |     |     | 0.05 |
| 2009     |     |      |        |      |      |      | 0.3  |    |    |      |      |      |     |     |     | 0.1 | 0.03 |
| 2010     |     |      |        |      |      |      |      |    |    |      |      |      | 0.3 |     |     | 0.1 | 0.03 |
| 2011     |     |      |        |      |      |      |      |    |    |      |      | 0.1  |     |     |     |     | 0.01 |
| 2012     |     |      |        | 0.1  | 0.1  |      |      |    |    |      |      |      |     |     | 3.0 | 1.9 | 0.4  |
| 2013     |     |      |        |      |      | 0.7  |      |    |    |      |      |      |     |     |     |     | 0.05 |
| 2014     |     |      |        |      |      |      |      |    |    |      |      |      |     | 0.1 |     | 0.3 | 0.03 |
| Mean     |     | 0.08 | 0.05   | 0.03 | 0.01 | 0.07 | 0.04 |    |    | 0.04 | 0.01 | 0.01 | 0.2 | 0.1 | 0.3 | 0.6 | 0.1  |

Among the three duck species that have been observed at MBO in all years, American Black Duck is consistently the least common. Spring sightings were fairly regular over the first four years, but then absent entirely in two of the next three, and rare thereafter, aside from a good count in the second week of 2013; peak timing is relatively indistinct given the patchy observations. Fall observations show more of a concentration toward the final third of the season (i.e., October), but are also quite scattered and highly variable from year to year. Unlike spring, numbers in fall have been consistently very low, with the only exceptions being somewhat larger flocks in final week or two of the season in 2007 and 2012. Late migrants have continued into early winter in four years, and early spring migrants arrived in March just once out of ten years. The lone summer record is a flock of five birds near the end of July 2006.

**MALL: Mallard / Canard colvert (*Anas platyrhynchos*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 10 | Jun 3 | 60   | 58 (98%) | 15   | 230   | Aug 3 | Oct 21 | Oct 30 | 89   | 20 (23%) | 31   | 96    |
| 2006     | Mar 30 | May 10 | Jun 5 | 68   | 67 (97%) | 55   | 1169  | Aug 3 | Oct 13 | Oct 30 | 89   | 47 (52%) | 65   | 523   |
| 2007     | Mar 28 | Apr 3  | Jun 4 | 69   | 62 (89%) | 56   | 594   | Aug 2 | Oct 30 | Oct 30 | 90   | 33 (36%) | 346  | 1156  |
| 2008     | Apr 7  | Apr 12 | Jun 5 | 60   | 58 (83%) | 15   | 388   | Aug 6 | Oct 26 | Oct 30 | 86   | 23 (25%) | 23   | 114   |
| 2009     | Mar 28 | Apr 2  | Jun 4 | 69   | 65 (94%) | 12   | 282   | Aug 2 | Oct 29 | Oct 30 | 90   | 27 (30%) | 88   | 296   |
| 2010     | Mar 28 | May 27 | Jun 5 | 70   | 64 (91%) | 12   | 290   | Aug 4 | Oct 19 | Oct 30 | 88   | 39 (43%) | 104  | 632   |
| 2011     | Mar 31 | Apr 10 | Jun 5 | 67   | 64 (91%) | 27   | 385   | Aug 5 | Oct 24 | Oct 30 | 87   | 34 (37%) | 51   | 357   |
| 2012     | Mar 28 | Apr 12 | Jun 5 | 70   | 65 (93%) | 83   | 682   | Aug 4 | Oct 28 | Oct 30 | 88   | 46 (51%) | 109  | 596   |
| 2013     | Mar 29 | Apr 10 | Jun 4 | 68   | 60 (86%) | 35   | 391   | Aug 4 | Aug 15 | Oct 30 | 88   | 33 (36%) | 10   | 100   |
| 2014     | Mar 30 | May 25 | Jun 3 | 66   | 57 (84%) | 14   | 255   | Aug 1 | Oct 24 | Oct 30 | 91   | 46 (51%) | 42   | 270   |
| Mean     | Mar 30 | Apr 21 | Jun 4 | 67   | 62 (91%) | 32   | 467   | Aug 3 | Oct 16 | Oct 30 | 89   | 35 (38%) | 87   | 414   |

| Observed | Nov  | Dec  | Jan  | Feb | Mar  | Winter | S1   | S2   | S3   | S4   | S5   | S6   | S7   | S8   | S9   | S10  | Spring |
|----------|------|------|------|-----|------|--------|------|------|------|------|------|------|------|------|------|------|--------|
| 2005     | 32.8 |      |      |     |      | 9.4    |      | 7.0  | 4.7  | 2.2  | 3.6  | 3.9  | 4.3  | 2.7  | 3.9  | 2.8  | 3.9    |
| 2006     | 0.6  | 0.1  |      |     |      | 0.2    | 6.1  | 6.7  | 12.1 | 19.4 | 20.1 | 12.3 | 29.7 | 18.7 | 26.3 | 16.4 | 16.9   |
| 2007     | 9.4  | 57.1 | 0.7  |     |      | 12.5   | 13.3 | 7.7  | 7.6  | 14.1 | 7.7  | 10.7 | 8.7  | 7.3  | 5.4  | 2.3  | 8.5    |
| 2008     | 8.3  |      |      |     |      | 2.8    |      | 1.0  | 8.0  | 11.6 | 7.1  | 4.3  | 6.3  | 6.9  | 6.0  | 4.3  | 5.5    |
| 2009     | 4.9  |      |      |     | 0.2  | 1.0    | 6.6  | 3.5  | 1.6  | 6.9  | 5.7  | 3.4  | 3.1  | 3.9  | 4.1  | 2.0  | 4.1    |
| 2010     | 21.8 | 1.6  |      |     | 1.5  | 7.1    | 3.3  | 3.6  | 3.6  | 3.4  | 4.0  | 3.4  | 6.9  | 4.3  | 8.3  | 0.7  | 4.1    |
| 2011     | 27.0 |      |      |     |      | 7.3    | 1.1  | 9.4  | 6.7  | 7.7  | 6.4  | 6.3  | 6.6  | 3.1  | 3.0  | 4.6  | 5.5    |
| 2012     | 20.2 | 11.5 |      |     | 25.0 | 14.9   | 11.6 | 7.1  | 18.6 | 12.4 | 10.3 | 12.4 | 12.4 | 6.7  | 3.9  | 2.0  | 9.7    |
| 2013     | 4.0  |      |      |     |      | 0.7    | 2.7  | 10.7 | 6.1  | 7.9  | 7.4  | 5.9  | 6.3  | 4.3  | 3.0  | 1.6  | 5.6    |
| 2014     | 12.2 |      |      |     |      | 2.1    | 0.2  | 1.0  | 4.4  | 7.1  | 3.9  | 4.9  | 2.6  | 4.0  | 4.9  | 4.2  | 3.8    |
| Mean     | 13.5 | 8.7  | 0.05 |     | 1.7  | 5.2    | 5.1  | 5.8  | 7.3  | 9.4  | 7.6  | 6.7  | 8.7  | 6.2  | 6.9  | 4.1  | 6.8    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10  | F11  | F12  | F13   | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-------|------|
| 2005     | 1.4 | 0.6 | 1.0    | 0.3 | 1.6 | 0.3 |     |     | 0.1 |     |     |     |      | 3.2  | 7.4  | 1.3   | 1.1  |
| 2006     | 4.2 | 1.2 | 2.5    | 3.4 | 1.7 |     | 0.9 | 2.1 |     |     | 0.9 | 3.6 | 6.9  | 27.4 | 16.9 | 11.0  | 5.7  |
| 2007     | 0.7 |     | 0.4    | 2.1 | 0.3 | 0.4 | 4.4 | 1.3 | 1.4 |     | 2.9 | 0.3 | 0.6  | 0.3  | 12.4 | 138.7 | 12.7 |
| 2008     | 1.6 | 0.2 | 0.9    | 1.6 | 0.7 | 0.7 | 1.9 |     | 1.7 | 0.1 | 1.9 | 0.1 |      | 0.9  | 0.6  | 6.1   | 1.3  |
| 2009     | 0.3 |     | 0.1    | 0.3 | 0.7 | 0.9 |     | 0.3 | 0.1 |     | 0.3 | 0.7 | 4.0  | 1.1  | 0.4  | 33.4  | 3.3  |
| 2010     |     |     |        | 0.4 |     | 0.3 |     | 0.1 | 0.3 | 0.9 | 0.4 | 3.4 | 24.3 | 7.1  | 21.9 | 31.1  | 6.9  |
| 2011     | 2.0 | 0.8 | 1.3    | 0.1 | 0.3 | 0.3 | 0.4 |     | 0.1 | 0.1 | 0.6 | 9.7 | 7.1  | 0.6  | 8.9  | 22.7  | 3.9  |
| 2012     |     |     |        | 0.1 | 1.4 | 1.0 | 1.6 | 0.1 | 0.7 | 1.0 | 1.4 | 3.0 | 1.9  | 6.9  | 20.0 | 46.0  | 6.5  |
| 2013     | 0.3 |     | 0.1    | 0.1 | 0.1 | 3.1 | 1.0 | 0.4 | 1.7 | 0.1 | 0.6 | 0.3 | 0.6  | 0.3  | 2.0  | 3.9   | 1.1  |
| 2014     | 0.3 | 1.8 | 1.1    | 2.3 |     |     | 0.7 | 0.1 | 0.1 | 1.3 | 1.0 | 3.3 | 2.3  | 6.6  | 6.4  | 14.4  | 3.0  |
| Mean     | 1.5 | 0.5 | 1.0    | 1.1 | 0.7 | 0.7 | 1.1 | 0.5 | 0.6 | 0.4 | 1.0 | 2.5 | 4.8  | 5.5  | 9.7  | 30.9  | 4.6  |

Mallard is the most abundant duck at MBO; while spring numbers are only marginally greater than Wood Duck, fall counts are much higher than for Wood Duck, thanks to large flocks late in the season. Outside of a delayed arrival in 2008, Mallards have been observed in every spring period over the past decade. Numbers have fluctuated somewhat from year to year, but the only noteworthy outlier was 2006, with atypically high counts sustained through most of the season. The peak of spring migration varies somewhat from year to year, but most commonly is around mid-April. There are summer records for all years except 2010 and 2012, with numbers generally small. Fall numbers consistently remain low through August and September, then build to a sharp peak, almost always in the final week of October, but spilling over into early winter. Early spring arrivals have been spotted at MBO in late winter in three years out of ten.

**BWTE: Blue-winged Teal / Sarcelle à ailes bleues (*Anas discors*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 21 | Apr 21 | May 30 | 40   | 4 (7%)  | 1    | 4     |        |        |        |      |        |      |       |
| 2006     | Apr 5  | Apr 12 | May 3  | 29   | 4 (6%)  | 2    | 5     | Aug 29 | Aug 29 | Aug 29 | 1    | 1 (1%) | 1    | 1     |
| 2007     | Apr 23 | Apr 23 | May 13 | 21   | 2 (3%)  | 2    | 3     |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |         |      |       |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |         |      |       |        |        |        |      |        |      |       |
| 2010     | May 4  | May 4  | May 20 | 17   | 7 (10%) | 2    | 13    |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |         |      |       |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |         |      |       | Oct 29 | Oct 29 | Oct 29 | 1    | 1 (1%) | 5    | 5     |
| 2013     | Apr 29 | May 3  | May 10 | 12   | 9 (13%) | 4    | 21    |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |         |      |       |        |        |        |      |        |      |       |
| Mean     | Apr 22 | Apr 24 | May 15 | 24   | 5 (8%)  | 2    | 4.6   | Sep 28 | Sep 28 | Sep 28 | 1    | 1 (1%) | 3    | 0.6   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2   | S3   | S4   | S5  | S6  | S7   | S8  | S9   | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|------|------|------|-----|-----|------|-----|------|------|--------|
| 2005     |     |     |     |     |     |        |    |      |      | 0.2  |     |     |      |     | 0.3  | 0.2  | 0.07   |
| 2006     |     |     |     |     |     |        |    | 0.2  | 0.3  |      | 0.1 | 0.1 |      |     |      |      | 0.07   |
| 2007     |     |     |     |     |     |        |    |      |      | 0.3  |     |     | 0.1  |     |      |      | 0.04   |
| 2008     |     |     |     |     |     |        |    |      |      |      |     |     |      |     |      |      |        |
| 2009     |     |     |     |     |     |        |    |      |      |      |     |     |      |     |      |      |        |
| 2010     |     |     |     |     |     |        |    |      |      |      |     | 0.9 |      | 1.0 |      |      | 0.2    |
| 2011     |     |     |     |     |     |        |    |      |      |      |     |     |      |     |      |      |        |
| 2012     |     |     |     |     |     |        |    |      |      |      |     |     |      |     |      |      |        |
| 2013     |     |     |     |     |     |        |    |      |      |      | 1.0 | 1.9 | 0.1  |     |      |      | 0.3    |
| 2014     |     |     |     |     |     |        |    |      |      |      |     |     |      |     |      |      |        |
| Mean     |     |     |     |     |     |        |    | 0.01 | 0.03 | 0.04 | 0.1 | 0.3 | 0.03 | 0.1 | 0.03 | 0.01 | 0.07   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5   | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13  | Fall  |
|----------|-----|-----|--------|----|----|----|----|------|----|----|----|----|-----|-----|-----|------|-------|
| 2005     |     |     |        |    |    |    |    |      |    |    |    |    |     |     |     |      |       |
| 2006     |     |     |        |    |    |    |    | 0.1  |    |    |    |    |     |     |     |      | 0.01  |
| 2007     |     |     |        |    |    |    |    |      |    |    |    |    |     |     |     |      |       |
| 2008     |     |     |        |    |    |    |    |      |    |    |    |    |     |     |     |      |       |
| 2009     |     |     |        |    |    |    |    |      |    |    |    |    |     |     |     |      |       |
| 2010     |     |     |        |    |    |    |    |      |    |    |    |    |     |     |     |      |       |
| 2011     |     |     |        |    |    |    |    |      |    |    |    |    |     |     |     |      |       |
| 2012     |     |     |        |    |    |    |    |      |    |    |    |    |     |     |     | 0.7  | 0.05  |
| 2013     |     |     |        |    |    |    |    |      |    |    |    |    |     |     |     |      |       |
| 2014     |     |     |        |    |    |    |    |      |    |    |    |    |     |     |     |      |       |
| Mean     |     |     |        |    |    |    |    | 0.01 |    |    |    |    |     |     |     | 0.07 | <0.01 |

Blue-winged Teal is an irregular spring and fall migrant at MBO, with no summer or winter records to date. Spring observations have occurred in five of ten years, and in each case have been spread over at least three weeks, although only in 2013 did it appear that particular individuals lingered for an extended period. Overall, spring observations have been scattered across almost the full season, with no clearly defined pattern. The two occurrences during fall migration were both limited to a single day, one in late August and the other in late October.



**NSHO: Northern Shoveler / Canard souchet (*Anas clypeata*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | May 1  | May 1  | May 1  | 1    | 1 (2%) | 2    | 2     |        |        |        |      |        |      |       |
| 2006     | Apr 11 | Apr 11 | May 10 | 30   | 2 (3%) | 4    | 5     |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     | May 24 | May 24 | May 24 | 1    | 1 (1%) | 1    | 1     | Oct 29 | Oct 29 | Oct 29 | 1    | 1 (1%) | 2    | 2     |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | May 2  | May 2  | May 11 | 11   | 1 (2%) | 2    | 0.8   | Oct 29 | Oct 29 | Oct 29 | 1    | 1 (1%) | 2    | 0.2   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3   | S4 | S5   | S6 | S7   | S8 | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|------|----|------|----|------|----|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |      |    | 0.3  |    |      |    |      |     | 0.03   |
| 2006     |     |     |     |     |     |        |    |    | 0.6  |    |      |    | 0.1  |    |      |     | 0.07   |
| 2007     |     |     |     |     |     |        |    |    |      |    |      |    |      |    |      |     |        |
| 2008     |     |     |     |     |     |        |    |    |      |    |      |    |      |    |      |     |        |
| 2009     |     |     |     |     |     |        |    |    |      |    |      |    |      |    | 0.1  |     | 0.01   |
| 2010     |     |     |     |     |     |        |    |    |      |    |      |    |      |    |      |     |        |
| 2011     |     |     |     |     |     |        |    |    |      |    |      |    |      |    |      |     |        |
| 2012     |     |     |     |     |     |        |    |    |      |    |      |    |      |    |      |     |        |
| 2013     |     |     |     |     |     |        |    |    |      |    |      |    |      |    |      |     |        |
| 2014     |     |     |     |     |     |        |    |    |      |    |      |    |      |    |      |     |        |
| Mean     |     |     |     |     |     |        |    |    | 0.06 |    | 0.03 |    | 0.01 |    | 0.01 |     | 0.01   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13  | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|------|-------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.3  | 0.02  |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.03 | <0.01 |

A rare migrant at MBO, Northern Shoveler has not been observed at MBO since October 2009. Spring observations were limited to one day in April and three days in May, scattered across 2005, 2006, and 2009. The lone fall observation was on the second last day of the season in 2009.

**NOPI: Northern Pintail / Canard pilet (*Anas acuta*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 30 | Apr 30 | May 16 | 17   | 11 (19%) | 3    | 18    | Oct 19 | Oct 19 | Oct 19 | 1    | 1 (1%) | 20   | 20    |
| 2006     | Apr 9  | May 1  | May 30 | 52   | 29 (42%) | 66   | 301   |        |        |        |      |        |      |       |
| 2007     | Apr 2  | Apr 2  | May 1  | 30   | 4 (6%)   | 7    | 16    | Aug 28 | Sep 27 | Sep 27 | 31   | 2 (2%) | 80   | 86    |
| 2008     | Apr 22 | Apr 22 | Apr 28 | 7    | 3 (4%)   | 6    | 8     |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |          |      |       | Oct 28 | Oct 28 | Oct 28 | 1    | 1 (1%) | 1    | 1     |
| 2010     | Mar 30 | Mar 30 | Apr 22 | 24   | 4 (6%)   | 2    | 6     |        |        |        |      |        |      |       |
| 2011     | Mar 31 | Apr 5  | Apr 5  | 6    | 3 (4%)   | 30   | 41    | Oct 6  | Oct 27 | Oct 27 | 22   | 2 (2%) | 11   | 12    |
| 2012     | Apr 12 | Apr 18 | Apr 23 | 12   | 6 (9%)   | 48   | 95    |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |          |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |          |      |       | Oct 29 | Oct 29 | Oct 29 | 1    | 1 (1%) | 6    | 6     |
| Mean     | Apr 10 | Apr 15 | Apr 30 | 21   | 9 (13%)  | 23   | 49    | Oct 9  | Oct 20 | Oct 20 | 11   | 1 (2%) | 24   | 13    |

| Observed | Nov  | Dec | Jan | Feb | Mar  | Winter | S1  | S2  | S3  | S4   | S5   | S6  | S7  | S8  | S9   | S10  | Spring |
|----------|------|-----|-----|-----|------|--------|-----|-----|-----|------|------|-----|-----|-----|------|------|--------|
| 2005     |      |     |     |     |      |        |     |     |     |      | 0.6  | 0.6 | 1.1 | 0.3 |      |      | 0.3    |
| 2006     |      |     |     |     |      |        |     | 0.3 | 2.6 | 12.3 | 17.0 | 6.7 | 1.9 | 1.3 | 0.7  | 0.3  | 4.4    |
| 2007     |      |     |     |     |      |        | 1.6 |     |     | 0.3  | 0.4  |     |     |     |      |      | 0.2    |
| 2008     |      |     |     |     |      |        |     |     |     | 0.9  | 0.3  |     |     |     |      |      | 0.1    |
| 2009     |      |     |     |     |      |        |     |     |     |      |      |     |     |     |      |      |        |
| 2010     | 0.1  |     |     |     |      | 0.03   | 0.3 |     | 0.3 | 0.3  |      |     |     |     |      |      | 0.09   |
| 2011     |      |     |     |     |      |        | 1.3 | 4.6 |     |      |      |     |     |     |      |      | 0.6    |
| 2012     |      |     |     |     | 0.2  | 0.04   |     |     | 4.9 | 8.7  |      |     |     |     |      |      | 1.4    |
| 2013     |      |     |     |     |      |        |     |     |     |      |      |     |     |     |      |      |        |
| 2014     | 1.0  |     |     |     |      | 0.2    |     |     |     |      |      |     |     |     |      |      |        |
| Mean     | 0.07 |     |     |     | 0.01 | 0.02   | 0.4 | 0.5 | 0.8 | 2.3  | 1.8  | 0.7 | 0.3 | 0.2 | 0.07 | 0.03 | 0.7    |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4   | F5 | F6 | F7 | F8 | F9   | F10  | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|----|----|----|------|----|----|----|----|------|------|-----|-----|-----|------|
| 2005     |     |     |        |    |    |    |      |    |    |    |    |      |      |     | 2.9 |     | 0.2  |
| 2006     |     |     |        |    |    |    |      |    |    |    |    |      |      |     |     |     |      |
| 2007     |     |     |        |    |    |    | 0.9  |    |    |    |    | 11.4 |      |     |     |     | 0.9  |
| 2008     |     |     |        |    |    |    |      |    |    |    |    |      |      |     |     |     |      |
| 2009     |     |     |        |    |    |    |      |    |    |    |    |      |      |     |     | 0.1 | 0.01 |
| 2010     |     |     |        |    |    |    |      |    |    |    |    |      |      |     |     |     |      |
| 2011     |     |     |        |    |    |    |      |    |    |    |    |      | 0.1  |     |     | 1.6 | 0.1  |
| 2012     |     |     |        |    |    |    |      |    |    |    |    |      |      |     |     |     |      |
| 2013     |     |     |        |    |    |    |      |    |    |    |    |      |      |     |     |     |      |
| 2014     |     |     |        |    |    |    |      |    |    |    |    |      |      |     |     | 0.9 | 0.07 |
| Mean     |     |     |        |    |    |    | 0.09 |    |    |    |    | 1.2  | 0.01 |     | 0.3 | 0.3 | 0.1  |

Northern Pintail is an irregular and uncommon migrant at MBO. Observations have been somewhat more frequent and numerous in spring than fall, and there have been only three winter records that reflect late fall or early spring migrants. While Northern Pintail was common throughout spring 2006 and also relatively common for a shorter period in 2005, it has been uncommon ever since, with scattered sightings limited to the first half of the season, and no observations at all in 2009, 2013, or 2014. Fall sightings have always been scarce, with observations scattered across seven days in five years, and no record at all in the other five years. Fall observations have all been in October, except in 2007 when they were in August and September.

**AGWT: American Green-winged Teal / Sarcelle d'hiver (*Anas crecca carolinensis*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 21 | Apr 21 | Apr 21 | 1    | 1 (2%)   | 7    | 7     | Oct 15 | Oct 15 | Oct 15 | 1    | 1 (1%) | 1    | 1     |
| 2006     | May 26 | May 26 | May 26 | 1    | 1 (1%)   | 1    | 1     |        |        |        |      |        |      |       |
| 2007     | Apr 3  | Apr 3  | Apr 14 | 12   | 2 (3%)   | 4    | 5     | Oct 27 | Oct 27 | Oct 27 | 1    | 1 (1%) | 1    | 1     |
| 2008     | Apr 22 | Apr 22 | Apr 22 | 1    | 1 (1%)   | 16   | 16    |        |        |        |      |        |      |       |
| 2009     | Apr 18 | Apr 18 | Apr 27 | 10   | 2 (3%)   | 3    | 5     | Oct 28 | Oct 28 | Oct 28 | 1    | 1 (1%) | 2    | 2     |
| 2010     | Apr 1  | Apr 15 | May 3  | 33   | 23 (33%) | 5    | 48    | Oct 9  | Oct 14 | Oct 26 | 18   | 4 (4%) | 6    | 16    |
| 2011     | Apr 6  | Apr 6  | Apr 12 | 7    | 2 (3%)   | 5    | 7     | Oct 11 | Oct 11 | Oct 11 | 1    | 1 (1%) | 1    | 1     |
| 2012     | Mar 31 | May 6  | May 6  | 37   | 24 (34%) | 16   | 119   |        |        |        |      |        |      |       |
| 2013     | Apr 16 | Apr 28 | May 6  | 21   | 13 (19%) | 18   | 60    |        |        |        |      |        |      |       |
| 2014     | Apr 16 | May 2  | May 9  | 24   | 5 (7%)   | 15   | 34    |        |        |        |      |        |      |       |
| Mean     | Apr 15 | Apr 23 | Apr 29 | 15   | 7 (11%)  | 9    | 30    | Oct 18 | Oct 19 | Oct 21 | 4    | 2 (2%) | 2    | 2.1   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7   | S8 | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|------|----|------|-----|--------|
| 2005     |     |     |     |     |     |        |     |     |     | 1.2 |     |     |      |    |      |     | 0.1    |
| 2006     |     |     |     |     |     |        |     |     |     |     |     |     |      |    | 0.1  |     | 0.01   |
| 2007     |     |     |     |     |     |        | 0.6 |     | 0.1 |     |     |     |      |    |      |     | 0.07   |
| 2008     |     |     |     |     |     |        |     |     |     | 2.3 |     |     |      |    |      |     | 0.2    |
| 2009     |     |     |     |     |     |        |     |     |     | 0.4 | 0.3 |     |      |    |      |     | 0.07   |
| 2010     |     |     |     |     |     |        | 0.6 | 0.7 | 1.9 | 1.7 | 1.7 | 0.3 |      |    |      |     | 0.7    |
| 2011     |     |     |     |     |     |        |     | 0.7 | 0.3 |     |     |     |      |    |      |     | 0.1    |
| 2012     |     |     |     |     | 1.8 | 0.4    | 0.7 | 1.9 | 1.9 | 3.7 | 3.9 | 5.0 |      |    |      |     | 1.7    |
| 2013     |     |     |     |     |     |        |     |     | 0.3 | 2.1 | 5.0 | 1.1 |      |    |      |     | 0.9    |
| 2014     |     |     |     |     |     |        |     |     | 0.4 | 1.7 |     | 2.6 | 0.1  |    |      |     | 0.5    |
| Mean     |     |     |     |     | 0.1 | 0.02   | 0.2 | 0.3 | 0.5 | 1.3 | 1.1 | 0.9 | 0.01 |    | 0.01 |     | 0.4    |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10  | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|------|-----|-----|-----|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |      | 0.2 |     |     | 0.01 |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |      |     |     |     |      |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |      |     |     | 0.1 | 0.01 |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |      |     |     |     |      |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |      |     |     | 0.3 | 0.02 |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    | 0.4  | 1.0 |     | 0.9 | 0.2  |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |      | 0.1 |     |     | 0.01 |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |      |     |     |     |      |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |      |     |     |     |      |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |      |     |     |     |      |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    | 0.04 | 0.1 |     | 0.1 | 0.02 |

Green-winged Teal is a regular spring migrant in small numbers, with numbers and duration of stopover notable higher in 2010 and 2012-14. It is a much less common fall migrant at MBO, with observations in only five of ten years, all in October, and in four cases limited to a single date.

**RNDU: Ring-necked Duck / Fuligule à collier (*Aythya collaris*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |         |      |       |       |      |      |      |        |      |       |
| 2006     |        |        |        |      |         |      |       |       |      |      |      |        |      |       |
| 2007     | Apr 4  | Apr 22 | May 2  | 29   | 8 (11%) | 6    | 19    |       |      |      |      |        |      |       |
| 2008     |        |        |        |      |         |      |       |       |      |      |      |        |      |       |
| 2009     |        |        |        |      |         |      |       |       |      |      |      |        |      |       |
| 2010     | Apr 17 | Apr 17 | Apr 17 | 1    | 1 (1%)  | 4    | 4     |       |      |      |      |        |      |       |
| 2011     |        |        |        |      |         |      |       |       |      |      |      |        |      |       |
| 2012     |        |        |        |      |         |      |       |       |      |      |      |        |      |       |
| 2013     |        |        |        |      |         |      |       |       |      |      |      |        |      |       |
| 2014     |        |        |        |      |         |      |       |       |      |      |      |        |      |       |
| Mean     | Apr 10 | Apr 19 | Apr 24 | 15   | 4 (6%)  | 5    | 2.3   |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3  | S4   | S5 | S6   | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|-----|-----|------|----|------|----|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |     |     |      |    |      |    |    |    |     |        |
| 2006     |     |     |     |     |     |        |    |     |     |      |    |      |    |    |    |     |        |
| 2007     |     |     |     |     |     |        |    | 1.1 | 0.6 | 0.9  |    | 0.1  |    |    |    |     | 0.3    |
| 2008     |     |     |     |     |     |        |    |     |     |      |    |      |    |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |     |     |      |    |      |    |    |    |     |        |
| 2010     |     |     |     |     |     |        |    |     | 0.6 |      |    |      |    |    |    |     | 0.06   |
| 2011     |     |     |     |     |     |        |    |     |     |      |    |      |    |    |    |     |        |
| 2012     |     |     |     |     |     |        |    |     |     |      |    |      |    |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |     |     |      |    |      |    |    |    |     |        |
| 2014     |     |     |     |     |     |        |    |     |     |      |    |      |    |    |    |     |        |
| Mean     |     |     |     |     |     |        |    | 0.1 | 0.1 | 0.09 |    | 0.01 |    |    |    |     | 0.03   |

Ring-necked Duck has only been observed at MBO in two spring seasons. Sightings in 2007 spanned nearly a full month, but the only other record in 2010 was from a single day in mid-April.

**GRSC: Greater Scaup / Fuligule milouinan (*Aythya marila*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2007     | May 22 | May 22 | May 22 | 1    | 1 (1%) | 175  | 175   |       |      |      |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2014     | May 21 | May 21 | May 21 | 1    | 1 (1%) | 15   | 15    |       |      |      |      |        |      |       |
| Mean     | May 21 | May 21 | May 21 | 1    | 1 (1%) | 95   | 19    |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8   | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|------|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    | 25.0 |    |     | 2.5    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    | 2.1  |    |     | 0.2    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    | 2.7  |    |     | 0.3    |

Flocks of Greater Scaup have been seen flying over MBO only twice, almost exactly 7 years apart.

**LESC: Lesser Scaup / Petit Fuligule (*Aythya affinis*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       | Oct 27 | Oct 27 | Oct 27 | 1    | 1 (1%) | 5    | 5     |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| Mean     |       |      |      |      |        |      |       | Oct 27 | Oct 27 | Oct 27 | 1    | 1 (1%) | 5    | 0.5   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13  | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|------|-------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.7  | 0.05  |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.07 | <0.01 |

Five Lesser Scaup were identified within a large flock of 1180 scaup that flew over MBO on 27 October 2005; a smaller flock of unidentified scaup that passed by in November 2006 (see following account) may also have been partly or entirely Lesser Scaup.

**USCA: Unidentified Scaup sp. / Aythya sp. (Aythya sp.)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       | Oct 27 | Oct 27 | Oct 27 | 1    | 1 (1%) | 1175 | 1175  |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| Mean     |       |      |      |      |        |      |       | Oct 27 | Oct 27 | Oct 27 | 1    | 1 (1%) | 1180 | 118   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2007     | 1.1 |     |     |     |     | 0.4    |    |    |    |    |    |    |    |    |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| Mean     | 0.2 |     |     |     |     | 0.04   |    |    |    |    |    |    |    |    |    |     |        |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13   | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-------|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 167.9 | 12.9 |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |       |      |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |       |      |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |       |      |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |       |      |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |       |      |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |       |      |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |       |      |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |       |      |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |       |      |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 16.8  | 1.3  |

Once in late fall 2005, and again in early winter 2007, flocks of unidentified scaup were observed flying high over MBO. Given that Lesser and Greater Scaup often migrate in mixed flocks, and the large size of the October 2005 observation in particular, it is likely both species were present.

**WWSC: White-winged Scoter / Macreuse brune (*Melanitta fusca*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2006     | May 21 | May 21 | May 21 | 1    | 1 (1%) | 47   | 47    |       |      |      |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| Mean     | May 21 | May 21 | May 21 | 1    | 1 (1%) | 47   | 4.7   |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    | 6.7 |    |     | 0.7    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.7 |    |     | 0.07   |

White-winged Scoter has only been observed once at MBO, a flock flying over in May 2006.

**COGO: Common Goldeneye / Garrot à oeil d'or (*Bucephala clangula*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First | Peak  | Last  | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|-------|-------|-------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2006     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2009     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2011     |       |      |      |      |        |      |       | Oct 1 | Oct 1 | Oct 1 | 1    | 1 (1%) | 1    | 1     |
| 2012     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2013     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2014     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| Mean     |       |      |      |      |        |      |       | Oct 1 | Oct 1 | Oct 1 | 1    | 1 (1%) | 1    | 0.1   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9   | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|------|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |       |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |       |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |       |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |       |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |       |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |       |
| 2011     |     |     |        |    |    |    |    |    |    |    |    | 0.1  |     |     |     |     | 0.01  |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |       |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |       |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |       |
| Mean     |     |     |        |    |    |    |    |    |    |    |    | 0.01 |     |     |     |     | <0.01 |

One of just eight species with only a single individual observed at MBO over ten years, a lone male flying overhead on the first day of October, 2011.



# HOME: Hooded Merganser / Harle couronné (*Lophodytes cucullatus*)

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First | Peak  | Last  | Span | # days | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|-------|-------|-------|------|--------|------|-------|
| 2005     | Apr 10 | Apr 10 | Apr 11 | 2    | 2 (3%)  | 3    | 5     |       |       |       |      |        |      |       |
| 2006     | May 19 | May 19 | May 19 | 1    | 1 (1%)  | 1    | 1     | Aug 2 | Aug 2 | Aug 2 | 1    | 1 (1%) | 1    | 1     |
| 2007     | Apr 2  | Apr 2  | Apr 17 | 16   | 3 (4%)  | 3    | 6     |       |       |       |      |        |      |       |
| 2008     |        |        |        |      |         |      |       |       |       |       |      |        |      |       |
| 2009     | Apr 23 | Apr 23 | Apr 23 | 1    | 1 (1%)  | 2    | 2     |       |       |       |      |        |      |       |
| 2010     | Apr 29 | Apr 29 | Apr 29 | 1    | 1 (1%)  | 1    | 1     |       |       |       |      |        |      |       |
| 2011     | Apr 8  | Apr 29 | Jun 1  | 55   | 7 (10%) | 3    | 14    |       |       |       |      |        |      |       |
| 2012     |        |        |        |      |         |      |       |       |       |       |      |        |      |       |
| 2013     | Apr 7  | Apr 7  | Apr 7  | 1    | 1 (1%)  | 2    | 2     |       |       |       |      |        |      |       |
| 2014     | Apr 22 | Apr 22 | Apr 30 | 9    | 2 (3%)  | 5    | 6     |       |       |       |      |        |      |       |
| Mean     | Apr 18 | Apr 21 | Apr 28 | 11   | 2 (3%)  | 2    | 3.7   | Aug 2 | Aug 2 | Aug 2 | 1    | 1 (1%) | 1    | 0.1   |

| Observed | Nov | Dec | Jan | Feb | Mar  | Winter | S1   | S2  | S3   | S4  | S5  | S6   | S7 | S8   | S9 | S10  | Spring |
|----------|-----|-----|-----|-----|------|--------|------|-----|------|-----|-----|------|----|------|----|------|--------|
| 2005     |     |     |     |     |      |        |      | 0.5 | 0.3  |     |     |      |    |      |    |      | 0.08   |
| 2006     |     |     |     |     |      |        |      |     |      |     |     |      |    | 0.1  |    |      | 0.01   |
| 2007     |     |     |     |     |      |        | 0.4  |     | 0.4  |     |     |      |    |      |    |      | 0.09   |
| 2008     |     |     |     |     |      |        |      |     |      |     |     |      |    |      |    |      |        |
| 2009     |     |     |     |     |      |        |      |     |      | 0.3 |     |      |    |      |    |      | 0.03   |
| 2010     |     |     |     |     |      |        |      |     |      |     | 0.1 |      |    |      |    |      | 0.01   |
| 2011     |     |     |     |     |      |        |      | 0.6 |      |     | 0.7 | 0.6  |    |      |    | 0.1  | 0.2    |
| 2012     |     |     |     |     | 0.6  | 0.1    |      |     |      |     |     |      |    |      |    |      |        |
| 2013     |     |     |     |     |      |        |      | 0.3 |      |     |     |      |    |      |    |      | 0.03   |
| 2014     |     |     |     |     |      |        |      |     |      | 0.7 | 0.1 |      |    |      |    |      | 0.09   |
| Mean     |     |     |     |     | 0.04 | 0.01   | 0.05 | 0.1 | 0.07 | 0.1 | 0.1 | 0.06 |    | 0.01 |    | 0.01 | 0.05   |

| Observed | Jun | Jul | Summer | F1   | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |      |    |    |    |    |    |    |    |    |     |     |     |     |       |
| 2006     |     |     |        | 0.1  |    |    |    |    |    |    |    |    |     |     |     |     | 0.01  |
| 2007     |     |     |        |      |    |    |    |    |    |    |    |    |     |     |     |     |       |
| 2008     |     |     |        |      |    |    |    |    |    |    |    |    |     |     |     |     |       |
| 2009     |     |     |        |      |    |    |    |    |    |    |    |    |     |     |     |     |       |
| 2010     |     |     |        |      |    |    |    |    |    |    |    |    |     |     |     |     |       |
| 2011     |     |     |        |      |    |    |    |    |    |    |    |    |     |     |     |     |       |
| 2012     |     |     |        |      |    |    |    |    |    |    |    |    |     |     |     |     |       |
| 2013     |     |     |        |      |    |    |    |    |    |    |    |    |     |     |     |     |       |
| 2014     |     |     |        |      |    |    |    |    |    |    |    |    |     |     |     |     |       |
| Mean     |     |     |        | 0.01 |    |    |    |    |    |    |    |    |     |     |     |     | <0.01 |

Hooded Merganser is a fairly regular although uncommon spring migrant, but has only been observed once each in fall (early August 2006) and winter (March 2012 – an early spring arrival in one of just two years when there were no sightings during the formal spring migration season). Although observed in eight of ten spring seasons, Hooded Merganser was present on just a single day in half of those years; the only spring with sightings on more than three days was 2011. Hooded Mergansers have occurred most frequently over the first six weeks of spring, but lone individuals have twice been seen in the last three weeks of the season.

**COME: Common Merganser / Grand Harle (*Mergus merganser*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |          |      |       |        |        |        |      |        |      |       |
| 2006     | May 23 | May 23 | May 23 | 1    | 1 (1%)   | 1    | 1     |        |        |        |      |        |      |       |
| 2007     | Mar 31 | Mar 31 | Apr 21 | 22   | 3 (4%)   | 7    | 12    |        |        |        |      |        |      |       |
| 2008     | Apr 11 | Apr 11 | May 30 | 50   | 6 (9%)   | 2    | 7     |        |        |        |      |        |      |       |
| 2009     | Apr 23 | Apr 25 | May 19 | 27   | 7 (10%)  | 3    | 13    | Aug 21 | Aug 21 | Oct 27 | 68   | 3 (3%) | 11   | 13    |
| 2010     |        |        |        |      |          |      |       | Oct 1  | Oct 1  | Oct 14 | 14   | 3 (3%) | 3    | 5     |
| 2011     |        |        |        |      |          |      |       | Aug 29 | Aug 29 | Aug 29 | 1    | 1 (1%) | 1    | 1     |
| 2012     | Apr 24 | May 18 | May 21 | 28   | 4 (6%)   | 3    | 8     | Sep 30 | Oct 7  | Oct 7  | 8    | 2 (2%) | 14   | 15    |
| 2013     | Mar 30 | Mar 30 | May 8  | 40   | 10 (14%) | 2    | 13    | Oct 4  | Oct 23 | Oct 23 | 20   | 2 (2%) | 2    | 3     |
| 2014     | Apr 6  | May 23 | May 28 | 53   | 3 (4%)   | 3    | 6     | Aug 3  | Aug 3  | Oct 25 | 84   | 2 (2%) | 4    | 5     |
| Mean     | Apr 16 | Apr 27 | May 17 | 32   | 5 (7%)   | 3    | 6.0   | Sep 9  | Sep 13 | Oct 10 | 32   | 2 (2%) | 6    | 4.2   |

| Observed | Nov | Dec  | Jan | Feb | Mar | Winter | S1  | S2   | S3   | S4  | S5  | S6  | S7   | S8  | S9   | S10  | Spring |
|----------|-----|------|-----|-----|-----|--------|-----|------|------|-----|-----|-----|------|-----|------|------|--------|
| 2005     |     |      |     |     |     |        |     |      |      |     |     |     |      |     |      |      |        |
| 2006     |     | 0.1  |     |     |     | 0.03   |     |      |      |     |     |     |      |     | 0.1  |      | 0.01   |
| 2007     |     |      |     |     |     |        | 1.0 |      |      | 0.7 |     |     |      |     |      |      | 0.2    |
| 2008     | 1.0 |      |     |     |     | 0.3    |     |      | 0.3  | 0.1 | 0.1 | 0.1 |      |     | 0.1  | 0.1  | 0.1    |
| 2009     | 0.4 |      |     |     |     | 0.08   |     |      |      | 0.1 | 0.7 | 0.6 | 0.3  | 0.1 |      |      | 0.2    |
| 2010     |     |      |     |     |     |        |     |      |      |     |     |     |      |     |      |      |        |
| 2011     |     |      |     |     |     |        |     |      |      |     |     |     |      |     |      |      |        |
| 2012     |     |      |     |     |     |        |     |      |      | 0.1 |     |     |      | 1.0 |      |      | 0.1    |
| 2013     |     |      |     |     |     |        | 0.3 |      |      | 0.9 | 0.3 | 0.4 |      |     |      |      | 0.2    |
| 2014     |     |      |     |     |     |        |     | 0.3  |      |     |     |     |      |     | 0.6  |      | 0.09   |
| Mean     | 0.1 | 0.04 |     |     |     | 0.03   | 0.1 | 0.03 | 0.03 | 0.2 | 0.1 | 0.1 | 0.03 | 0.1 | 0.09 | 0.01 | 0.09   |

| Observed | Jun | Jul | Summer | F1   | F2  | F3  | F4 | F5   | F6 | F7 | F8 | F9   | F10 | F11  | F12  | F13  | Fall |
|----------|-----|-----|--------|------|-----|-----|----|------|----|----|----|------|-----|------|------|------|------|
| 2005     |     |     |        |      |     |     |    |      |    |    |    |      |     |      |      |      |      |
| 2006     |     |     |        |      |     |     |    |      |    |    |    |      |     |      |      |      |      |
| 2007     |     |     |        |      |     |     |    |      |    |    |    |      |     |      |      |      |      |
| 2008     |     |     |        |      |     |     |    |      |    |    |    |      |     |      |      |      |      |
| 2009     |     |     |        |      |     | 1.6 |    |      |    |    |    |      |     |      | 0.1  | 0.1  | 0.1  |
| 2010     |     |     |        |      |     |     |    |      |    |    |    | 0.4  | 0.1 | 0.1  |      |      | 0.05 |
| 2011     |     |     |        |      |     |     |    | 0.1  |    |    |    |      |     |      |      |      | 0.01 |
| 2012     |     |     |        |      |     |     |    |      |    |    |    | 0.1  | 2.0 |      |      |      | 0.2  |
| 2013     |     |     |        |      |     |     |    |      |    |    |    | 0.1  |     |      | 0.3  |      | 0.03 |
| 2014     |     |     |        |      | 0.6 |     |    |      |    |    |    |      |     |      |      | 0.1  | 0.05 |
| Mean     |     |     |        | 0.06 |     | 0.2 |    | 0.01 |    |    |    | 0.06 | 0.2 | 0.01 | 0.04 | 0.03 | 0.05 |

Common Merganser has been observed in seven spring and six fall seasons. The species tends to occur more frequently in spring, with observations often spanning several weeks, but in small numbers (a peak exceeding 3 individuals only once, in 2007). There were no fall observations until 2009, but since then Common Mergansers have been observed annually, although always on three or fewer days per fall. The number of individuals per sightings tends to be somewhat larger in fall, with peak counts over 10 in two years. In both spring and fall, observations have been widely scattered through the season, although in fall there is somewhat more of a pattern of sightings concentrated in the last five weeks.

**RBME: Red-breasted Merganser / Harle huppé (*Mergus serrator*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak  | Last  | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|-------|-------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2009     |        |        |        |      |        |      |       | Oct 7 | Oct 7 | Oct 7 | 1    | 1 (1%) | 3    | 3     |
| 2010     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2011     | Apr 24 | Apr 24 | Apr 24 | 1    | 1 (1%) | 3    | 3     |       |       |       |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| Mean     | Apr 24 | Apr 24 | Apr 24 | 1    | 1 (1%) | 3    | 0.3   | Oct 7 | Oct 7 | Oct 7 | 1    | 1 (1%) | 3    | 0.3   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|----|----|----|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    | 0.4  |    |    |    |    |    |     | 0.04   |
| 2012     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    | 0.04 |    |    |    |    |    |     | <0.01  |

| Observed | Jun | Jul  | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10  | F11 | F12 | F13 | Fall  |
|----------|-----|------|--------|----|----|----|----|----|----|----|----|----|------|-----|-----|-----|-------|
| 2005     |     | 0.06 | 0.03   |    |    |    |    |    |    |    |    |    |      |     |     |     |       |
| 2006     |     |      |        |    |    |    |    |    |    |    |    |    |      |     |     |     |       |
| 2007     |     |      |        |    |    |    |    |    |    |    |    |    |      |     |     |     |       |
| 2008     |     |      |        |    |    |    |    |    |    |    |    |    |      |     |     |     |       |
| 2009     |     |      |        |    |    |    |    |    |    |    |    |    | 0.4  |     |     |     | 0.03  |
| 2010     |     |      |        |    |    |    |    |    |    |    |    |    |      |     |     |     |       |
| 2011     |     |      |        |    |    |    |    |    |    |    |    |    |      |     |     |     |       |
| 2012     |     |      |        |    |    |    |    |    |    |    |    |    |      |     |     |     |       |
| 2013     |     |      |        |    |    |    |    |    |    |    |    |    |      |     |     |     |       |
| 2014     |     |      |        |    |    |    |    |    |    |    |    |    |      |     |     |     |       |
| Mean     |     | 0.02 | <0.01  |    |    |    |    |    |    |    |    |    | 0.04 |     |     |     | <0.01 |

By far the least common of the three merganser species at MBO, Red-breasted Merganser has only been observed twice – once in spring, and once in fall. In both cases, a small flock of three individuals was observed flying overhead.

**RUGR: Ruffed Grouse / Gélinotte huppée (*Bonasa umbellus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       | Oct 12 | Oct 12 | Oct 30 | 19   | 3 (3%) | 1    | 3     |
| 2009     | Mar 31 | Mar 31 | Mar 31 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       | Aug 5  | Aug 5  | Sep 2  | 29   | 2 (2%) | 1    | 2     |
| 2011     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       | Oct 13 | Oct 13 | Oct 26 | 14   | 3 (3%) | 1    | 3     |
| Mean     | Mar 31 | Mar 31 | Mar 31 | 1    | 1 (1%) | 1    | 0.1   | Sep 19 | Sep 19 | Oct 9  | 21   | 3 (3%) | 1    | 0.8   |

| Observed | Nov | Dec | Jan  | Feb  | Mar  | Winter | S1   | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|------|------|------|--------|------|----|----|----|----|----|----|----|----|-----|--------|
| 2005     |     |     |      |      |      |        |      |    |    |    |    |    |    |    |    |     |        |
| 2006     |     |     |      |      |      |        |      |    |    |    |    |    |    |    |    |     |        |
| 2007     |     |     |      |      |      |        |      |    |    |    |    |    |    |    |    |     |        |
| 2008     |     |     |      |      |      |        |      |    |    |    |    |    |    |    |    |     |        |
| 2009     |     |     | 0.3  |      | 0.07 | 0.05   | 0.1  |    |    |    |    |    |    |    |    |     | 0.01   |
| 2010     |     |     |      |      |      |        |      |    |    |    |    |    |    |    |    |     |        |
| 2011     |     |     |      | 0.2  | 0.1  | 0.05   |      |    |    |    |    |    |    |    |    |     |        |
| 2012     |     |     |      |      |      |        |      |    |    |    |    |    |    |    |    |     |        |
| 2013     |     |     |      |      |      |        |      |    |    |    |    |    |    |    |    |     |        |
| 2014     |     |     |      |      |      |        |      |    |    |    |    |    |    |    |    |     |        |
| Mean     |     |     | 0.01 | 0.01 | 0.02 | 0.01   | 0.02 |    |    |    |    |    |    |    |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1   | F2 | F3 | F4 | F5   | F6 | F7 | F8 | F9 | F10 | F11  | F12  | F13  | Fall  |
|----------|-----|-----|--------|------|----|----|----|------|----|----|----|----|-----|------|------|------|-------|
| 2005     |     |     |        |      |    |    |    |      |    |    |    |    |     |      |      |      |       |
| 2006     |     |     |        |      |    |    |    |      |    |    |    |    |     |      |      |      |       |
| 2007     |     |     |        |      |    |    |    |      |    |    |    |    |     |      |      |      |       |
| 2008     |     |     |        |      |    |    |    |      |    |    |    |    |     | 0.1  | 0.1  | 0.1  | 0.03  |
| 2009     |     |     |        |      |    |    |    |      |    |    |    |    |     |      |      |      |       |
| 2010     |     |     |        | 0.1  |    |    |    | 0.1  |    |    |    |    |     |      |      |      | 0.02  |
| 2011     |     |     |        |      |    |    |    |      |    |    |    |    |     |      |      |      |       |
| 2012     |     |     |        |      |    |    |    |      |    |    |    |    |     |      |      |      |       |
| 2013     |     |     |        |      |    |    |    |      |    |    |    |    |     |      |      |      |       |
| 2014     |     |     |        |      |    |    |    |      |    |    |    |    |     | 0.1  | 0.1  | 0.1  | 0.03  |
| Mean     |     |     |        | 0.01 |    |    |    | 0.01 |    |    |    |    |     | 0.03 | 0.03 | 0.03 | <0.01 |

Ruffed Grouse has been observed at MBO sporadically since fall 2008, with sightings mostly in fall, but also in mid-late winter, and once in the first week of spring. All sightings have been of lone individuals, and except for the early fall records in 2010, all have been between mid-October and end of March.

**COLO: Common Loon / Plongeon huard (*Gavia immer*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days  | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|---------|------|-------|
| 2005     | May 7  | May 7  | May 29 | 23   | 5 (8%)   | 2    | 6     | Sep 7  | Oct 8  | Oct 23 | 47   | 8 (9%)  | 6    | 17    |
| 2006     | Apr 18 | May 21 | Jun 2  | 46   | 13 (19%) | 4    | 19    |        |        |        |      |         |      |       |
| 2007     | Apr 30 | Apr 30 | May 30 | 31   | 10 (14%) | 1    | 10    | Aug 8  | Sep 28 | Oct 17 | 71   | 4 (4%)  | 3    | 6     |
| 2008     | Apr 20 | May 2  | May 27 | 38   | 15 (21%) | 6    | 33    | Oct 17 | Oct 17 | Oct 17 | 1    | 1 (1%)  | 1    | 1     |
| 2009     | Apr 18 | Apr 19 | May 22 | 35   | 13 (19%) | 2    | 17    | Aug 2  | Aug 2  | Aug 2  | 1    | 1 (1%)  | 1    | 1     |
| 2010     | Apr 14 | May 22 | May 22 | 39   | 12 (17%) | 4    | 18    | Sep 29 | Sep 29 | Oct 5  | 7    | 4 (4%)  | 1    | 4     |
| 2011     | Apr 19 | May 2  | May 25 | 37   | 15 (21%) | 5    | 23    | Aug 25 | Oct 1  | Oct 7  | 44   | 6 (7%)  | 2    | 8     |
| 2012     | Apr 16 | May 12 | Jun 1  | 47   | 16 (23%) | 3    | 22    | Aug 1  | Oct 1  | Oct 18 | 79   | 9 (10%) | 6    | 14    |
| 2013     | Apr 18 | Apr 28 | May 28 | 41   | 15 (21%) | 5    | 28    | Aug 25 | Oct 30 | Oct 30 | 67   | 2 (2%)  | 2    | 3     |
| 2014     | Apr 18 | May 7  | May 29 | 42   | 20 (29%) | 2    | 26    | Aug 4  | Aug 4  | Oct 25 | 83   | 6 (7%)  | 1    | 6     |
| Mean     | Apr 20 | May 6  | May 27 | 38   | 13 (20%) | 3    | 20    | Aug 26 | Sep 23 | Oct 9  | 44   | 5 (5%)  | 3    | 6.0   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3   | S4  | S5  | S6  | S7  | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|------|-----|-----|-----|-----|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |      |     |     | 0.3 | 0.3 |     | 0.3 |      | 0.1    |
| 2006     |     |     |     |     |     |        |    |    |      | 0.4 | 0.3 | 0.7 | 0.3 | 0.7 |     | 0.3  | 0.3    |
| 2007     |     |     |     |     |     |        |    |    |      |     | 0.3 | 0.1 | 0.6 |     | 0.3 | 0.1  | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |      | 0.7 | 0.9 | 1.1 | 0.4 | 0.3 | 1.3 |      | 0.5    |
| 2009     |     |     |     |     |     |        |    |    |      | 0.6 |     | 0.7 | 0.7 | 0.4 |     |      | 0.2    |
| 2010     |     |     |     |     |     |        |    |    | 0.1  | 0.3 | 0.4 | 0.1 | 0.7 | 0.9 |     |      | 0.3    |
| 2011     |     |     |     |     |     |        |    |    |      | 0.7 | 0.6 | 1.3 | 0.4 | 0.1 | 0.1 |      | 0.3    |
| 2012     |     |     |     |     |     |        |    |    | 0.1  | 0.3 | 0.4 | 0.1 | 1.3 | 0.4 | 0.3 | 0.1  | 0.3    |
| 2013     |     |     |     |     |     |        |    |    |      | 0.3 | 1.3 | 1.4 | 0.6 |     | 0.4 |      | 0.4    |
| 2014     |     |     |     |     |     |        |    |    |      | 0.6 | 0.1 | 0.7 | 0.9 | 0.7 | 0.7 |      | 0.4    |
| Mean     |     |     |     |     |     |        |    |    | 0.03 | 0.4 | 0.4 | 0.7 | 0.6 | 0.4 | 0.3 | 0.06 | 0.3    |

| Observed | Jun | Jul  | Summer | F1   | F2   | F3   | F4   | F5   | F6   | F7   | F8   | F9  | F10 | F11  | F12  | F13  | Fall |
|----------|-----|------|--------|------|------|------|------|------|------|------|------|-----|-----|------|------|------|------|
| 2005     |     | 0.06 | 0.03   |      |      |      |      |      | 0.1  |      | 0.6  | 0.2 | 1.5 | 0.2  | 0.1  |      | 0.2  |
| 2006     |     |      |        |      |      |      |      |      |      |      |      |     |     |      |      |      |      |
| 2007     |     |      |        |      | 0.1  |      | 0.1  |      |      |      |      | 0.4 |     |      | 0.1  |      | 0.07 |
| 2008     |     |      |        |      |      |      |      |      |      |      |      |     |     |      | 0.1  |      | 0.01 |
| 2009     |     |      |        | 0.1  |      |      |      |      |      |      |      |     |     |      |      |      | 0.01 |
| 2010     |     |      |        |      |      |      |      |      |      |      |      | 0.1 | 0.4 |      |      |      | 0.04 |
| 2011     |     |      |        |      |      |      | 0.1  |      |      |      | 0.1  | 0.4 | 0.4 |      |      |      | 0.09 |
| 2012     |     |      |        | 0.1  | 0.1  | 0.1  |      |      | 0.1  |      | 0.1  | 0.9 | 0.1 | 0.1  | 0.1  |      | 0.2  |
| 2013     |     |      |        |      |      |      | 0.1  |      |      |      |      |     |     |      |      | 0.3  | 0.03 |
| 2014     |     |      |        | 0.1  |      |      |      | 0.1  |      | 0.4  |      |     |     |      |      | 0.1  | 0.07 |
| Mean     |     | 0.02 | <0.01  | 0.04 | 0.03 | 0.01 | 0.04 | 0.01 | 0.03 | 0.04 | 0.09 | 0.2 | 0.2 | 0.03 | 0.06 | 0.04 | 0.07 |

Common Loon is a regular spring and fall migrant at MBO, missed only in spring 2006. Numbers are always modest, with all-time high single-day counts of 6 in both seasons. Spring migration is somewhat more regular, with observations on average spanning more than five weeks and almost always peaking in early-mid May. Fall observations are scattered throughout the season, although somewhat more regular in late September and early October. All observations have been of loons flying past MBO.

**PBGR: Pied-billed Grebe / Grèbe à bec bigarré (*Podilymbus podiceps*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 16 | Apr 19 | May 31 | 46   | 24 (41%) | 2    | 30    | Aug 3  | Aug 3  | Aug 3  | 1    | 1 (1%) | 1    | 1     |
| 2006     | May 24 | May 24 | May 24 | 1    | 1 (1%)   | 1    | 1     |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |          |      |       |        |        |        |      |        |      |       |
| 2008     | Apr 22 | Apr 22 | May 18 | 27   | 3 (4%)   | 1    | 3     |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |          |      |       | Sep 1  | Sep 1  | Sep 1  | 1    | 1 (1%) | 1    | 1     |
| 2010     | Apr 19 | Apr 19 | May 16 | 28   | 2 (3%)   | 1    | 2     |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |          |      |       |        |        |        |      |        |      |       |
| 2012     | May 14 | May 14 | May 14 | 1    | 1 (1%)   | 1    | 1     |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |          |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |          |      |       | Aug 1  | Aug 1  | Aug 1  | 1    | 1 (1%) | 1    | 1     |
| Mean     | May 1  | May 1  | May 20 | 21   | 6 (9%)   | 1    | 3.7   | Aug 12 | Aug 12 | Aug 12 | 1    | 1 (1%) | 1    | 0.3   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3   | S4   | S5   | S6   | S7  | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|------|------|------|------|-----|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    | 0.1  | 0.5  | 0.6  | 0.3  | 0.9 | 0.9 | 1.0 | 0.2  | 0.5    |
| 2006     |     |     |     |     |     |        |    |    |      |      |      |      |     |     | 0.1 |      | 0.01   |
| 2007     |     |     |     |     |     |        |    |    |      |      |      |      |     |     |     |      |        |
| 2008     |     |     |     |     |     |        |    |    | 0.1  |      |      | 0.1  |     | 0.1 |     |      | 0.04   |
| 2009     |     |     |     |     |     |        |    |    |      |      |      |      |     |     |     |      |        |
| 2010     |     |     |     |     |     |        |    |    | 0.1  |      |      |      |     | 0.1 |     |      | 0.03   |
| 2011     |     |     |     |     |     |        |    |    |      |      |      |      |     |     |     |      |        |
| 2012     |     |     |     |     |     |        |    |    |      |      |      | 0.1  |     |     |     |      | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |      |      |      |      |     |     |     |      |        |
| 2014     |     |     |     |     |     |        |    |    |      |      |      |      |     |     |     |      |        |
| Mean     |     |     |     |     |     |        |    |    | 0.01 | 0.07 | 0.06 | 0.04 | 0.1 | 0.1 | 0.1 | 0.01 | 0.05   |

| Observed | Jun  | Jul  | Summer | F1   | F2 | F3 | F4 | F5   | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|------|------|--------|------|----|----|----|------|----|----|----|----|-----|-----|-----|-----|-------|
| 2005     | 0.1  | 0.2  | 0.2    | 0.1  |    |    |    |      |    |    |    |    |     |     |     |     | 0.01  |
| 2006     |      |      |        |      |    |    |    |      |    |    |    |    |     |     |     |     |       |
| 2007     |      |      |        |      |    |    |    |      |    |    |    |    |     |     |     |     |       |
| 2008     |      |      |        |      |    |    |    |      |    |    |    |    |     |     |     |     |       |
| 2009     |      |      |        |      |    |    |    | 0.1  |    |    |    |    |     |     |     |     | 0.01  |
| 2010     |      |      |        |      |    |    |    |      |    |    |    |    |     |     |     |     |       |
| 2011     |      |      |        |      |    |    |    |      |    |    |    |    |     |     |     |     |       |
| 2012     |      |      |        |      |    |    |    |      |    |    |    |    |     |     |     |     |       |
| 2013     |      |      |        |      |    |    |    |      |    |    |    |    |     |     |     |     |       |
| 2014     |      |      |        | 0.1  |    |    |    |      |    |    |    |    |     |     |     |     | 0.01  |
| Mean     | 0.04 | 0.06 | 0.05   | 0.03 |    |    |    | 0.01 |    |    |    |    |     |     |     |     | <0.01 |

The only grebe species observed at MBO. Pied-billed Grebe was observed regularly through the spring and summer of 2005, nesting in Stoneycroft Pond, but in subsequent years has been limited to scattered observations in three spring and two fall seasons.

**NOGA: Northern Gannet / Fou de Bassan (*Morus bassanus*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First | Peak  | Last  | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|-------|-------|-------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2006     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2008     |       |      |      |      |        |      |       | Sep 7 | Sep 7 | Sep 7 | 1    | 1 (1%) | 1    | 1     |
| 2009     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2011     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2012     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2013     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2014     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| Mean     |       |      |      |      |        |      |       | Sep 7 | Sep 7 | Sep 7 | 1    | 1 (1%) | 1    | 0.1   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6   | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|------|----|----|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2006     |     |     |        |    |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2007     |     |     |        |    |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2008     |     |     |        |    |    |    |    |    | 0.1  |    |    |    |     |     |     |     | 0.01  |
| 2009     |     |     |        |    |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2010     |     |     |        |    |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2011     |     |     |        |    |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2012     |     |     |        |    |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2013     |     |     |        |    |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2014     |     |     |        |    |    |    |    |    |      |    |    |    |     |     |     |     |       |
| Mean     |     |     |        |    |    |    |    |    | 0.01 |    |    |    |     |     |     |     | <0.01 |

One of just eight species with only a single individual observed at MBO over ten years, a lone bird flying southeast over MBO following passage of a tropical storm in September 2008.



**DCCO: Double-crested Cormorant / Cormoran à aigrettes (*Phalacrocorax auritus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days  | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|---------|------|-------|
| 2005     | Apr 6  | Apr 6  | May 17 | 42   | 5 (8%)   | 4    | 11    | Sep 5  | Oct 8  | Oct 8  | 34   | 2 (2%)  | 6    | 10    |
| 2006     | Apr 11 | Apr 11 | May 16 | 36   | 4 (6%)   | 17   | 24    | Aug 5  | Aug 5  | Oct 12 | 69   | 5 (5%)  | 1    | 5     |
| 2007     | Apr 25 | May 14 | May 26 | 32   | 6 (9%)   | 9    | 14    | Aug 23 | Aug 23 | Sep 22 | 31   | 4 (4%)  | 2    | 6     |
| 2008     | Apr 8  | Apr 28 | May 28 | 51   | 9 (13%)  | 9    | 39    | Sep 18 | Sep 18 | Oct 7  | 20   | 2 (2%)  | 1    | 2     |
| 2009     | Apr 30 | Apr 30 | May 8  | 9    | 2 (3%)   | 3    | 4     | Aug 15 | Aug 15 | Oct 7  | 54   | 4 (4%)  | 32   | 42    |
| 2010     | Apr 12 | May 12 | May 24 | 43   | 8 (11%)  | 12   | 37    | Sep 12 | Oct 17 | Oct 17 | 36   | 3 (3%)  | 6    | 8     |
| 2011     | Apr 25 | Apr 25 | May 24 | 30   | 6 (9%)   | 14   | 21    | Sep 3  | Sep 13 | Oct 27 | 55   | 4 (4%)  | 14   | 23    |
| 2012     | Apr 21 | May 19 | May 31 | 41   | 11 (16%) | 6    | 28    | Aug 7  | Sep 16 | Oct 9  | 64   | 9 (10%) | 8    | 22    |
| 2013     | Apr 22 | May 3  | May 28 | 37   | 9 (13%)  | 7    | 29    | Sep 27 | Sep 27 | Sep 27 | 1    | 1 (1%)  | 1    | 1     |
| 2014     | Apr 6  | May 2  | May 30 | 55   | 17 (25%) | 18   | 59    | Aug 17 | Aug 17 | Oct 22 | 67   | 5 (5%)  | 3    | 10    |
| Mean     | Apr 16 | Apr 30 | May 23 | 38   | 8 (11%)  | 10   | 27    | Aug 28 | Sep 9  | Oct 9  | 43   | 4 (4%)  | 7    | 13    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    | 0.7 |     | 0.2 | 0.1 |     | 0.3 | 0.4 |     |     | 0.2    |
| 2006     |     |     |     |     |     |        |    |     | 2.4 | 0.1 |     | 0.3 |     | 0.6 |     |     | 0.3    |
| 2007     |     |     |     |     |     |        |    |     |     |     | 0.3 | 0.1 | 1.3 | 0.1 | 0.1 |     | 0.2    |
| 2008     |     |     |     |     |     |        |    | 0.3 |     | 0.3 | 1.3 | 1.0 |     | 1.3 | 1.4 |     | 0.6    |
| 2009     |     |     |     |     |     |        |    |     |     |     | 0.4 | 0.1 |     |     |     |     | 0.06   |
| 2010     |     |     |     |     |     |        |    |     | 0.3 | 0.7 |     |     | 2.3 | 1.7 | 0.3 |     | 0.5    |
| 2011     |     |     |     |     |     |        |    |     |     |     | 2.0 | 0.4 |     | 0.3 | 0.3 |     | 0.3    |
| 2012     |     |     |     |     |     |        |    |     |     | 0.1 |     | 0.7 | 0.3 | 1.1 | 0.4 | 1.3 | 0.4    |
| 2013     |     |     |     |     |     |        |    |     |     | 0.7 |     | 1.9 | 0.4 | 0.3 | 0.9 |     | 0.4    |
| 2014     |     |     |     |     |     |        |    | 0.1 |     | 0.1 | 1.0 | 2.7 | 0.9 | 1.9 | 1.0 | 0.8 | 0.9    |
| Mean     |     |     |     |     |     |        |    | 0.1 | 0.3 | 0.2 | 0.5 | 0.7 | 0.5 | 0.8 | 0.4 | 0.2 | 0.4    |

| Observed | Jun | Jul | Summer | F1   | F2   | F3  | F4   | F5   | F6   | F7  | F8   | F9  | F10 | F11  | F12 | F13 | Fall |
|----------|-----|-----|--------|------|------|-----|------|------|------|-----|------|-----|-----|------|-----|-----|------|
| 2005     |     |     |        |      |      |     |      |      | 0.6  |     |      |     | 1.0 |      |     |     | 0.1  |
| 2006     |     |     |        | 0.1  | 0.1  |     |      |      |      |     |      | 0.1 | 0.1 | 0.1  |     |     | 0.05 |
| 2007     |     |     |        |      |      |     | 0.3  | 0.1  | 0.1  |     | 0.3  |     |     |      |     |     | 0.07 |
| 2008     |     |     |        |      |      |     |      |      |      | 0.1 |      |     | 0.1 |      |     |     | 0.02 |
| 2009     |     |     |        |      |      | 5.6 |      |      |      |     | 0.1  |     | 0.3 |      |     |     | 0.5  |
| 2010     |     |     |        |      |      |     |      |      |      | 0.3 |      |     |     |      | 0.9 |     | 0.09 |
| 2011     |     |     |        |      |      |     |      | 0.1  |      | 2.0 | 0.1  |     |     |      |     | 1.0 | 0.3  |
| 2012     |     |     |        | 0.1  |      | 0.4 |      |      |      | 1.1 | 0.3  | 0.9 | 0.3 |      |     |     | 0.2  |
| 2013     |     |     |        |      |      |     |      |      |      |     |      | 0.1 |     |      |     |     | 0.01 |
| 2014     |     |     |        |      |      | 0.9 |      | 0.1  |      |     |      |     | 0.3 |      | 0.1 |     | 0.1  |
| Mean     |     |     |        | 0.03 | 0.01 | 0.7 | 0.03 | 0.04 | 0.07 | 0.4 | 0.09 | 0.1 | 0.2 | 0.01 | 0.1 | 0.1 | 0.1  |

Double-crested Cormorant has been observed at MBO in all spring and fall seasons, but not during summer or winter. Mean daily counts tend to be slightly higher in spring than in fall, although relatively small in both seasons due to being observed only sporadically during the course of the season. Spring sightings show a slight overall peak spanning most of May, but there is no discernible pattern to fall observations.

**AMBI: American Bittern / Butor d'Amérique (*Botaurus lentiginosus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 25 | Apr 25 | May 31 | 37   | 6 (10%)  | 1    | 6     | Aug 3  | Aug 3  | Sep 17 | 46   | 3 (3%) | 1    | 3     |
| 2006     | Apr 13 | Apr 13 | May 27 | 45   | 4 (6%)   | 1    | 4     | Aug 9  | Aug 9  | Aug 9  | 1    | 1 (1%) | 1    | 1     |
| 2007     | May 3  | May 3  | May 30 | 28   | 3 (4%)   | 1    | 3     | Aug 10 | Aug 10 | Aug 10 | 1    | 1 (1%) | 1    | 1     |
| 2008     | May 4  | May 4  | May 18 | 15   | 3 (4%)   | 1    | 3     |        |        |        |      |        |      |       |
| 2009     | Apr 20 | Apr 21 | May 8  | 19   | 6 (9%)   | 2    | 7     |        |        |        |      |        |      |       |
| 2010     | Apr 20 | Apr 20 | Apr 20 | 1    | 1 (1%)   | 1    | 1     | Sep 18 | Sep 18 | Sep 18 | 1    | 1 (1%) | 1    | 1     |
| 2011     | May 17 | May 21 | Jun 5  | 20   | 14 (20%) | 2    | 15    | Aug 20 | Aug 20 | Aug 20 | 1    | 1 (1%) | 1    | 1     |
| 2012     | Apr 1  | Apr 10 | Jun 2  | 63   | 8 (11%)  | 2    | 10    |        |        |        |      |        |      |       |
| 2013     | Apr 30 | Apr 30 | Jun 4  | 36   | 5 (7%)   | 1    | 5     |        |        |        |      |        |      |       |
| 2014     | May 15 | May 15 | May 15 | 1    | 1 (1%)   | 1    | 1     |        |        |        |      |        |      |       |
| Mean     | Apr 26 | Apr 28 | May 22 | 26   | 5 (7%)   | 1    | 5.5   | Aug 18 | Aug 18 | Aug 27 | 10   | 1 (2%) | 1    | 0.7   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1   | S2   | S3   | S4  | S5   | S6   | S7   | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|------|------|------|-----|------|------|------|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |      |      |      |     | 0.3  | 0.1  | 0.3  |     |     | 0.2 | 0.1    |
| 2006     |     |     |     |     |     |        |      |      | 0.1  | 0.1 |      |      |      | 0.1 | 0.1 |     | 0.06   |
| 2007     |     |     |     |     |     |        |      |      |      |     |      | 0.1  |      |     | 0.1 | 0.1 | 0.04   |
| 2008     |     |     |     |     |     |        |      |      |      |     |      | 0.1  |      | 0.3 |     |     | 0.04   |
| 2009     |     |     |     |     |     |        |      |      |      | 0.6 | 0.1  | 0.3  |      |     |     |     | 0.1    |
| 2010     |     |     |     |     |     |        |      |      |      | 0.1 |      |      |      |     |     |     | 0.01   |
| 2011     |     |     |     |     |     |        |      |      |      |     |      |      |      | 0.7 | 1.0 | 0.4 | 0.2    |
| 2012     |     |     |     |     |     |        | 0.1  | 0.6  |      | 0.6 |      |      |      |     |     | 0.1 | 0.1    |
| 2013     |     |     |     |     |     |        |      |      |      |     | 0.3  | 0.1  |      | 0.1 |     | 0.1 | 0.07   |
| 2014     |     |     |     |     |     |        |      |      |      |     |      |      | 0.1  |     |     |     | 0.01   |
| Mean     |     |     |     |     |     |        | 0.02 | 0.06 | 0.01 | 0.1 | 0.07 | 0.09 | 0.04 | 0.1 | 0.1 | 0.1 | 0.08   |

| Observed | Jun | Jul | Summer | F1   | F2   | F3   | F4 | F5 | F6 | F7   | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|------|------|------|----|----|----|------|----|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        | 0.3  |      |      |    |    |    | 0.1  |    |    |     |     |     |     | 0.03  |
| 2006     |     |     |        |      | 0.1  |      |    |    |    |      |    |    |     |     |     |     | 0.01  |
| 2007     |     |     |        |      | 0.1  |      |    |    |    |      |    |    |     |     |     |     | 0.01  |
| 2008     |     |     |        |      |      |      |    |    |    |      |    |    |     |     |     |     |       |
| 2009     |     |     |        |      |      |      |    |    |    |      |    |    |     |     |     |     |       |
| 2010     |     |     |        |      |      |      |    |    |    | 0.1  |    |    |     |     |     |     | 0.01  |
| 2011     |     |     |        |      |      | 0.1  |    |    |    |      |    |    |     |     |     |     | 0.01  |
| 2012     |     |     |        |      |      |      |    |    |    |      |    |    |     |     |     |     |       |
| 2013     |     |     |        |      |      |      |    |    |    |      |    |    |     |     |     |     |       |
| 2014     |     |     |        |      |      |      |    |    |    |      |    |    |     |     |     |     |       |
| Mean     |     |     |        | 0.03 | 0.03 | 0.01 |    |    |    | 0.03 |    |    |     |     |     |     | <0.01 |

Of the five heron and egret species observed at MBO, three have been recorded annually; American Bittern is the least common of these. Observations are more consistent in spring, with annual sightings, although as low as one individual in both 2010 and 2014. Even in years with a higher count of sightings, it is likely that only one or two lingering individuals were involved. Spring sightings have been scattered throughout the season without any discernible pattern. Fall observations are less common, with sightings in only five of ten years, most recently in 2011. Although there have been fewer fall sightings, they are more concentrated toward the early part of the season, with only two occurring a month later, in week 7.

**GBHE: Great Blue Heron / Grand Héron (*Ardea herodias*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | May 17 | Jun 3  | 60   | 30 (51%) | 3    | 39    | Aug 1 | Aug 2  | Oct 18 | 79   | 22 (25%) | 2    | 27    |
| 2006     | Apr 7  | Apr 21 | Jun 4  | 59   | 53 (77%) | 7    | 171   | Aug 1 | Aug 1  | Oct 17 | 78   | 22 (24%) | 4    | 27    |
| 2007     | Apr 8  | May 27 | Jun 5  | 59   | 45 (64%) | 10   | 139   | Aug 8 | Aug 8  | Oct 18 | 72   | 27 (30%) | 2    | 34    |
| 2008     | Mar 31 | May 14 | Jun 5  | 67   | 47 (67%) | 14   | 119   | Aug 1 | Aug 12 | Oct 5  | 66   | 21 (23%) | 3    | 24    |
| 2009     | Mar 28 | May 24 | Jun 1  | 66   | 30 (43%) | 4    | 49    | Aug 5 | Aug 26 | Oct 6  | 63   | 21 (23%) | 2    | 22    |
| 2010     | Apr 2  | May 23 | Jun 3  | 63   | 29 (41%) | 4    | 40    | Aug 6 | Aug 6  | Oct 18 | 74   | 18 (20%) | 5    | 25    |
| 2011     | Mar 31 | Apr 24 | Jun 5  | 67   | 17 (24%) | 7    | 34    | Aug 1 | Aug 12 | Oct 29 | 90   | 21 (23%) | 6    | 36    |
| 2012     | Apr 2  | May 9  | Jun 3  | 63   | 26 (37%) | 4    | 44    | Aug 4 | Aug 8  | Oct 25 | 83   | 36 (40%) | 4    | 60    |
| 2013     | Apr 5  | May 5  | May 31 | 57   | 26 (37%) | 3    | 36    | Aug 1 | Aug 1  | Oct 11 | 72   | 15 (16%) | 6    | 22    |
| 2014     | Apr 2  | Apr 18 | Jun 1  | 61   | 23 (34%) | 2    | 31    | Aug 1 | Aug 1  | Oct 25 | 86   | 40 (44%) | 5    | 62    |
| Mean     | Apr 2  | May 9  | Jun 3  | 62   | 33 (48%) | 6    | 70    | Aug 2 | Aug 7  | Oct 17 | 76   | 24 (27%) | 4    | 34    |

| Observed | Nov  | Dec  | Jan | Feb | Mar  | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|------|------|-----|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |      |      |     |     |      |        |     | 0.5 | 0.1 | 0.2 | 0.3 | 0.7 | 0.6 | 1.3 | 1.1 | 1.2 | 0.7    |
| 2006     |      | 0.07 |     |     |      | 0.02   |     | 0.3 | 1.7 | 2.6 | 2.0 | 4.9 | 2.4 | 3.4 | 4.4 | 2.7 | 2.5    |
| 2007     | 0.06 | 0.1  |     |     |      | 0.04   |     | 0.4 |     | 1.4 | 0.9 | 4.1 | 3.3 | 2.3 | 4.9 | 2.6 | 2.0    |
| 2008     | 0.1  |      |     |     |      | 0.04   | 0.3 | 0.7 | 0.6 | 1.7 | 1.6 | 1.9 | 3.7 | 1.6 | 3.4 | 1.6 | 1.7    |
| 2009     |      |      |     |     |      |        | 0.3 |     | 0.1 | 0.7 | 0.4 | 0.6 | 1.1 | 1.6 | 1.7 | 0.4 | 0.7    |
| 2010     |      |      |     |     | 0.08 | 0.02   | 0.1 |     | 0.1 | 1.0 | 0.3 | 0.9 | 1.0 | 0.7 | 1.3 | 0.3 | 0.6    |
| 2011     |      |      |     |     |      |        | 0.1 | 0.3 | 0.1 | 1.1 | 0.4 | 0.4 | 0.3 | 0.6 | 0.4 | 1.0 | 0.5    |
| 2012     |      |      |     |     | 0.2  | 0.04   | 0.1 | 0.1 | 0.1 | 0.4 | 0.3 | 1.1 | 1.1 | 1.0 | 1.1 | 0.7 | 0.6    |
| 2013     |      |      |     |     |      |        |     | 0.3 |     | 0.7 | 0.6 | 1.1 | 0.7 | 0.7 | 0.7 | 0.3 | 0.5    |
| 2014     |      |      |     |     |      |        | 0.2 | 0.1 | 0.3 | 0.9 | 0.4 | 0.3 | 0.1 | 0.9 | 0.9 | 0.5 | 0.5    |
| Mean     | 0.02 | 0.04 |     |     | 0.02 | 0.02   | 0.1 | 0.3 | 0.3 | 1.1 | 0.7 | 1.6 | 1.4 | 1.4 | 2.0 | 1.1 | 1.0    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11  | F12 | F13  | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|------|
| 2005     | 0.9 | 1.6 | 1.3    | 0.7 | 0.3 | 0.4 | 0.6 | 0.4 | 0.1 | 0.3 |     | 0.5 | 0.2 |      | 0.4 |      | 0.3  |
| 2006     | 1.2 | 1.2 | 1.2    | 1.3 | 0.1 | 0.1 | 0.1 |     | 0.3 | 0.7 | 0.3 | 0.1 | 0.3 | 0.3  | 0.1 |      | 0.3  |
| 2007     | 1.3 | 0.3 | 0.8    |     | 0.6 | 0.6 | 0.9 | 0.4 | 0.6 | 1.1 |     |     | 0.6 |      | 0.1 |      | 0.4  |
| 2008     | 0.4 |     | 0.2    | 0.4 | 1.1 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.4 | 0.1 |      |     |      | 0.3  |
| 2009     |     | 0.3 | 0.1    | 0.1 | 0.4 | 0.6 | 0.7 |     |     | 0.3 | 0.4 | 0.4 | 0.1 |      |     |      | 0.2  |
| 2010     |     |     |        | 0.9 | 0.3 | 0.1 | 0.4 | 0.1 | 0.4 | 0.7 | 0.3 |     | 0.1 |      | 0.1 |      | 0.3  |
| 2011     |     |     |        | 0.7 | 1.3 | 0.7 | 0.4 | 0.3 | 0.3 | 0.7 | 0.1 | 0.1 | 0.1 |      | 0.1 | 0.1  | 0.4  |
| 2012     |     | 0.3 | 0.1    | 0.1 | 1.3 | 1.4 | 0.1 | 0.3 | 2.1 | 1.3 | 0.7 | 0.7 | 0.1 | 0.1  |     | 0.1  | 0.7  |
| 2013     |     | 0.3 | 0.1    | 1.0 | 0.4 | 0.1 | 0.1 | 0.1 |     | 0.3 |     | 0.1 | 0.7 | 0.1  |     |      | 0.2  |
| 2014     |     | 0.5 | 0.3    | 1.4 | 0.6 | 1.1 | 1.3 | 1.0 | 1.3 | 1.0 | 0.3 | 0.1 | 0.4 | 0.1  |     | 0.1  | 0.7  |
| Mean     | 0.6 | 0.7 | 0.7    | 0.7 | 0.6 | 0.6 | 0.5 | 0.3 | 0.5 | 0.7 | 0.3 | 0.3 | 0.3 | 0.07 | 0.1 | 0.04 | 0.4  |

Great Blue Heron is the most frequently observed heron at MBO, with observations through most of spring and fall annually, plus some sightings in most summers and also in early and late winter in some years. Spring counts were elevated from 2006 through 2008, but otherwise have been very consistent; numbers tend to be somewhat greater in the second half of the season but there are no strong peaks. Similarly in fall there tends not to be a distinct peak to migration, but sightings are more common in the first half of the season, with greatest numbers in the first half of August in seven years out of ten. Unlike in spring, fall numbers have been relatively consistent across all years, except for a notable increase observations in 2012 and 2014. Considering that many sightings involve individuals landing in the ponds at MBO, frequency of observation is also correlated to some degree with the water level (which, for example, was unusually high in 2014).

**GREG: Great Egret / Grande Aigrette (*Ardea alba*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2010     | Apr 22 | Apr 22 | Apr 22 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2011     | May 22 | May 22 | Jun 1  | 11   | 3 (4%) | 1    | 3     | Oct 12 | Oct 12 | Oct 12 | 1    | 1 (1%) | 1    | 1     |
| 2012     |        |        |        |      |        |      |       | Aug 21 | Aug 21 | Aug 21 | 1    | 1 (1%) | 2    | 2     |
| 2013     |        |        |        |      |        |      |       | Aug 16 | Aug 16 | Sep 26 | 42   | 2 (2%) | 2    | 3     |
| 2014     | May 23 | May 23 | May 23 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| Mean     | May 12 | May 12 | May 15 | 4    | 2 (2%) | 1    | 0.5   | Sep 5  | Sep 5  | Sep 19 | 15   | 1 (1%) | 2    | 0.6   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5 | S6 | S7 | S8   | S9   | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|----|----|----|------|------|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |      |        |
| 2006     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |      |        |
| 2007     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |      |        |
| 2008     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |      |        |
| 2009     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |      |        |
| 2010     |     |     |     |     |     |        |    |    |    | 0.1  |    |    |    |      |      |      | 0.01   |
| 2011     |     |     |     |     |     |        |    |    |    |      |    |    |    | 0.1  |      | 0.3  | 0.04   |
| 2012     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |      |        |
| 2013     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |      |        |
| 2014     |     |     |     |     |     |        |    |    |    |      |    |    |    |      | 0.1  |      | 0.01   |
| Mean     |     |     |     |     |     |        |    |    |    | 0.01 |    |    |    | 0.01 | 0.01 | 0.03 | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2 | F3   | F4 | F5 | F6 | F7 | F8 | F9   | F10 | F11  | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|------|----|----|----|----|----|------|-----|------|-----|-----|-------|
| 2005     |     |     |        |    |    |      |    |    |    |    |    |      |     |      |     |     |       |
| 2006     |     |     |        |    |    |      |    |    |    |    |    |      |     |      |     |     |       |
| 2007     |     |     |        |    |    |      |    |    |    |    |    |      |     |      |     |     |       |
| 2008     |     |     |        |    |    |      |    |    |    |    |    |      |     |      |     |     |       |
| 2009     |     |     |        |    |    |      |    |    |    |    |    |      |     |      |     |     |       |
| 2010     |     |     |        |    |    |      |    |    |    |    |    |      |     |      |     |     |       |
| 2011     |     |     |        |    |    |      |    |    |    |    |    |      |     | 0.1  |     |     | 0.01  |
| 2012     |     |     |        |    |    | 0.3  |    |    |    |    |    |      |     |      |     |     | 0.02  |
| 2013     |     |     |        |    |    | 0.3  |    |    |    |    |    | 0.1  |     |      |     |     | 0.03  |
| 2014     |     |     |        |    |    |      |    |    |    |    |    |      |     |      |     |     |       |
| Mean     |     |     |        |    |    | 0.06 |    |    |    |    |    | 0.01 |     | 0.01 |     |     | <0.01 |

Great Egret is a rare species at MBO, with only 11 individuals observed to date, all since April 2010. The five spring observations have been scattered between weeks 4 and 10, while the six fall sightings range from week 3 to 11. All observations are believed to be of birds nesting at the colony at Ile-aux-herons, approximately 28 km east of MBO.

**GRHE: Green Heron / Héron vert (*Butorides virescens*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 16 | May 25 | Jun 1  | 17   | 7 (12%)  | 4    | 11    | Aug 1  | Sep 6  | Sep 27 | 58   | 13 (15%) | 3    | 18    |
| 2006     | May 6  | May 28 | Jun 4  | 30   | 19 (28%) | 3    | 28    | Aug 1  | Aug 17 | Sep 24 | 55   | 29 (32%) | 6    | 50    |
| 2007     | May 16 | May 22 | Jun 5  | 21   | 7 (10%)  | 2    | 8     | Aug 1  | Aug 8  | Oct 6  | 67   | 23 (25%) | 4    | 45    |
| 2008     | May 11 | May 28 | Jun 3  | 24   | 21 (30%) | 3    | 34    | Aug 1  | Aug 3  | Sep 10 | 41   | 14 (15%) | 5    | 23    |
| 2009     | Apr 24 | May 12 | Jun 3  | 41   | 22 (32%) | 2    | 23    | Aug 1  | Aug 16 | Sep 25 | 56   | 21 (23%) | 5    | 34    |
| 2010     | May 4  | May 28 | May 29 | 26   | 7 (10%)  | 4    | 11    | Aug 1  | Aug 1  | Sep 23 | 54   | 8 (9%)   | 1    | 8     |
| 2011     | May 7  | May 11 | Jun 5  | 30   | 13 (19%) | 2    | 17    | Aug 12 | Sep 2  | Sep 4  | 24   | 4 (4%)   | 3    | 6     |
| 2012     | May 5  | May 19 | May 27 | 23   | 8 (11%)  | 3    | 13    | Aug 3  | Aug 4  | Aug 19 | 17   | 9 (10%)  | 3    | 16    |
| 2013     | May 8  | May 8  | May 29 | 22   | 8 (11%)  | 1    | 8     | Aug 4  | Aug 4  | Oct 10 | 68   | 3 (3%)   | 1    | 3     |
| 2014     | May 10 | May 14 | May 31 | 22   | 21 (31%) | 3    | 38    | Aug 1  | Aug 3  | Sep 24 | 55   | 16 (18%) | 5    | 26    |
| Mean     | May 7  | May 19 | Jun 1  | 26   | 13 (19%) | 3    | 19    | Aug 2  | Aug 12 | Sep 20 | 50   | 14 (15%) | 4    | 23    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |    |     |     | 0.1 | 0.9 | 0.8 | 0.2    |
| 2006     |     |     |     |     |     |        |    |    |    |      |    | 0.6 | 0.6 | 0.3 | 1.6 | 1.0 | 0.4    |
| 2007     |     |     |     |     |     |        |    |    |    |      |    |     |     | 0.7 | 0.3 | 0.1 | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |    |      |    |     | 0.4 | 1.4 | 1.7 | 1.3 | 0.5    |
| 2009     |     |     |     |     |     |        |    |    |    | 0.1  |    | 0.4 | 0.7 | 0.7 | 0.7 | 0.6 | 0.3    |
| 2010     |     |     |     |     |     |        |    |    |    |      |    | 0.4 | 0.1 | 0.1 | 0.9 |     | 0.2    |
| 2011     |     |     |     |     |     |        |    |    |    |      |    | 0.1 | 0.7 | 0.9 | 0.3 | 0.4 | 0.2    |
| 2012     |     |     |     |     |     |        |    |    |    |      |    | 0.3 | 0.1 | 1.1 | 0.3 |     | 0.2    |
| 2013     |     |     |     |     |     |        |    |    |    |      |    | 0.1 | 0.6 | 0.3 | 0.1 |     | 0.1    |
| 2014     |     |     |     |     |     |        |    |    |    |      |    |     | 1.3 | 2.0 | 1.9 | 0.3 | 0.6    |
| Mean     |     |     |     |     |     |        |    |    |    | 0.01 |    | 0.2 | 0.5 | 0.8 | 0.9 | 0.4 | 0.3    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7   | F8   | F9   | F10  | F11  | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|-----|-----|------|
| 2005     | 0.7 | 0.7 | 0.7    | 0.3 | 0.7 | 0.1 | 0.7 | 0.1 | 0.4 |      |      | 0.2  |      |      |     |     | 0.2  |
| 2006     | 0.4 | 0.8 | 0.6    | 1.4 | 1.1 | 2.0 | 0.7 | 0.4 | 0.7 | 0.3  | 0.4  |      |      |      |     |     | 0.5  |
| 2007     | 0.1 | 0.3 | 0.2    | 1.1 | 3.0 | 1.1 | 0.4 | 0.3 | 0.3 |      |      |      | 0.1  |      |     |     | 0.5  |
| 2008     | 1.2 | 1.0 | 1.1    | 2.1 | 0.4 |     | 0.3 | 0.3 | 0.1 |      |      |      |      |      |     |     | 0.3  |
| 2009     | 1.0 |     | 0.4    | 0.7 | 1.9 | 1.7 | 0.3 |     |     | 0.1  | 0.1  |      |      |      |     |     | 0.4  |
| 2010     |     |     |        | 0.3 | 0.1 |     |     |     | 0.1 | 0.4  | 0.1  |      |      |      |     |     | 0.09 |
| 2011     | 0.3 | 0.5 | 0.4    |     | 0.1 |     | 0.1 | 0.6 |     |      |      |      |      |      |     |     | 0.07 |
| 2012     | 0.3 |     | 0.1    | 1.0 | 0.6 | 0.7 |     |     |     |      |      |      |      |      |     |     | 0.2  |
| 2013     |     | 0.5 | 0.3    | 0.1 |     |     | 0.1 |     |     |      |      |      |      | 0.1  |     |     | 0.03 |
| 2014     | 0.3 | 0.3 | 0.3    | 2.0 | 1.0 | 0.1 | 0.1 | 0.1 | 0.1 |      | 0.1  |      |      |      |     |     | 0.3  |
| Mean     | 0.5 | 0.5 | 0.5    | 0.9 | 0.9 | 0.6 | 0.3 | 0.2 | 0.2 | 0.09 | 0.09 | 0.01 | 0.01 | 0.01 |     |     | 0.3  |

Green Heron is a regular though uncommon species from mid-spring through mid-fall. There has been only one spring record in the first half of spring, in week 4 of 2009; numbers almost always peak in week 8 or 9. Periodic sightings throughout summer most years suggest nesting of a pair either on site or nearby; most observations in spring and fall are likely the same individuals. Fall numbers tend to peak in early August and taper off by mid-season, although there have been sightings in week 9 or later in three of ten years. Numbers observed are similarly low across spring, summer, and fall.

**BCNH: Black-crowned Night-Heron / Bihoreau gris (*Nycticorax nycticorax*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 28 | Apr 28 | Apr 28 | 1    | 1 (2%) | 1    | 1     |        |        |        |      |        |      |       |
| 2006     | Apr 30 | Apr 30 | Apr 30 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     | Apr 21 | Apr 21 | Apr 21 | 1    | 1 (1%) | 2    | 2     |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     | May 13 | May 13 | May 13 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       | Aug 11 | Aug 11 | Aug 11 | 1    | 1 (1%) | 1    | 1     |
| 2013     |        |        |        |      |        |      |       | Aug 3  | Aug 3  | Aug 3  | 1    | 1 (1%) | 1    | 1     |
| 2014     |        |        |        |      |        |      |       | Aug 1  | Aug 1  | Aug 1  | 1    | 1 (1%) | 1    | 1     |
| Mean     | Apr 30 | Apr 30 | Apr 30 | 1    | 1 (1%) | 1    | 0.5   | Aug 5  | Aug 5  | Aug 5  | 1    | 1 (1%) | 1    | 0.3   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5   | S6 | S7   | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|------|----|------|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      | 0.1  |    |      |    |    |     | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    |      | 0.1  |    |      |    |    |     | 0.01   |
| 2007     |     |     |     |     |     |        |    |    |    |      |      |    |      |    |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |      |      |    |      |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    | 0.3  |      |    |      |    |    |     | 0.03   |
| 2010     |     |     |     |     |     |        |    |    |    |      |      |    |      |    |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |      |      |    | 0.1  |    |    |     | 0.01   |
| 2012     |     |     |     |     |     |        |    |    |    |      |      |    |      |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |      |      |    |      |    |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |      |      |    |      |    |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    | 0.03 | 0.03 |    | 0.01 |    |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2   | F3   | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|------|------|----|----|----|----|----|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |      |      |    |    |    |    |    |    |     |     |     |     |       |
| 2006     |     |     |        |    |      |      |    |    |    |    |    |    |     |     |     |     |       |
| 2007     |     |     |        |    |      |      |    |    |    |    |    |    |     |     |     |     |       |
| 2008     |     |     |        |    |      |      |    |    |    |    |    |    |     |     |     |     |       |
| 2009     |     |     |        |    |      |      |    |    |    |    |    |    |     |     |     |     |       |
| 2010     |     |     |        |    |      |      |    |    |    |    |    |    |     |     |     |     |       |
| 2011     |     |     |        |    |      |      |    |    |    |    |    |    |     |     |     |     |       |
| 2012     |     |     |        |    |      | 0.1  |    |    |    |    |    |    |     |     |     |     | 0.01  |
| 2013     |     |     |        |    | 0.1  |      |    |    |    |    |    |    |     |     |     |     | 0.01  |
| 2014     |     |     |        |    | 0.1  |      |    |    |    |    |    |    |     |     |     |     | 0.01  |
| Mean     |     |     |        |    | 0.03 | 0.01 |    |    |    |    |    |    |     |     |     |     | <0.01 |

Black-crowned Night Heron is a rare species at MBO, with only five observations in spring, and three in fall. Curiously, the spring observations all occurred between 2005 and 2011, while fall observations were annual from 2012 through 2014. All sightings involved lone individuals, except for two together in April 2009. Despite the scarcity of observations, there is some consistency to timing, with four of the five spring observations occurring between April 21 and 30, and all fall observations between August 1 and 11.



**TUVU: Turkey Vulture / Urubu à tête rouge (*Cathartes aura*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 18 | Apr 18 | May 31 | 44   | 7 (12%)  | 5    | 13    | Aug 22 | Oct 20 | Oct 20 | 60   | 7 (8%)   | 3    | 9     |
| 2006     | Mar 31 | May 29 | May 31 | 62   | 20 (29%) | 6    | 35    | Aug 5  | Oct 29 | Oct 30 | 87   | 11 (12%) | 5    | 20    |
| 2007     | Apr 10 | May 6  | May 30 | 51   | 18 (26%) | 5    | 27    | Sep 25 | Sep 25 | Sep 25 | 1    | 1 (1%)   | 1    | 1     |
| 2008     | Apr 18 | Apr 27 | May 30 | 43   | 19 (27%) | 5    | 36    | Aug 10 | Oct 17 | Oct 17 | 69   | 6 (7%)   | 3    | 10    |
| 2009     | Apr 11 | Apr 29 | Jun 1  | 52   | 24 (35%) | 6    | 57    | Aug 20 | Sep 25 | Oct 23 | 65   | 12 (13%) | 16   | 38    |
| 2010     | Apr 8  | Apr 21 | May 31 | 54   | 31 (44%) | 10   | 79    | Aug 1  | Oct 3  | Oct 24 | 85   | 15 (16%) | 30   | 57    |
| 2011     | Apr 4  | May 9  | Jun 1  | 59   | 34 (49%) | 7    | 92    | Aug 1  | Sep 18 | Oct 27 | 88   | 25 (27%) | 8    | 67    |
| 2012     | Mar 31 | May 12 | Jun 1  | 63   | 31 (44%) | 6    | 69    | Aug 7  | Sep 27 | Oct 24 | 79   | 22 (24%) | 69   | 108   |
| 2013     | Mar 31 | May 18 | Jun 4  | 66   | 40 (57%) | 10   | 116   | Aug 7  | Sep 25 | Oct 24 | 79   | 9 (10%)  | 8    | 19    |
| 2014     | Apr 18 | Apr 20 | Jun 1  | 45   | 36 (53%) | 6    | 85    | Aug 4  | Sep 18 | Oct 22 | 80   | 18 (20%) | 7    | 36    |
| Mean     | Apr 8  | May 3  | May 31 | 54   | 26 (38%) | 7    | 61    | Aug 13 | Oct 2  | Oct 20 | 69   | 13 (14%) | 15   | 37    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1   | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |      |     |     | 0.8 | 0.1 | 0.1 |     | 0.6 | 0.1 | 0.2 | 0.2    |
| 2006     |     |     |     |     |     |        | 0.3  | 0.2 | 0.1 | 0.6 | 0.3 | 1.1 | 0.6 | 0.6 | 1.1 | 0.1 | 0.5    |
| 2007     |     |     |     |     |     |        |      | 0.1 |     | 0.3 | 0.3 | 1.7 | 0.6 | 0.1 | 0.6 | 0.1 | 0.4    |
| 2008     |     |     |     |     |     |        |      |     |     | 1.4 | 1.0 | 0.3 | 0.9 | 0.6 | 0.9 | 0.1 | 0.5    |
| 2009     |     |     |     |     |     |        |      |     | 0.6 | 1.3 | 2.3 | 1.9 | 0.4 | 0.4 | 1.0 | 0.3 | 0.8    |
| 2010     |     |     |     |     | 0.5 | 0.10   |      | 0.9 | 0.9 | 3.3 | 1.1 | 1.1 | 0.7 | 1.9 | 1.1 | 0.3 | 1.1    |
| 2011     |     |     |     |     | 0.3 | 0.05   |      | 0.9 | 1.0 | 1.7 | 1.4 | 3.1 | 3.0 | 1.0 | 0.1 | 0.9 | 1.3    |
| 2012     |     |     |     |     | 0.6 | 0.1    | 0.3  | 0.1 | 0.7 | 0.9 | 1.7 | 1.4 | 1.6 | 0.9 | 2.0 | 0.3 | 1.0    |
| 2013     |     |     |     |     |     |        | 0.1  | 0.3 | 0.6 | 3.3 | 1.6 | 2.9 | 3.0 | 3.3 | 0.4 | 1.1 | 1.7    |
| 2014     |     |     |     |     |     |        |      |     |     | 2.6 | 2.4 | 1.6 | 3.1 | 1.1 | 1.1 | 0.2 | 1.2    |
| Mean     |     |     |     |     | 0.1 | 0.03   | 0.08 | 0.3 | 0.4 | 1.6 | 1.2 | 1.5 | 1.4 | 1.0 | 0.9 | 0.4 | 0.9    |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9   | F10 | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|
| 2005     | 0.3 |      | 0.2    |     |     |     | 0.1 | 0.1 |     | 0.1 | 0.1 |      | 0.3 |     | 0.4 |     | 0.1  |
| 2006     |     |      |        | 0.1 | 0.1 | 0.1 | 0.3 |     | 0.1 | 0.7 |     |      |     |     | 0.4 | 0.9 | 0.2  |
| 2007     | 0.4 | 0.2  | 0.3    |     |     |     |     |     |     |     | 0.1 |      |     |     |     |     | 0.01 |
| 2008     |     |      |        |     | 0.1 |     |     |     | 0.3 | 0.3 | 0.1 |      | 0.1 |     | 0.4 |     | 0.1  |
| 2009     |     |      |        |     |     | 0.1 | 0.1 | 0.1 |     |     | 2.4 | 0.9  | 1.1 | 0.4 | 0.1 |     | 0.4  |
| 2010     |     |      |        | 0.3 |     | 0.6 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 |      | 4.9 | 1.0 | 0.4 | 0.1 | 0.6  |
| 2011     | 0.3 |      | 0.1    | 0.6 | 0.3 | 0.1 | 0.3 | 0.3 | 0.4 | 1.3 | 0.3 | 2.6  | 2.3 | 0.1 |     | 1.0 | 0.7  |
| 2012     | 0.3 | 0.3  | 0.2    | 0.1 | 0.6 |     | 0.1 | 1.3 | 0.4 | 0.1 | 0.7 | 10.1 | 0.6 |     | 0.7 | 0.6 | 1.2  |
| 2013     |     | 0.3  | 0.1    | 0.3 | 0.1 | 0.1 | 0.1 | 0.4 |     | 0.1 | 1.1 |      |     |     |     | 0.3 | 0.2  |
| 2014     | 0.7 |      | 0.3    | 0.1 | 0.3 | 0.9 | 0.3 | 0.3 | 0.1 | 1.0 | 0.1 | 0.4  | 0.3 | 1.0 | 0.3 |     | 0.4  |
| Mean     | 0.2 | 0.05 | 0.1    | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.4 | 0.5 | 1.4  | 1.0 | 0.3 | 0.3 | 0.3 | 0.4  |

Turkey Vulture is a fairly common spring and fall migrant and occasional summer resident at MBO. In three years, early spring migrants arrived in the last period of winter; more commonly the first vultures arrive in week 1 or 2 of spring, but occasionally (in 2005, 2008, and 2014) not until week 4. Week 4 also represents the overall peak of spring migration, although depending on year it can range as late as week 6 or 7. Spring counts have been higher since 2010, reflecting the presence of a resident pair each year. Since 2010, there has been a resident pair, although in 2010 they abandoned their nesting attempt early, and there were only single eggs laid in 2011 and 2014, neither of which hatched. Fall numbers are generally lower than in spring, although occasionally the peak of migration in late September or early October brings large flocks past MBO.

**OSPR: Osprey / Balbuzard pêcheur (*Pandion haliaetus*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |         |      |       | Oct 8  | Oct 8  | Oct 8  | 1    | 1 (1%) | 1    | 1     |
| 2006     | Apr 24 | May 4  | May 8  | 15   | 5 (7%)  | 9    | 16    | Sep 17 | Oct 7  | Oct 7  | 21   | 4 (4%) | 4    | 10    |
| 2007     | Apr 23 | Apr 23 | May 10 | 18   | 5 (7%)  | 3    | 9     | Sep 24 | Sep 24 | Oct 21 | 28   | 4 (4%) | 1    | 4     |
| 2008     | Apr 24 | May 6  | May 6  | 13   | 4 (6%)  | 3    | 7     | Aug 20 | Aug 20 | Aug 20 | 1    | 1 (1%) | 1    | 1     |
| 2009     | Apr 25 | Apr 25 | May 11 | 17   | 2 (3%)  | 1    | 2     | Aug 14 | Aug 14 | Aug 14 | 1    | 1 (1%) | 1    | 1     |
| 2010     | Apr 23 | May 15 | May 31 | 39   | 4 (6%)  | 2    | 5     | Oct 3  | Oct 3  | Oct 30 | 28   | 2 (2%) | 1    | 2     |
| 2011     | Apr 18 | Apr 25 | Apr 30 | 13   | 5 (7%)  | 4    | 9     | Sep 8  | Sep 8  | Oct 1  | 24   | 6 (7%) | 2    | 9     |
| 2012     | Apr 19 | May 5  | May 14 | 26   | 4 (6%)  | 4    | 7     | Sep 9  | Sep 9  | Oct 1  | 23   | 3 (3%) | 1    | 3     |
| 2013     | Apr 28 | May 4  | May 30 | 33   | 7 (10%) | 2    | 8     | Sep 25 | Sep 25 | Oct 12 | 18   | 2 (2%) | 1    | 2     |
| 2014     | Apr 27 | Apr 27 | May 22 | 26   | 7 (10%) | 3    | 10    | Sep 7  | Sep 18 | Sep 24 | 18   | 5 (5%) | 5    | 11    |
| Mean     | Apr 23 | May 1  | May 14 | 22   | 5 (7%)  | 3    | 7.3   | Sep 13 | Sep 16 | Sep 28 | 16   | 3 (3%) | 2    | 4.4   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6  | S7  | S8   | S9 | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|-----|-----|------|----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |     |     |     |     |      |    |      |        |
| 2006     |     |     |     |     |     |        |    |    |    | 0.1 | 0.7 | 1.4 |     |      |    |      | 0.2    |
| 2007     |     |     |     |     |     |        |    |    |    | 0.4 | 0.4 | 0.3 | 0.1 |      |    |      | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |    | 0.1 | 0.1 | 0.7 |     |      |    |      | 0.1    |
| 2009     |     |     |     |     |     |        |    |    |    |     | 0.1 |     | 0.1 |      |    |      | 0.03   |
| 2010     |     |     |     |     |     |        |    |    |    | 0.1 |     | 0.1 | 0.3 |      |    | 0.1  | 0.07   |
| 2011     |     |     |     |     |     |        |    |    |    | 0.6 | 0.7 |     |     |      |    |      | 0.1    |
| 2012     |     |     |     |     |     |        |    |    |    | 0.1 |     | 0.6 | 0.3 |      |    |      | 0.1    |
| 2013     |     |     |     |     |     |        |    |    |    |     | 0.1 | 0.6 | 0.3 |      |    | 0.1  | 0.1    |
| 2014     |     |     |     |     |     |        |    |    |    |     | 0.4 | 0.1 | 0.6 | 0.3  |    |      | 0.1    |
| Mean     |     |     |     |     |     |        |    |    |    | 0.2 | 0.3 | 0.4 | 0.2 | 0.03 |    | 0.03 | 0.1    |

| Observed | Jun | Jul | Summer | F1 | F2   | F3   | F4 | F5 | F6   | F7  | F8  | F9  | F10 | F11  | F12  | F13  | Fall |
|----------|-----|-----|--------|----|------|------|----|----|------|-----|-----|-----|-----|------|------|------|------|
| 2005     |     |     |        |    |      |      |    |    |      |     |     |     | 0.2 |      |      |      | 0.01 |
| 2006     |     |     |        |    |      |      |    |    |      | 0.4 | 0.1 |     | 0.9 |      |      |      | 0.1  |
| 2007     |     |     |        |    |      |      |    |    |      |     | 0.1 | 0.1 | 0.1 |      | 0.1  |      | 0.04 |
| 2008     |     |     |        |    |      | 0.1  |    |    |      |     |     |     |     |      |      |      | 0.01 |
| 2009     |     |     |        |    | 0.1  |      |    |    |      |     |     |     |     |      |      |      | 0.01 |
| 2010     |     |     |        |    |      |      |    |    |      |     |     |     | 0.1 |      |      | 0.1  | 0.02 |
| 2011     |     |     |        |    |      |      |    |    | 0.3  | 0.3 | 0.1 | 0.6 |     |      |      |      | 0.10 |
| 2012     |     |     |        |    |      |      |    |    | 0.1  |     |     | 0.3 |     |      |      |      | 0.03 |
| 2013     |     |     |        |    |      |      |    |    |      |     | 0.1 |     |     | 0.1  |      |      | 0.02 |
| 2014     |     |     |        |    |      |      |    |    | 0.3  | 0.9 | 0.4 |     |     |      |      |      | 0.1  |
| Mean     |     |     |        |    | 0.01 | 0.01 |    |    | 0.07 | 0.2 | 0.1 | 0.1 | 0.1 | 0.01 | 0.01 | 0.01 | 0.05 |

Osprey is an uncommon migrant at MBO, observed in every spring except 2005, and in all ten fall seasons. Almost all spring sightings have been between week 4 and 7, with later observations in just three years. Except for an unusually low year in 2009, Osprey have been observed on between four and seven days each spring, with a total count of 5 to 10 individuals per season, aside from a record high of 16 in 2006. Fall sightings are somewhat less common; except for high counts ranging from 9 to 11 individuals in 2006, 2011, and 2014, the season totals have ranged from 1 to 4. While the majority of fall observations are between weeks 7 and 10, there have been two mid-August sightings (perhaps from nest sites relatively nearby), as well as two in the second half of October.

**BAEA: Bald Eagle / Pygargue à tête blanche (*Haliaeetus leucocephalus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       | Sep 14 | Sep 14 | Sep 14 | 1    | 1 (1%) | 1    | 1     |
| 2006     | Mar 31 | Mar 31 | May 21 | 52   | 4 (6%) | 1    | 4     |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     | May 1  | May 1  | May 1  | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       | Oct 3  | Oct 3  | Oct 3  | 1    | 1 (1%) | 3    | 3     |
| 2011     |        |        |        |      |        |      |       | Sep 17 | Oct 1  | Oct 1  | 15   | 3 (3%) | 2    | 4     |
| 2012     | May 12 | May 12 | May 15 | 4    | 2 (3%) | 1    | 2     | Aug 19 | Aug 19 | Oct 23 | 66   | 6 (7%) | 1    | 6     |
| 2013     | Apr 21 | Apr 21 | Apr 21 | 1    | 1 (1%) | 1    | 1     | Aug 29 | Oct 29 | Oct 29 | 62   | 4 (4%) | 2    | 5     |
| 2014     | Apr 18 | May 15 | May 15 | 28   | 2 (3%) | 2    | 3     | Aug 19 | Sep 7  | Oct 15 | 58   | 6 (7%) | 3    | 11    |
| Mean     | Apr 22 | Apr 27 | May 8  | 17   | 2 (3%) | 1    | 1.1   | Sep 6  | Sep 22 | Oct 9  | 34   | 4 (4%) | 2    | 3.0   |

| Observed | Nov  | Dec | Jan | Feb | Mar  | Winter | S1   | S2 | S3 | S4   | S5   | S6   | S7   | S8   | S9 | S10 | Spring |
|----------|------|-----|-----|-----|------|--------|------|----|----|------|------|------|------|------|----|-----|--------|
| 2005     |      |     |     |     |      |        |      |    |    |      |      |      |      |      |    |     |        |
| 2006     |      |     |     |     |      |        | 0.1  |    |    |      |      | 0.1  | 0.1  | 0.1  |    |     | 0.06   |
| 2007     |      |     |     |     |      |        |      |    |    |      |      |      |      |      |    |     |        |
| 2008     |      |     |     |     |      |        |      |    |    |      | 0.1  |      |      |      |    |     | 0.01   |
| 2009     |      |     |     |     |      |        |      |    |    |      |      |      |      |      |    |     |        |
| 2010     |      |     |     |     | 0.08 | 0.02   |      |    |    |      |      |      |      |      |    |     |        |
| 2011     | 0.1  |     |     |     |      | 0.03   |      |    |    |      |      |      |      |      |    |     |        |
| 2012     |      |     |     |     |      |        |      |    |    |      |      |      | 0.3  |      |    |     | 0.03   |
| 2013     |      |     |     |     |      |        |      |    |    | 0.1  |      |      |      |      |    |     | 0.01   |
| 2014     |      |     |     |     |      |        |      |    |    | 0.1  |      |      | 0.3  |      |    |     | 0.04   |
| Mean     | 0.01 |     |     |     | 0.01 | <0.01  | 0.02 |    |    | 0.03 | 0.01 | 0.01 | 0.07 | 0.01 |    |     | 0.02   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3   | F4 | F5   | F6   | F7   | F8   | F9  | F10  | F11  | F12  | F13  | Fall |
|----------|-----|-----|--------|----|----|------|----|------|------|------|------|-----|------|------|------|------|------|
| 2005     |     |     |        |    |    |      |    |      |      | 0.1  |      |     |      |      |      |      | 0.01 |
| 2006     |     |     |        |    |    |      |    |      |      |      |      |     |      |      |      |      |      |
| 2007     |     |     |        |    |    |      |    |      |      |      |      |     |      |      |      |      |      |
| 2008     |     |     |        |    |    |      |    |      |      |      |      |     |      |      |      |      |      |
| 2009     |     |     |        |    |    |      |    |      |      |      |      |     |      |      |      |      |      |
| 2010     |     |     |        |    |    |      |    |      |      |      |      |     | 0.4  |      |      |      | 0.03 |
| 2011     |     |     |        |    |    |      |    |      |      | 0.1  |      | 0.4 |      |      |      |      | 0.04 |
| 2012     |     |     |        |    |    | 0.1  |    |      |      |      |      | 0.4 | 0.1  |      | 0.1  |      | 0.07 |
| 2013     |     |     |        |    |    |      |    | 0.1  | 0.1  |      | 0.1  |     |      |      |      | 0.3  | 0.05 |
| 2014     |     |     |        |    |    | 0.1  |    |      | 0.4  | 0.3  |      | 0.4 |      | 0.3  |      |      | 0.1  |
| Mean     |     |     |        |    |    | 0.03 |    | 0.01 | 0.06 | 0.06 | 0.01 | 0.1 | 0.06 | 0.03 | 0.01 | 0.03 | 0.03 |

Bald Eagle is a rare but increasing migrant at MBO. Spring observations have been recorded in five of ten years, including the last three; all sightings have been between April 18 and May 21, except for an early migrant on March 31 in 2006. A late winter observation in March 2010 was likely also an early spring migrant. In fall, there was only one sighting in the first five years of operation, but annual observations since 2010, with numbers showing an increasing trend, peaking with 11 individuals counted in 2014. Fall sightings have been broadly spread out from week 3 to 13, but show somewhat of a peak around weeks 9 and 10. The increasing numbers reflect the growing regional population, including a breeding attempt at Ile-aux-Hérons in 2010.

**NOHA: Northern Harrier / Busard Saint-Martin (*Circus cyaneus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 1  | May 1  | May 1  | 1    | 1 (2%)   | 1    | 1     | Aug 19 | Oct 13 | Oct 27 | 70   | 10 (11%) | 2    | 13    |
| 2006     | Apr 11 | May 4  | May 24 | 44   | 9 (13%)  | 2    | 10    | Aug 22 | Aug 26 | Oct 29 | 69   | 18 (20%) | 4    | 24    |
| 2007     | Apr 16 | Apr 16 | May 24 | 39   | 8 (11%)  | 1    | 8     | Aug 7  | Aug 18 | Oct 29 | 84   | 21 (23%) | 3    | 29    |
| 2008     | Apr 23 | Apr 27 | Jun 1  | 40   | 10 (14%) | 2    | 12    | Aug 7  | Sep 7  | Sep 10 | 35   | 5 (5%)   | 2    | 6     |
| 2009     | Apr 3  | May 9  | May 14 | 42   | 12 (17%) | 2    | 13    | Aug 18 | Aug 18 | Oct 27 | 71   | 11 (12%) | 1    | 11    |
| 2010     | Apr 21 | May 4  | May 12 | 22   | 4 (6%)   | 2    | 5     | Aug 31 | Oct 3  | Oct 24 | 55   | 16 (18%) | 5    | 28    |
| 2011     | Apr 24 | Apr 24 | May 20 | 27   | 7 (10%)  | 1    | 7     | Aug 31 | Oct 1  | Oct 11 | 42   | 6 (7%)   | 3    | 12    |
| 2012     | Apr 18 | Apr 18 | Apr 28 | 11   | 4 (6%)   | 1    | 4     | Aug 24 | Sep 27 | Oct 29 | 67   | 17 (19%) | 3    | 23    |
| 2013     | Apr 23 | Apr 23 | May 16 | 24   | 3 (4%)   | 1    | 3     | Aug 1  | Sep 28 | Oct 25 | 86   | 7 (8%)   | 3    | 12    |
| 2014     | Apr 18 | Apr 18 | May 18 | 31   | 9 (13%)  | 2    | 13    | Sep 6  | Sep 23 | Oct 30 | 55   | 15 (16%) | 2    | 20    |
| Mean     | Apr 18 | Apr 26 | May 15 | 28   | 7 (10%)  | 2    | 7.6   | Aug 19 | Sep 16 | Oct 21 | 63   | 13 (14%) | 3    | 18    |

| Observed | Nov  | Dec  | Jan | Feb | Mar  | Winter | S1   | S2 | S3   | S4  | S5  | S6  | S7  | S8   | S9   | S10  | Spring |
|----------|------|------|-----|-----|------|--------|------|----|------|-----|-----|-----|-----|------|------|------|--------|
| 2005     |      |      |     |     |      |        |      |    |      |     | 0.1 |     |     |      |      |      | 0.02   |
| 2006     |      |      |     |     |      |        |      |    | 0.4  | 0.1 | 0.1 | 0.4 |     | 0.1  | 0.1  |      | 0.1    |
| 2007     | 0.1  | 0.1  |     |     | 0.1  | 0.09   |      |    | 0.1  | 0.3 | 0.3 |     | 0.1 | 0.1  | 0.1  |      | 0.1    |
| 2008     |      |      |     |     |      |        |      |    |      | 0.1 | 0.7 | 0.3 | 0.1 | 0.1  | 0.1  | 0.1  | 0.2    |
| 2009     |      |      |     |     | 0.07 | 0.03   | 0.1  |    |      | 0.6 | 0.6 | 0.1 | 0.4 |      |      |      | 0.2    |
| 2010     |      |      |     |     |      |        |      |    |      | 0.1 |     | 0.4 | 0.1 |      |      |      | 0.07   |
| 2011     |      |      |     |     |      |        |      |    |      | 0.1 |     | 0.4 | 0.3 | 0.1  |      |      | 0.1    |
| 2012     |      |      |     |     |      |        |      |    |      | 0.4 | 0.1 |     |     |      |      |      | 0.06   |
| 2013     |      |      |     |     |      |        |      |    |      | 0.3 |     |     |     | 0.1  |      |      | 0.04   |
| 2014     | 0.2  |      |     |     |      | 0.03   |      |    |      | 0.9 |     | 0.7 | 0.1 | 0.1  |      |      | 0.2    |
| Mean     | 0.03 | 0.02 |     |     | 0.02 | 0.02   | 0.02 |    | 0.06 | 0.3 | 0.2 | 0.2 | 0.1 | 0.09 | 0.04 | 0.01 | 0.1    |

| Observed | Jun  | Jul | Summer | F1   | F2 | F3   | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|------|-----|--------|------|----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     |      |     |        |      |    | 0.1  |     |     | 0.3 |     |     |     |     | 0.7 | 0.3 | 0.6 | 0.1  |
| 2006     |      |     |        |      |    |      | 0.9 | 0.3 | 0.3 |     | 0.3 | 0.4 | 0.3 | 0.1 | 0.6 | 0.3 | 0.3  |
| 2007     | 0.1  |     | 0.08   | 0.1  |    | 0.4  |     | 0.3 | 0.3 | 0.7 | 0.4 | 0.7 | 0.3 | 0.1 | 0.4 | 0.3 | 0.3  |
| 2008     |      |     |        | 0.1  |    |      |     | 0.1 | 0.6 |     |     |     |     |     |     |     | 0.07 |
| 2009     |      |     |        |      |    | 0.3  | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 | 0.1 |     | 0.1 |     | 0.1 | 0.1  |
| 2010     |      |     |        |      |    |      |     | 1.0 |     | 0.4 | 0.1 | 0.3 | 1.4 | 0.3 | 0.1 | 0.3 | 0.3  |
| 2011     |      |     |        |      |    |      |     | 0.1 |     | 0.3 | 0.3 | 0.4 |     | 0.6 |     |     | 0.1  |
| 2012     |      |     |        |      |    |      | 0.1 | 0.3 |     |     |     | 1.0 | 0.6 |     | 0.6 | 0.7 | 0.3  |
| 2013     |      |     |        | 0.3  |    |      |     | 0.1 |     | 0.1 | 0.3 | 0.4 | 0.1 |     |     | 0.3 | 0.1  |
| 2014     |      |     |        |      |    |      |     |     | 0.1 | 0.1 | 0.3 | 1.0 |     | 0.6 | 0.1 | 0.6 | 0.2  |
| Mean     | 0.02 |     | 0.01   | 0.06 |    | 0.09 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2  |

Northern Harrier is an uncommon spring and fairly common fall migrant at MBO, with rare sightings in early and late winter, and a single early summer observation. Except for early arrivals in 2006, 2007, and 2009, Northern Harrier consistently arrives in week 4 of spring, and typically also peaks either in the same week or in weeks 5 or 6. Single individuals have been observed in week 9 or later in just three years. Fall sightings are scattered throughout the season, although generally irregular in August, and peaking around late September. In both spring and summer, numbers have varied relatively little from year to year, although fall counts in 2008, 2011, and 2013 were unusually low.

**SSHA: Sharp-shinned Hawk / Épervier brun (*Accipiter striatus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 12 | May 14 | May 14 | 3    | 2 (3%)   | 2    | 3     | Aug 13 | Sep 11 | Oct 24 | 73   | 42 (48%) | 5    | 73    |
| 2006     | Apr 18 | Apr 18 | May 28 | 41   | 8 (12%)  | 1    | 8     | Aug 6  | Aug 11 | Oct 30 | 86   | 37 (41%) | 2    | 48    |
| 2007     | Apr 18 | May 5  | May 31 | 44   | 9 (13%)  | 3    | 12    | Aug 18 | Aug 31 | Oct 29 | 73   | 41 (45%) | 6    | 61    |
| 2008     | Apr 25 | Apr 28 | May 30 | 36   | 15 (21%) | 2    | 17    | Aug 5  | Sep 30 | Oct 24 | 81   | 35 (38%) | 4    | 52    |
| 2009     | Apr 18 | Apr 24 | May 24 | 37   | 12 (17%) | 2    | 13    | Aug 2  | Oct 16 | Oct 29 | 89   | 44 (48%) | 9    | 73    |
| 2010     | Apr 12 | Apr 12 | May 31 | 50   | 9 (13%)  | 1    | 9     | Aug 6  | Oct 3  | Oct 30 | 86   | 50 (55%) | 21   | 137   |
| 2011     | Apr 19 | Apr 19 | May 12 | 24   | 5 (7%)   | 1    | 5     | Aug 27 | Sep 25 | Oct 29 | 64   | 32 (35%) | 6    | 65    |
| 2012     | Apr 7  | May 5  | May 28 | 52   | 10 (14%) | 4    | 14    | Aug 7  | Sep 27 | Oct 28 | 83   | 63 (69%) | 50   | 182   |
| 2013     | Apr 21 | Apr 28 | Jun 5  | 46   | 9 (13%)  | 2    | 10    | Aug 10 | Sep 14 | Oct 29 | 81   | 49 (54%) | 9    | 108   |
| 2014     | Apr 6  | Apr 20 | Jun 2  | 58   | 9 (13%)  | 2    | 11    | Aug 14 | Sep 18 | Oct 26 | 74   | 55 (60%) | 31   | 181   |
| Mean     | Apr 18 | Apr 26 | May 26 | 39   | 9 (13%)  | 2    | 10    | Aug 10 | Sep 18 | Oct 27 | 79   | 45 (49%) | 14   | 98    |

| Observed | Nov  | Dec  | Jan  | Feb  | Mar  | Winter | S1 | S2   | S3   | S4  | S5  | S6  | S7  | S8   | S9  | S10  | Spring |
|----------|------|------|------|------|------|--------|----|------|------|-----|-----|-----|-----|------|-----|------|--------|
| 2005     |      |      |      |      |      |        |    |      |      |     |     |     | 0.4 |      |     |      | 0.05   |
| 2006     | 0.2  |      |      | 0.09 |      | 0.06   |    |      |      | 0.3 | 0.1 | 0.1 | 0.3 |      | 0.3 |      | 0.1    |
| 2007     |      | 0.1  | 0.2  |      |      | 0.04   |    |      |      | 0.4 |     | 1.0 |     |      | 0.1 | 0.1  | 0.2    |
| 2008     |      |      |      |      |      |        |    |      |      |     | 0.7 | 0.7 | 0.4 |      | 0.4 | 0.1  | 0.2    |
| 2009     |      |      |      | 0.1  |      | 0.03   |    |      |      | 0.6 | 0.3 | 0.4 | 0.4 |      | 0.1 |      | 0.2    |
| 2010     | 0.2  |      |      |      | 0.08 | 0.06   |    |      | 0.3  | 0.3 | 0.1 | 0.1 | 0.1 |      |     | 0.3  | 0.1    |
| 2011     |      |      | 0.08 |      | 0.1  | 0.05   |    |      |      | 0.3 | 0.3 |     | 0.1 |      |     |      | 0.07   |
| 2012     | 0.2  |      |      |      |      | 0.08   |    | 0.1  |      | 0.1 | 0.1 | 1.1 |     | 0.1  | 0.3 |      | 0.2    |
| 2013     |      |      |      |      |      |        |    |      |      | 0.3 | 0.6 | 0.1 | 0.1 |      | 0.1 | 0.1  | 0.1    |
| 2014     | 0.2  |      |      | 0.3  |      | 0.1    |    | 0.1  |      | 0.7 | 0.1 | 0.3 |     | 0.1  |     | 0.2  | 0.2    |
| Mean     | 0.09 | 0.02 | 0.03 | 0.06 | 0.02 | 0.05   |    | 0.03 | 0.03 | 0.3 | 0.2 | 0.4 | 0.2 | 0.03 | 0.1 | 0.09 | 0.1    |

| Observed | Jun  | Jul  | Summer | F1   | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9   | F10 | F11 | F12 | F13 | Fall |
|----------|------|------|--------|------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|
| 2005     |      |      |        |      | 0.1 | 0.4 | 0.3 | 0.4 | 1.4 | 0.7 | 1.6 | 1.7  | 1.5 | 1.5 | 1.3 | 0.1 | 0.8  |
| 2006     |      |      |        | 0.1  | 0.3 | 0.4 | 0.1 | 0.4 | 1.0 | 1.0 | 0.9 | 0.6  | 1.0 | 0.1 | 0.6 | 0.3 | 0.5  |
| 2007     | 0.1  | 0.3  | 0.2    |      |     | 0.1 | 0.7 | 1.6 | 1.4 | 0.7 | 1.3 | 0.7  | 0.1 | 0.7 | 0.3 | 1.0 | 0.7  |
| 2008     |      |      |        | 0.1  | 0.1 | 0.1 | 1.0 | 0.3 | 0.7 | 0.7 | 1.9 | 1.3  | 0.3 | 0.1 | 0.6 | 0.1 | 0.6  |
| 2009     |      |      |        | 0.1  |     |     | 0.4 | 0.7 | 0.9 | 1.1 | 1.4 | 1.3  | 1.4 | 1.7 | 0.6 | 0.7 | 0.8  |
| 2010     |      |      |        | 0.1  | 0.1 | 0.4 | 0.4 | 1.4 | 1.6 | 3.3 | 2.1 | 1.9  | 5.3 | 0.9 | 0.9 | 1.1 | 1.5  |
| 2011     |      |      |        |      |     |     | 0.3 | 0.4 | 1.1 | 0.7 | 1.3 | 1.9  | 1.1 | 0.9 | 0.9 | 0.7 | 0.7  |
| 2012     |      |      |        | 0.3  | 0.3 | 1.1 | 1.3 | 1.0 | 1.9 | 2.0 | 2.4 | 10.1 | 2.3 | 1.7 | 0.7 | 0.9 | 2.0  |
| 2013     |      |      |        |      | 0.4 | 0.1 | 0.7 | 1.6 | 2.3 | 2.6 | 2.1 | 1.3  | 1.9 | 1.3 | 0.7 | 0.4 | 1.2  |
| 2014     |      |      |        |      | 0.1 | 0.7 | 0.6 | 1.1 | 1.0 | 6.7 | 2.6 | 5.0  | 2.0 | 3.9 | 1.9 | 0.3 | 2.0  |
| Mean     | 0.02 | 0.03 | 0.02   | 0.09 | 0.2 | 0.4 | 0.6 | 0.9 | 1.3 | 2.0 | 1.8 | 2.6  | 1.7 | 1.3 | 0.8 | 0.6 | 1.1  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6  | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|-----|-----|----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |     |     |    |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |     |     |    |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |     |     |    |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |     | 1   |    |    |    |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |    |     |     |    |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |     |     |    |    |    | 1   | 1      |
| 2011   |     |     |     |     |     |        |    |    |    |    | 1   |     |    |    |    |     | 1      |
| 2012   |     |     |     |     |     |        |    |    |    |    |     | 1   |    |    |    |     | 1      |
| 2013   |     |     |     |     |     |        |    |    |    |    |     |     |    |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |     |     |    |    |    |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    | 0.1 | 0.2 |    |    |    | 0.1 | 0.4    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     |     |     |     | 1   |     |     | 2   |     | 1   |     |     | 4    |
| 2006   |     |     |        | 1   |     |     |     |     |     |     |     | 1   |     |     |     |     | 2    |
| 2007   |     |     |        |     |     |     |     | 1   |     | 2   | 1   |     |     | 1   |     |     | 5    |
| 2008   |     |     |        | 1   |     |     |     |     |     | 1   | 1   | 1   |     |     |     |     | 4    |
| 2009   |     |     |        |     |     |     | 1   | 2   |     | 1   |     | 1   | 2   |     |     |     | 7    |
| 2010   |     |     |        | 1   |     | 2   | 1   |     |     | 4   | 1   | 3   |     | 1   |     |     | 13   |
| 2011   |     |     |        |     |     |     | 1   |     | 1   | 1   | 1   |     |     | 1   | 1   |     | 6    |
| 2012   |     |     |        |     | 1   | 1   | 1   | 1   | 3   |     |     | 2   |     |     |     |     | 9    |
| 2013   |     |     |        |     |     |     |     | 1   |     | 2   |     |     | 1   |     |     |     | 4    |
| 2014   |     |     |        |     |     |     |     |     | 1   | 5   | 2   | 7   | 1   | 1   | 1   |     | 18   |
| Mean   |     |     |        | 0.3 | 0.1 | 0.3 | 0.4 | 0.5 | 0.6 | 1.6 | 0.6 | 1.7 | 0.4 | 0.5 | 0.2 |     | 7.2  |

Sharp-shinned Hawk is regular at MBO throughout much of spring and fall, but has only been observed in summer in 2007, and not at all yet in winter. Spring migrants typically move through in small numbers, with a slight peak between weeks 4 and 7. Observations are much more frequent in fall, with sightings weekly from week 4 onward in all years, and a variable peak that most often comes between weeks 4 and 7. Sharp-shinned Hawk is by far the most common of the four diurnal raptors banded at MBO, with an average of 7.6 per year. Numbers banded correlate reasonably well with numbers observed, although not linearly, as fall counts are sometimes inflated by large counts on single days of peak migration.

**COHA: Cooper's Hawk / Épervier de Cooper (*Accipiter cooperii*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 5  | May 17 | 43   | 13 (22%) | 2    | 17    | Aug 1  | Sep 5  | Oct 28 | 89   | 31 (35%) | 3    | 41    |
| 2006     | Apr 5  | Apr 5  | May 18 | 44   | 9 (13%)  | 1    | 9     | Aug 4  | Oct 21 | Oct 28 | 86   | 32 (35%) | 4    | 48    |
| 2007     | Apr 6  | May 10 | May 27 | 52   | 10 (14%) | 2    | 11    | Aug 4  | Aug 18 | Oct 29 | 87   | 43 (47%) | 4    | 54    |
| 2008     | Apr 23 | Apr 27 | May 27 | 35   | 9 (13%)  | 2    | 11    | Aug 2  | Sep 16 | Oct 26 | 86   | 35 (38%) | 4    | 48    |
| 2009     | Apr 11 | Apr 25 | Jun 5  | 56   | 17 (25%) | 3    | 23    | Aug 5  | Oct 16 | Oct 21 | 78   | 48 (53%) | 5    | 69    |
| 2010     | Apr 3  | May 7  | May 7  | 35   | 10 (14%) | 4    | 15    | Aug 11 | Oct 3  | Oct 30 | 81   | 32 (35%) | 8    | 51    |
| 2011     | Apr 24 | Apr 24 | May 25 | 32   | 5 (7%)   | 4    | 8     | Aug 3  | Sep 27 | Oct 30 | 89   | 34 (37%) | 3    | 48    |
| 2012     | Apr 6  | May 5  | Jun 1  | 57   | 12 (17%) | 3    | 14    | Aug 1  | Sep 11 | Oct 30 | 91   | 62 (68%) | 7    | 97    |
| 2013     | Apr 6  | Apr 6  | May 14 | 39   | 13 (19%) | 2    | 16    | Aug 5  | Sep 18 | Oct 30 | 87   | 39 (43%) | 3    | 53    |
| 2014     | Apr 18 | May 24 | May 26 | 39   | 13 (19%) | 3    | 18    | Aug 7  | Aug 29 | Oct 30 | 85   | 54 (59%) | 5    | 103   |
| Mean     | Apr 10 | Apr 25 | May 22 | 43   | 11 (16%) | 3    | 14    | Aug 4  | Sep 19 | Oct 28 | 86   | 41 (45%) | 5    | 61    |

| Observed | Nov | Dec  | Jan  | Feb  | Mar  | Winter | S1   | S2  | S3   | S4  | S5  | S6  | S7  | S8  | S9  | S10  | Spring |
|----------|-----|------|------|------|------|--------|------|-----|------|-----|-----|-----|-----|-----|-----|------|--------|
| 2005     |     |      |      |      |      |        |      | 0.8 | 0.1  | 0.7 |     | 0.6 | 0.3 | 0.1 |     |      | 0.3    |
| 2006     | 0.4 | 0.07 | 0.08 |      | 0.2  | 0.1    |      | 0.5 | 0.1  | 0.1 | 0.3 |     | 0.1 | 0.1 |     |      | 0.1    |
| 2007     | 0.1 | 0.3  | 0.5  |      |      | 0.2    |      | 0.1 |      | 0.3 | 0.1 | 0.4 | 0.3 | 0.1 | 0.1 |      | 0.2    |
| 2008     | 0.3 |      |      |      |      | 0.08   |      |     |      | 0.1 | 0.7 | 0.1 | 0.3 |     | 0.3 |      | 0.2    |
| 2009     |     |      |      |      | 0.07 | 0.03   |      |     | 0.3  | 0.4 | 1.0 | 0.4 | 0.1 | 0.1 | 0.6 | 0.3  | 0.3    |
| 2010     | 0.2 |      | 0.09 |      | 0.2  | 0.1    | 0.1  | 0.1 |      | 0.6 | 0.4 | 0.9 |     |     |     |      | 0.2    |
| 2011     | 0.1 |      | 0.08 | 0.2  |      | 0.08   |      |     |      | 0.6 | 0.3 |     |     |     | 0.3 |      | 0.1    |
| 2012     | 0.1 |      |      |      |      | 0.04   |      | 0.1 | 0.1  |     | 0.1 | 0.4 | 0.1 | 0.4 | 0.4 | 0.1  | 0.2    |
| 2013     | 0.3 | 0.3  | 0.07 |      |      | 0.1    |      | 0.6 | 0.1  | 0.4 | 0.1 | 0.7 | 0.3 |     |     |      | 0.2    |
| 2014     |     |      |      |      |      |        |      |     |      | 1.1 | 0.3 | 0.1 |     | 0.4 | 0.6 |      | 0.3    |
| Mean     | 0.2 | 0.09 | 0.09 | 0.01 | 0.07 | 0.09   | 0.02 | 0.2 | 0.09 | 0.4 | 0.3 | 0.4 | 0.2 | 0.1 | 0.2 | 0.04 | 0.2    |

| Observed | Jun  | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|------|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     | 0.06 | 0.06 | 0.06   | 0.1 |     | 0.1 | 0.1 | 0.3 | 1.4 | 0.3 | 0.7 | 1.0 | 0.8 | 0.3 | 0.4 | 0.4 | 0.5  |
| 2006     |      |      |        | 0.3 | 0.1 | 0.3 | 0.1 | 0.6 | 0.4 | 0.9 | 0.4 | 0.9 | 0.6 | 0.6 | 1.6 | 0.1 | 0.5  |
| 2007     |      |      |        | 0.3 | 0.1 | 1.3 | 0.1 | 0.9 | 0.7 | 0.9 | 0.6 | 0.7 | 0.7 | 0.9 | 0.3 | 0.3 | 0.6  |
| 2008     |      |      |        | 0.3 |     | 0.1 | 0.3 | 1.0 | 0.9 | 1.0 | 1.1 | 0.1 | 0.9 | 0.4 | 0.4 | 0.3 | 0.5  |
| 2009     | 0.3  |      | 0.1    | 0.4 | 0.3 | 0.6 | 1.3 | 0.4 | 1.0 | 1.1 | 1.4 | 0.9 | 0.3 | 1.7 | 0.4 |     | 0.8  |
| 2010     |      |      |        |     | 0.3 |     | 0.1 | 1.3 | 0.7 | 0.7 | 0.1 | 0.7 | 2.3 | 0.4 | 0.3 | 0.3 | 0.6  |
| 2011     |      |      |        | 0.1 | 0.3 | 0.7 |     | 0.1 | 0.7 | 1.0 | 0.9 | 1.3 | 0.7 | 0.4 | 0.3 | 0.3 | 0.5  |
| 2012     |      |      |        | 0.1 | 0.3 | 0.7 | 0.3 | 0.7 | 1.7 | 1.3 | 1.0 | 1.9 | 1.7 | 1.7 | 1.1 | 1.3 | 1.1  |
| 2013     |      |      |        | 0.1 | 0.3 | 0.1 | 0.3 | 1.1 | 0.9 | 0.9 | 0.9 | 0.7 | 0.6 | 0.7 | 0.7 | 0.3 | 0.6  |
| 2014     |      |      |        | 0.1 |     | 0.7 | 0.9 | 1.6 | 1.3 | 1.7 | 2.0 | 2.0 | 1.1 | 1.3 | 0.7 | 1.3 | 1.1  |
| Mean     | 0.04 | 0.02 | 0.02   | 0.2 | 0.2 | 0.5 | 0.4 | 0.8 | 1.0 | 1.0 | 0.9 | 1.0 | 1.0 | 0.9 | 0.6 | 0.5 | 0.7  |

| Banded | Jun | Jul | Summer | F1 | F2  | F3 | F4  | F5 | F6 | F7 | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|-----|----|-----|----|----|----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |     |    |     |    |    |    |     |     |     |     |     |     |      |
| 2006   |     |     |        |    |     |    |     |    |    |    |     |     |     |     |     |     |      |
| 2007   |     |     |        |    | 1   |    |     |    |    |    |     |     |     |     |     |     | 1    |
| 2008   |     |     |        |    |     |    |     |    |    |    |     |     |     |     |     |     |      |
| 2009   |     |     |        |    |     |    |     |    |    |    |     |     |     |     |     |     |      |
| 2010   |     |     |        |    |     |    |     |    |    |    |     |     |     |     |     |     |      |
| 2011   |     |     |        |    |     |    |     |    |    |    | 1   |     |     |     |     |     | 1    |
| 2012   |     |     |        |    |     |    |     |    |    |    |     | 1   |     |     |     |     | 1    |
| 2013   |     |     |        |    |     |    |     |    |    |    |     |     |     |     |     |     |      |
| 2014   |     |     |        |    |     |    | 1   |    |    |    |     |     |     |     |     |     | 1    |
| Mean   |     |     |        |    | 0.1 |    | 0.1 |    |    |    | 0.1 | 0.1 |     |     |     |     | 0.4  |

Cooper's Hawk is slightly more common than Sharp-shinned Hawk in spring and summer, and considerably more so in winter, with observations in all but two years, and across all months. However, fall counts average roughly 40% lower than for Sharp-shinned Hawk, and only 4 Cooper's Hawks have been banded, compared to 76 Sharp-shinned Hawks. The discrepancy in banding frequency may largely be a function of size, with Cooper's Hawks generally too large to get caught in nets. Spring and especially fall numbers have been quite consistent across years, except for counts more than 50% above the long-term mean in fall 2012 and 2014. Spring numbers typically peak between weeks 4 and 6, but there is rarely a distinct peak in fall, although numbers are somewhat higher from early September to mid-October.



**NOGO: Northern Goshawk / Autour des palombes (*Accipiter gentilis*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     |        |        |        |      |        |      |       | Oct 9  | Oct 9  | Oct 9  | 1    | 1 (1%)   | 1    | 1     |
| 2006     |        |        |        |      |        |      |       | Sep 14 | Sep 14 | Sep 14 | 1    | 1 (1%)   | 1    | 1     |
| 2007     |        |        |        |      |        |      |       | Aug 10 | Aug 10 | Oct 25 | 77   | 6 (7%)   | 1    | 6     |
| 2008     |        |        |        |      |        |      |       | Oct 8  | Oct 8  | Oct 8  | 1    | 1 (1%)   | 1    | 1     |
| 2009     |        |        |        |      |        |      |       | Aug 14 | Oct 16 | Oct 20 | 68   | 14 (15%) | 4    | 18    |
| 2010     | May 6  | May 6  | May 6  | 1    | 1 (1%) | 1    | 1     | Aug 4  | Sep 15 | Oct 11 | 69   | 17 (19%) | 4    | 25    |
| 2011     | Apr 9  | Apr 9  | May 22 | 44   | 2 (3%) | 1    | 2     | Sep 8  | Sep 8  | Oct 30 | 53   | 10 (11%) | 1    | 10    |
| 2012     | Apr 8  | Apr 8  | Apr 29 | 22   | 3 (4%) | 1    | 3     | Aug 5  | Aug 5  | Oct 23 | 80   | 8 (9%)   | 1    | 8     |
| 2013     |        |        |        |      |        |      |       | Sep 26 | Sep 26 | Oct 23 | 28   | 5 (5%)   | 1    | 5     |
| 2014     |        |        |        |      |        |      |       | Aug 30 | Aug 30 | Sep 13 | 15   | 2 (2%)   | 1    | 2     |
| Mean     | Apr 17 | Apr 17 | May 9  | 22   | 2 (3%) | 1    | 0.6   | Sep 3  | Sep 13 | Oct 11 | 39   | 6 (7%)   | 2    | 7.7   |

| Observed | Nov  | Dec  | Jan | Feb | Mar  | Winter | S1 | S2   | S3   | S4 | S5   | S6   | S7 | S8   | S9 | S10 | Spring |
|----------|------|------|-----|-----|------|--------|----|------|------|----|------|------|----|------|----|-----|--------|
| 2005     |      |      |     |     |      |        |    |      |      |    |      |      |    |      |    |     |        |
| 2006     | 0.2  |      |     |     |      | 0.05   |    |      |      |    |      |      |    |      |    |     |        |
| 2007     |      |      |     |     |      |        |    |      |      |    |      |      |    |      |    |     |        |
| 2008     |      |      |     |     |      |        |    |      |      |    |      |      |    |      |    |     |        |
| 2009     |      |      |     |     |      |        |    |      |      |    |      |      |    |      |    |     |        |
| 2010     |      | 0.1  |     |     |      | 0.02   |    |      |      |    |      | 0.1  |    |      |    |     | 0.01   |
| 2011     |      |      |     |     |      |        |    | 0.1  |      |    |      |      |    | 0.1  |    |     | 0.03   |
| 2012     |      |      |     |     | 0.2  | 0.04   |    | 0.1  | 0.1  |    | 0.1  |      |    |      |    |     | 0.04   |
| 2013     |      |      |     |     |      |        |    |      |      |    |      |      |    |      |    |     |        |
| 2014     |      |      |     |     |      |        |    |      |      |    |      |      |    |      |    |     |        |
| Mean     | 0.03 | 0.02 |     |     | 0.01 | 0.01   |    | 0.03 | 0.01 |    | 0.01 | 0.01 |    | 0.01 |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1   | F2   | F3 | F4   | F5  | F6   | F7  | F8  | F9  | F10 | F11 | F12 | F13  | Fall |
|----------|-----|-----|--------|------|------|----|------|-----|------|-----|-----|-----|-----|-----|-----|------|------|
| 2005     |     |     |        |      |      |    |      |     |      |     |     |     | 0.2 |     |     |      | 0.01 |
| 2006     |     |     |        |      |      |    |      |     |      | 0.1 |     |     |     |     |     |      | 0.01 |
| 2007     |     |     |        |      | 0.1  |    |      | 0.1 |      | 0.1 | 0.1 |     |     | 0.1 |     | 0.1  | 0.07 |
| 2008     |     |     |        |      |      |    |      |     |      |     |     | 0.1 |     |     |     |      | 0.01 |
| 2009     |     |     |        |      | 0.1  |    | 0.1  |     |      |     | 0.3 | 0.7 | 0.3 | 0.7 | 0.3 |      | 0.2  |
| 2010     |     |     |        | 0.1  |      |    | 0.3  | 0.9 | 0.3  | 1.1 | 0.3 | 0.4 | 0.1 | 0.1 | 0.1 |      | 0.3  |
| 2011     |     |     |        |      |      |    |      |     | 0.1  | 0.1 | 0.3 | 0.4 | 0.1 |     | 0.1 | 0.1  | 0.1  |
| 2012     |     |     |        | 0.3  |      |    | 0.1  | 0.3 |      |     |     | 0.1 |     |     | 0.3 |      | 0.09 |
| 2013     |     |     |        |      |      |    |      |     |      |     |     | 0.3 |     | 0.1 | 0.3 |      | 0.05 |
| 2014     |     |     |        |      |      |    |      | 0.1 |      | 0.1 |     |     |     |     |     |      | 0.02 |
| Mean     |     |     |        | 0.04 | 0.03 |    | 0.06 | 0.1 | 0.04 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.03 | 0.08 |

Northern Goshawk is a rare spring and rare to uncommon fall migrant, with three winter sightings. Fall numbers were substantially elevated from 2009 through 2011, and the only spring observations to date have come in the corresponding 2010 to 2012 seasons. In both spring and fall, sightings have been scattered through much of the season, although fall observations show somewhat of a peak between week 7 and 10.

**RSHA: Red-shouldered Hawk / Buse à épaulettes (*Buteo lineatus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 7  | May 31 | Jun 2  | 57   | 17 (29%) | 2    | 18    | Aug 2  | Oct 5  | Oct 27 | 87   | 26 (30%) | 3    | 33    |
| 2006     | Mar 28 | May 4  | Jun 5  | 70   | 54 (78%) | 9    | 82    | Aug 2  | Sep 10 | Oct 26 | 86   | 67 (74%) | 4    | 84    |
| 2007     | Mar 30 | Apr 13 | May 30 | 62   | 29 (41%) | 2    | 33    | Aug 9  | Aug 20 | Oct 29 | 82   | 31 (34%) | 2    | 33    |
| 2008     | Apr 11 | May 7  | Jun 3  | 54   | 36 (51%) | 6    | 61    | Aug 3  | Sep 8  | Oct 27 | 86   | 32 (35%) | 3    | 43    |
| 2009     | Apr 1  | Apr 25 | Jun 5  | 66   | 20 (29%) | 3    | 25    | Aug 8  | Oct 16 | Oct 26 | 80   | 27 (30%) | 4    | 37    |
| 2010     | Apr 5  | Apr 21 | May 31 | 57   | 16 (23%) | 2    | 19    | Aug 2  | Oct 9  | Oct 15 | 75   | 32 (35%) | 4    | 44    |
| 2011     | Apr 14 | Apr 24 | May 31 | 48   | 21 (30%) | 7    | 34    | Aug 2  | Sep 9  | Oct 19 | 79   | 23 (25%) | 3    | 29    |
| 2012     | Mar 31 | May 15 | Jun 1  | 63   | 23 (33%) | 4    | 40    | Aug 5  | Sep 27 | Oct 26 | 83   | 29 (32%) | 5    | 38    |
| 2013     | Mar 28 | Apr 21 | May 31 | 65   | 14 (20%) | 4    | 21    | Aug 14 | Sep 8  | Oct 29 | 77   | 21 (23%) | 6    | 38    |
| 2014     | Apr 2  | Apr 20 | May 31 | 60   | 12 (18%) | 5    | 20    | Aug 9  | Aug 18 | Oct 30 | 83   | 33 (36%) | 7    | 60    |
| Mean     | Apr 3  | Apr 30 | Jun 1  | 60   | 24 (35%) | 4    | 35    | Aug 5  | Sep 15 | Oct 25 | 82   | 32 (35%) | 4    | 44    |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |      |     |     |     | 0.3 | 0.07   |     | 0.3 |     | 0.3 | 0.3 | 0.4 |     | 0.3 | 0.4 | 0.8 | 0.3    |
| 2006     |      |     |     |     |     |        | 1.4 | 1.0 | 1.0 | 1.0 | 1.4 | 2.6 | 0.9 | 0.7 | 1.3 | 0.6 | 1.2    |
| 2007     | 0.06 |     |     |     | 0.4 | 0.1    | 0.7 | 0.7 | 0.6 | 0.4 | 0.4 | 0.7 | 0.1 | 0.7 | 0.1 | 0.1 | 0.5    |
| 2008     |      |     |     |     |     |        |     |     | 0.3 | 1.7 | 1.3 | 2.0 | 1.3 | 0.9 | 0.6 | 0.7 | 0.9    |
| 2009     |      |     |     |     | 0.1 | 0.05   | 0.3 |     | 0.1 | 0.1 | 1.0 | 0.6 | 0.4 | 0.3 | 0.4 | 0.3 | 0.4    |
| 2010     | 0.1  |     |     |     | 0.2 | 0.08   |     | 0.1 |     | 0.6 | 0.1 | 0.6 | 0.4 | 0.4 | 0.3 | 0.1 | 0.3    |
| 2011     | 0.1  |     |     |     |     | 0.03   |     |     | 0.4 | 1.3 | 1.1 | 0.7 | 0.4 | 0.1 | 0.4 | 0.3 | 0.5    |
| 2012     |      |     |     |     | 0.8 | 0.2    | 0.1 | 0.1 |     | 0.7 | 0.3 | 0.6 | 1.0 | 1.9 | 0.4 | 0.6 | 0.6    |
| 2013     |      |     |     |     |     |        | 0.3 |     |     | 0.9 | 0.1 | 0.9 | 0.1 | 0.3 | 0.3 | 0.1 | 0.3    |
| 2014     |      |     |     |     |     |        | 0.2 |     |     | 1.7 |     | 0.1 | 0.1 | 0.1 | 0.1 | 0.5 | 0.3    |
| Mean     | 0.04 |     |     |     | 0.2 | 0.05   | 0.3 | 0.2 | 0.2 | 0.9 | 0.6 | 0.9 | 0.5 | 0.6 | 0.4 | 0.4 | 0.5    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     | 0.1 | 0.3 | 0.2    | 0.1 |     | 0.1 | 0.3 |     | 0.3 | 0.3 | 0.6 | 0.7 | 1.5 | 0.5 | 0.6 | 0.1 | 0.4  |
| 2006     | 0.2 | 0.3 | 0.3    | 0.7 | 1.1 | 0.7 | 0.9 | 0.7 | 1.6 | 1.1 | 1.3 | 1.1 | 1.4 | 0.6 | 0.4 | 0.3 | 0.9  |
| 2007     | 0.1 | 0.3 | 0.2    |     | 0.9 | 1.0 | 0.3 | 0.4 | 0.9 | 0.6 | 0.3 | 0.1 | 0.1 |     |     | 0.1 | 0.4  |
| 2008     |     |     |        | 0.3 | 0.4 | 0.3 | 0.1 |     | 0.6 | 1.1 | 1.6 | 0.9 | 0.6 | 0.1 |     | 0.1 | 0.5  |
| 2009     | 0.7 | 0.3 | 0.4    |     | 0.6 | 0.1 | 0.1 | 0.3 | 0.9 | 0.3 | 0.7 | 0.3 | 0.4 | 1.0 |     | 0.6 | 0.4  |
| 2010     | 0.7 | 0.2 | 0.3    | 0.4 | 0.6 | 0.4 | 0.6 | 0.7 | 0.4 | 1.0 | 0.1 |     | 1.6 | 0.4 |     |     | 0.5  |
| 2011     | 1.3 | 0.8 | 1.0    | 0.3 | 0.4 | 0.1 | 0.1 | 0.4 | 0.7 | 0.4 | 0.4 | 0.4 | 0.1 | 0.3 | 0.3 |     | 0.3  |
| 2012     | 0.3 | 0.5 | 0.4    | 0.3 | 0.6 | 0.4 | 0.6 | 0.6 | 0.3 | 0.9 | 0.1 | 1.1 |     |     | 0.3 | 0.3 | 0.4  |
| 2013     |     |     |        |     | 0.1 | 0.3 | 0.4 | 0.3 | 1.3 | 1.0 | 0.4 | 1.1 |     | 0.3 |     | 0.1 | 0.4  |
| 2014     |     | 0.3 | 0.1    |     | 0.6 | 1.7 | 1.6 | 0.4 | 0.3 | 0.9 | 0.4 | 0.7 | 0.4 | 0.3 | 0.7 | 0.6 | 0.7  |
| Mean     | 0.2 | 0.3 | 0.3    | 0.2 | 0.5 | 0.5 | 0.5 | 0.4 | 0.7 | 0.8 | 0.6 | 0.7 | 0.6 | 0.3 | 0.2 | 0.2 | 0.5  |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 1   |     | 1    |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 0.1 |     | 0.1  |

Red-shouldered Hawk is regular at MBO from late winter or early spring through to late fall or early winter. The majority of sightings pertain to a pair that nests most years in the adjacent Morgan Arboretum, although some migrants are also counted. Spring numbers have generally been consistently low, aside from higher results in 2006 and 2008; similarly fall numbers have varied relatively little except for a high in 2006. Spring migration tends to peak between weeks 4 and 6; fall migration rarely has a clearly defined peak, but over time, numbers have been somewhat higher between weeks 6 and 10. The one individual banded in October 2005 remains the largest bird banded at MBO.

**BWHA: Broad-winged Hawk / Petite Buse (*Buteo platypterus*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 19 | Apr 19 | May 17 | 29   | 2 (3%)  | 1    | 2     | Sep 6  | Sep 11 | Sep 19 | 14   | 3 (3%)   | 36   | 39    |
| 2006     | May 4  | May 4  | May 4  | 1    | 1 (1%)  | 2    | 2     | Aug 15 | Aug 16 | Sep 20 | 37   | 11 (12%) | 3    | 17    |
| 2007     | Apr 23 | Apr 24 | May 11 | 19   | 7 (10%) | 3    | 10    | Sep 12 | Sep 16 | Sep 29 | 18   | 7 (8%)   | 25   | 58    |
| 2008     | Apr 23 | Apr 23 | May 14 | 22   | 7 (10%) | 10   | 17    | Aug 20 | Sep 16 | Sep 24 | 36   | 9 (10%)  | 29   | 61    |
| 2009     | Apr 25 | Apr 25 | May 24 | 30   | 3 (4%)  | 1    | 3     | Aug 24 | Sep 15 | Sep 26 | 34   | 5 (5%)   | 10   | 20    |
| 2010     | Apr 20 | Apr 21 | May 29 | 40   | 7 (10%) | 11   | 23    | Aug 9  | Sep 14 | Oct 4  | 57   | 10 (11%) | 6    | 26    |
| 2011     | Apr 24 | Apr 24 | May 21 | 28   | 5 (7%)  | 16   | 27    | Sep 8  | Sep 10 | Sep 19 | 12   | 5 (5%)   | 300  | 310   |
| 2012     | Apr 28 | May 5  | May 5  | 8    | 3 (4%)  | 23   | 25    | Aug 28 | Sep 1  | Oct 18 | 52   | 9 (10%)  | 5    | 19    |
| 2013     | Apr 19 | Apr 19 | May 28 | 40   | 3 (4%)  | 1    | 3     | Aug 28 | Sep 14 | Oct 5  | 39   | 13 (14%) | 74   | 133   |
| 2014     | Apr 21 | Apr 21 | Apr 21 | 1    | 1 (1%)  | 1    | 1     | Aug 17 | Sep 18 | Oct 30 | 75   | 26 (29%) | 327  | 486   |
| Mean     | Apr 23 | Apr 24 | May 14 | 22   | 4 (6%)  | 7    | 11    | Aug 26 | Sep 10 | Oct 1  | 37   | 10 (11%) | 82   | 117   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6  | S7   | S8   | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|-----|------|------|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    | 0.2 |     |     |      | 0.1  |      |     | 0.03   |
| 2006     |     |     |     |     |     |        |    |    |    |     |     | 0.3 |      |      |      |     | 0.03   |
| 2007     |     |     |     |     |     |        |    |    |    | 0.7 | 0.3 | 0.3 | 0.1  |      |      |     | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |    | 1.6 | 0.4 | 0.3 | 0.1  |      |      |     | 0.2    |
| 2009     |     |     |     |     |     |        |    |    |    |     | 0.1 |     |      | 0.1  | 0.1  |     | 0.04   |
| 2010     |     |     |     |     |     |        |    |    |    | 2.6 | 0.1 | 0.4 |      |      | 0.1  |     | 0.3    |
| 2011     |     |     |     |     |     |        |    |    |    | 2.3 | 1.4 |     |      | 0.1  |      |     | 0.4    |
| 2012     |     |     |     |     |     |        |    |    |    |     | 0.3 | 3.3 |      |      |      |     | 0.4    |
| 2013     |     |     |     |     |     |        |    |    |    | 0.3 |     |     |      |      | 0.1  |     | 0.04   |
| 2014     |     |     |     |     |     |        |    |    |    | 0.1 |     |     |      |      |      |     | 0.01   |
| Mean     |     |     |     |     |     |        |    |    |    | 0.8 | 0.3 | 0.5 | 0.03 | 0.04 | 0.04 |     | 0.2    |

| Observed | Jun | Jul | Summer | F1 | F2   | F3   | F4  | F5  | F6   | F7   | F8  | F9  | F10 | F11 | F12  | F13  | Fall |
|----------|-----|-----|--------|----|------|------|-----|-----|------|------|-----|-----|-----|-----|------|------|------|
| 2005     |     |     |        |    |      |      |     |     | 5.3  |      | 0.3 |     |     |     |      |      | 0.4  |
| 2006     |     |     |        |    |      | 0.9  | 0.6 | 0.1 | 0.7  |      | 0.1 |     |     |     |      |      | 0.2  |
| 2007     |     |     |        |    |      |      |     |     |      | 7.3  | 0.7 | 0.3 |     |     |      |      | 0.6  |
| 2008     |     |     |        |    |      | 0.1  | 0.4 | 0.9 | 2.4  | 4.7  | 0.1 |     |     |     |      |      | 0.7  |
| 2009     |     |     |        |    |      |      | 0.1 |     | 1.0  | 1.4  |     | 0.3 |     |     |      |      | 0.2  |
| 2010     |     |     |        |    | 0.3  |      |     |     | 1.1  | 1.6  |     |     | 0.7 |     |      |      | 0.3  |
| 2011     |     |     |        |    |      |      |     |     | 44.0 | 0.1  | 0.1 |     |     |     |      |      | 3.4  |
| 2012     |     |     |        |    |      |      | 0.1 | 0.9 | 0.9  |      | 0.1 | 0.6 |     |     | 0.1  |      | 0.2  |
| 2013     |     |     |        |    |      |      | 1.0 | 1.6 | 0.3  | 14.9 | 0.9 | 0.1 | 0.3 |     |      |      | 1.5  |
| 2014     |     |     |        |    |      | 11.1 | 1.1 | 2.7 | 2.1  | 50.1 | 0.3 | 1.0 | 0.3 |     |      | 0.6  | 5.3  |
| Mean     |     |     |        |    | 0.03 | 1.2  | 0.3 | 0.6 | 5.8  | 8.0  | 0.3 | 0.2 | 0.1 |     | 0.01 | 0.06 | 1.3  |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6  | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|-----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |     |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |    |    |    |    |    |     |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |     |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |     |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |     |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |     |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |     |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |    |    |     |    |    |    |     |     |     |     |      |
| 2013   |     |     |        |    |    |    |    |    |     |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    | 1   |    |    |    |     |     |     |     | 1    |
| Mean   |     |     |        |    |    |    |    |    | 0.1 |    |    |    |     |     |     |     | 0.1  |

Broad-winged Hawk is among the more predictable spring arrivals, first detected in week 4 in seven of ten years, and peaking in that week each time. The exceptions (2006, 2009, and 2012) featured arrivals and peaks in week 5 or 6; there have been sightings between week 7 and 9 in seven of ten years, but always involving lone individuals. Fall observations range from week 2 to 13, but with a strong peak in weeks 7 and 8. In all but three years (2006, 2010, and 2012) there has been at least one day with high counts, in two cases 300 individuals or more (2011 and 2014). Broad-winged Hawks are almost always seen flying over MBO, often circling in small or large kettles, but one low-flying individuals was banded in September 2014.

# RTHA: Red-tailed Hawk / Buse à queue rousse (*Buteo jamaicensis*)

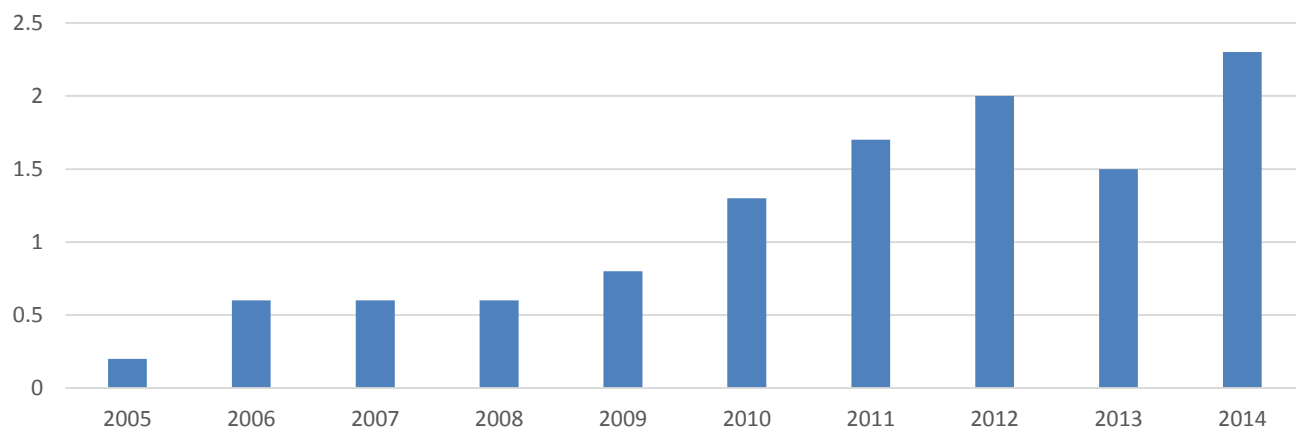
| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 30 | Apr 30 | May 4  | 5    | 2 (3%)   | 1    | 2     | Aug 28 | Oct 8  | Oct 27 | 61   | 13 (15%) | 5    | 22    |
| 2006     | Mar 30 | May 4  | May 23 | 55   | 10 (14%) | 13   | 27    | Aug 26 | Oct 21 | Oct 30 | 66   | 25 (27%) | 21   | 54    |
| 2007     | Apr 7  | Apr 23 | May 18 | 42   | 9 (13%)  | 4    | 14    | Aug 5  | Oct 25 | Oct 30 | 87   | 30 (33%) | 7    | 59    |
| 2008     | Mar 29 | Apr 23 | May 30 | 63   | 13 (19%) | 3    | 18    | Aug 20 | Oct 12 | Oct 30 | 72   | 27 (30%) | 6    | 56    |
| 2009     | Mar 29 | Apr 25 | May 23 | 56   | 11 (16%) | 6    | 17    | Aug 11 | Oct 16 | Oct 29 | 80   | 32 (35%) | 16   | 73    |
| 2010     | Apr 19 | Apr 21 | Jun 4  | 47   | 11 (16%) | 8    | 21    | Aug 9  | Oct 3  | Oct 30 | 83   | 26 (29%) | 55   | 120   |
| 2011     | Apr 14 | May 12 | May 30 | 47   | 18 (26%) | 5    | 28    | Aug 2  | Oct 27 | Oct 29 | 89   | 41 (45%) | 56   | 159   |
| 2012     | Mar 31 | Mar 31 | May 31 | 62   | 24 (34%) | 2    | 29    | Aug 1  | Sep 27 | Oct 30 | 91   | 57 (63%) | 20   | 179   |
| 2013     | Mar 29 | Mar 29 | May 31 | 64   | 22 (31%) | 2    | 26    | Aug 2  | Sep 25 | Oct 29 | 89   | 48 (53%) | 24   | 137   |
| 2014     | Apr 2  | May 31 | Jun 4  | 64   | 35 (51%) | 3    | 53    | Aug 2  | Oct 30 | Oct 30 | 90   | 59 (65%) | 19   | 212   |
| Mean     | Apr 6  | Apr 25 | May 26 | 50   | 16 (23%) | 5    | 24    | Aug 10 | Oct 13 | Oct 29 | 81   | 36 (39%) | 23   | 107   |

| Observed | Nov | Dec  | Jan  | Feb  | Mar | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|------|------|------|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |     |      |      |      | 0.8 | 0.2    |     |     |     |     | 0.1 | 0.1 |     |     |     |     | 0.03   |
| 2006     | 0.3 | 0.07 | 0.2  |      | 0.2 | 0.1    | 0.1 | 0.2 | 1.0 |     | 0.4 | 1.9 | 0.1 |     | 0.1 |     | 0.4    |
| 2007     | 0.3 | 0.6  | 0.3  | 0.5  | 0.6 | 0.4    |     | 0.4 | 0.1 | 0.9 | 0.1 | 0.1 | 0.1 | 0.1 |     |     | 0.2    |
| 2008     | 0.6 | 0.3  | 0.2  |      |     | 0.3    | 0.3 | 0.1 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 |     | 0.3 | 0.1 | 0.3    |
| 2009     | 0.4 | 0.5  |      | 0.4  | 0.3 | 0.3    | 0.1 |     | 0.1 | 0.3 | 0.9 | 0.6 |     | 0.3 | 0.1 |     | 0.2    |
| 2010     | 0.3 | 0.3  | 0.09 | 0.08 | 0.2 | 0.2    |     |     |     | 1.3 | 0.6 |     | 0.1 | 0.6 | 0.1 | 0.3 | 0.3    |
| 2011     | 0.3 | 1.0  | 0.08 | 0.2  |     | 0.2    |     |     | 0.1 | 0.4 | 0.4 | 0.9 | 1.3 | 0.3 | 0.4 | 0.1 | 0.4    |
| 2012     | 0.6 | 0.5  |      | 1.7  | 0.4 | 0.6    | 0.3 | 0.1 | 0.6 | 0.3 | 0.6 | 0.4 | 0.6 | 0.7 | 0.4 | 0.1 | 0.4    |
| 2013     | 0.3 | 0.6  | 0.5  |      | 0.5 | 0.4    | 1.1 | 0.1 | 0.4 | 0.4 | 0.4 |     | 0.4 | 0.4 | 0.1 | 0.1 | 0.4    |
| 2014     | 0.4 | 0.3  | 0.3  | 0.1  | 0.4 | 0.3    | 0.2 | 0.1 |     | 1.3 | 0.7 | 0.4 | 1.0 | 1.3 | 1.9 | 0.8 | 0.8    |
| Mean     | 0.4 | 0.3  | 0.2  | 0.2  | 0.3 | 0.3    | 0.2 | 0.1 | 0.3 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.2 | 0.3    |

| Observed | Jun  | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10  | F11 | F12 | F13 | Fall |
|----------|------|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|------|
| 2005     |      |      |        |     |     |     | 0.1 |     |     | 0.1 | 0.1 | 0.3 | 1.3  | 0.7 | 0.3 | 0.4 | 0.2  |
| 2006     |      | 0.08 | 0.05   |     |     |     | 0.1 | 0.3 | 0.3 | 0.1 | 0.1 | 0.4 | 0.6  | 0.7 | 3.7 | 1.3 | 0.6  |
| 2007     | 0.1  |      | 0.08   | 0.1 |     | 0.1 | 0.3 | 0.1 | 0.1 | 1.4 | 0.6 | 0.3 | 1.3  | 0.7 | 1.4 | 1.9 | 0.6  |
| 2008     |      |      |        |     |     | 0.1 | 0.3 | 0.1 | 0.1 | 0.1 | 0.6 | 0.3 | 0.7  | 1.9 | 2.0 | 1.7 | 0.6  |
| 2009     |      |      |        |     | 0.3 |     | 0.3 |     | 0.7 | 0.7 | 1.1 | 0.9 | 0.6  | 4.1 | 0.9 | 0.9 | 0.8  |
| 2010     |      |      |        |     | 0.1 | 0.3 |     | 1.1 | 0.1 | 0.3 | 0.1 | 0.9 | 11.1 | 0.7 | 1.0 | 1.3 | 1.3  |
| 2011     |      |      |        | 0.1 | 0.3 |     | 0.4 | 0.3 | 0.7 | 1.4 | 1.0 | 2.9 | 3.6  | 1.6 | 1.0 | 9.4 | 1.7  |
| 2012     |      |      |        | 0.4 | 0.4 | 0.6 | 1.0 | 1.7 | 0.7 | 0.7 | 0.4 | 4.6 | 2.9  | 1.9 | 3.3 | 7.0 | 2.0  |
| 2013     |      | 0.3  | 0.1    | 0.1 |     | 0.6 | 1.0 | 1.1 | 1.7 | 1.4 | 4.1 | 0.7 | 1.7  | 2.1 | 3.0 | 1.9 | 1.5  |
| 2014     | 1.0  | 0.3  | 0.6    | 0.7 | 0.9 | 2.1 | 1.4 | 1.6 | 0.9 | 3.9 | 1.4 | 5.0 | 2.4  | 1.7 | 3.7 | 4.6 | 2.3  |
| Mean     | 0.07 | 0.05 | 0.06   | 0.2 | 0.2 | 0.4 | 0.5 | 0.6 | 0.5 | 1.0 | 1.0 | 1.6 | 2.6  | 1.6 | 2.0 | 3.0 | 1.2  |

Red-tailed Hawk occurs at MBO through all seasons, although only irregularly in summer. Spring observations are generally spread through most of the season in low numbers, usually with a modest peak somewhere between weeks 4 and 9; counts have varied little across years except for a remarkable low in 2005, and a mean daily count more than double the long-term mean in 2014. A pair breeds nearby most years, on the McGill farm, but is only observed on site occasionally in summer. Fall observations also often span most of the season, but numbers typically build steadily to a peak in late October. Except for a slight regression in 2013, fall counts have increased steadily throughout the past decade.

## Mean Daily Count of Red-tailed Hawks in fall (2005-2014)



**RLHA: Rough-Legged Hawk / Buse pattue (*Buteo lagopus*)**

| Observed | First  | Peak   | Last  | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|-------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |       |      |        |      |       |        |        |        |      |        |      |       |
| 2006     | May 9  | May 9  | May 9 | 1    | 1 (1%) | 1    | 1     | Oct 5  | Oct 21 | Oct 21 | 17   | 2 (2%) | 2    | 3     |
| 2007     | Apr 22 | Apr 22 | May 2 | 11   | 2 (3%) | 1    | 2     |        |        |        |      |        |      |       |
| 2008     |        |        |       |      |        |      |       | Oct 10 | Oct 10 | Oct 22 | 13   | 2 (2%) | 1    | 2     |
| 2009     |        |        |       |      |        |      |       | Oct 29 | Oct 29 | Oct 29 | 1    | 1 (1%) | 1    | 1     |
| 2010     |        |        |       |      |        |      |       | Oct 9  | Oct 9  | Oct 29 | 21   | 4 (4%) | 1    | 4     |
| 2011     |        |        |       |      |        |      |       | Oct 29 | Oct 29 | Oct 29 | 1    | 1 (1%) | 1    | 1     |
| 2012     |        |        |       |      |        |      |       | Oct 25 | Oct 25 | Oct 25 | 1    | 1 (1%) | 4    | 4     |
| 2013     |        |        |       |      |        |      |       | Oct 23 | Oct 23 | Oct 23 | 1    | 1 (1%) | 2    | 2     |
| 2014     |        |        |       |      |        |      |       | Oct 26 | Oct 26 | Oct 30 | 5    | 2 (2%) | 1    | 2     |
| Mean     | Apr 30 | Apr 30 | May 5 | 6    | 2 (2%) | 1    | 0.3   | Oct 19 | Oct 21 | Oct 26 | 8    | 2 (2%) | 2    | 1.9   |

| Observed | Nov  | Dec  | Jan | Feb  | Mar | Winter | S1 | S2 | S3 | S4   | S5 | S6   | S7   | S8 | S9 | S10 | Spring |
|----------|------|------|-----|------|-----|--------|----|----|----|------|----|------|------|----|----|-----|--------|
| 2005     |      |      |     |      |     |        |    |    |    |      |    |      |      |    |    |     |        |
| 2006     | 0.07 |      |     |      |     | 0.02   |    |    |    |      |    |      | 0.1  |    |    |     | 0.01   |
| 2007     |      |      |     |      |     |        |    |    |    | 0.1  |    | 0.1  |      |    |    |     | 0.03   |
| 2008     |      |      |     |      |     |        |    |    |    |      |    |      |      |    |    |     |        |
| 2009     |      |      |     | 0.1  |     | 0.03   |    |    |    |      |    |      |      |    |    |     |        |
| 2010     |      | 0.1  |     |      |     | 0.02   |    |    |    |      |    |      |      |    |    |     |        |
| 2011     |      |      |     |      |     |        |    |    |    |      |    |      |      |    |    |     |        |
| 2012     | 0.1  |      |     |      |     | 0.04   |    |    |    |      |    |      |      |    |    |     |        |
| 2013     |      |      |     |      |     |        |    |    |    |      |    |      |      |    |    |     |        |
| 2014     | 0.2  |      |     |      |     | 0.03   |    |    |    |      |    |      |      |    |    |     |        |
| Mean     | 0.03 | 0.02 |     | 0.01 |     | 0.01   |    |    |    | 0.01 |    | 0.01 | 0.01 |    |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10  | F11  | F12  | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|------|------|------|-----|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |      |      |      |     |      |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    | 0.1  |      | 0.3  |     | 0.03 |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |      |      |      |     |      |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |      | 0.1  | 0.1  |     | 0.02 |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |      |      |      | 0.1 | 0.01 |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    | 0.1  | 0.3  |      | 0.1 | 0.04 |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |      |      |      | 0.1 | 0.01 |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |      |      |      | 0.6 | 0.04 |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |      |      | 0.3  |     | 0.02 |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |      |      |      | 0.3 | 0.02 |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    | 0.03 | 0.04 | 0.07 | 0.1 | 0.02 |

Rough-legged Hawk is a rare migrant and winter resident at MBO. There have been only three spring sightings, all in mid-season, and limited to 2006 and 2007. Fall sightings are more regular, with occurrences in all years except 2005 and 2007, but limited to no more than four individuals in any year. All fall sightings have been in October, typically peaking late in the month, with fall migration sometimes carrying over into November. All observations have been of hawks flying overhead.

**GOEA: Golden Eagle / Aigle royal (*Aquila chrysaetos*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     | May 9  | May 9  | May 9  | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2007     | May 10 | May 10 | May 10 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     | Apr 25 | Apr 25 | Apr 25 | 1    | 1 (1%) | 1    | 1     | Oct 26 | Oct 26 | Oct 29 | 4    | 2 (2%) | 1    | 2     |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |        |      |       | Oct 10 | Oct 10 | Oct 10 | 1    | 1 (1%) | 1    | 1     |
| 2012     |        |        |        |      |        |      |       | Oct 23 | Oct 23 | Oct 28 | 6    | 3 (3%) | 1    | 3     |
| 2013     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       | Oct 26 | Oct 26 | Oct 26 | 1    | 1 (1%) | 1    | 1     |
| Mean     | May 4  | May 4  | May 4  | 1    | 1 (1%) | 1    | 0.3   | Oct 21 | Oct 21 | Oct 23 | 3    | 2 (2%) | 1    | 0.7   |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6 | S7   | S8 | S9 | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|----|----|----|----|------|----|------|----|----|-----|--------|
| 2005     |      |     |     |     |     |        |    |    |    |    |      |    |      |    |    |     |        |
| 2006     | 0.07 |     |     |     |     | 0.02   |    |    |    |    |      |    | 0.1  |    |    |     | 0.01   |
| 2007     |      |     |     |     |     |        |    |    |    |    |      |    | 0.1  |    |    |     | 0.01   |
| 2008     |      |     |     |     |     |        |    |    |    |    |      |    |      |    |    |     |        |
| 2009     |      |     |     |     |     |        |    |    |    |    | 0.1  |    |      |    |    |     | 0.01   |
| 2010     |      |     |     |     |     |        |    |    |    |    |      |    |      |    |    |     |        |
| 2011     |      |     |     |     |     |        |    |    |    |    |      |    |      |    |    |     |        |
| 2012     | 0.1  |     |     |     |     | 0.04   |    |    |    |    |      |    |      |    |    |     |        |
| 2013     |      |     |     |     |     |        |    |    |    |    |      |    |      |    |    |     |        |
| 2014     |      |     |     |     |     |        |    |    |    |    |      |    |      |    |    |     |        |
| Mean     | 0.02 |     |     |     |     | <0.01  |    |    |    |    | 0.01 |    | 0.03 |    |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11  | F12  | F13  | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|------|------|------|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |      |      |      |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |      |      |      |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |      |      |      |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |      |      |      |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |      | 0.3  | 0.02 |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |      |      |      |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     | 0.1  |      |      | 0.01 |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |      | 0.1  | 0.3  | 0.03 |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |      |      |      |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |      | 0.1  | 0.01 |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    |     | 0.01 | 0.01 | 0.07 | 0.01 |

Golden Eagle is a rare migrant at MBO, with three observations in spring, seven in fall, and two in early winter. Spring migrants have all passed between April 25 and May 10. Aside from one early migrant on October 10, all other fall observations have been between October 23 and 29.



**VIRA: Virginia Rail / Râle de Virginie (*Rallus limicola*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | May 24 | May 24 | May 24 | 1    | 1 (2%)   | 1    | 1     |        |        |        |      |        |      |       |
| 2006     | Apr 22 | Apr 22 | Jun 2  | 42   | 2 (3%)   | 1    | 2     | Sep 4  | Sep 4  | Sep 4  | 1    | 1 (1%) | 1    | 1     |
| 2007     | May 5  | May 5  | Jun 1  | 28   | 3 (4%)   | 1    | 3     | Aug 21 | Aug 21 | Aug 27 | 7    | 2 (2%) | 1    | 2     |
| 2008     | May 9  | May 9  | May 23 | 15   | 8 (11%)  | 2    | 9     | Sep 16 | Sep 16 | Sep 16 | 1    | 1 (1%) | 2    | 2     |
| 2009     | Apr 23 | May 17 | May 25 | 33   | 14 (20%) | 3    | 20    | Aug 7  | Aug 7  | Aug 7  | 1    | 1 (1%) | 1    | 1     |
| 2010     | Apr 23 | May 2  | May 24 | 32   | 20 (29%) | 3    | 25    |        |        |        |      |        |      |       |
| 2011     | May 1  | May 19 | Jun 4  | 35   | 26 (37%) | 3    | 32    |        |        |        |      |        |      |       |
| 2012     | Apr 21 | Apr 21 | Jun 2  | 43   | 8 (11%)  | 1    | 8     |        |        |        |      |        |      |       |
| 2013     | May 4  | May 4  | May 30 | 27   | 14 (20%) | 1    | 14    |        |        |        |      |        |      |       |
| 2014     | May 10 | May 19 | Jun 4  | 26   | 19 (28%) | 3    | 23    | Aug 3  | Aug 3  | Aug 3  | 1    | 1 (1%) | 1    | 1     |
| Mean     | May 2  | May 8  | May 29 | 28   | 12 (17%) | 2    | 14    | Aug 22 | Aug 22 | Aug 23 | 2    | 1 (1%) | 1    | 0.7   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|-----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |     |     |     |     | 0.1 |     | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    | 0.1  |     |     |     |     |     | 0.1 | 0.03   |
| 2007     |     |     |     |     |     |        |    |    |    |      |     | 0.3 |     |     |     | 0.1 | 0.04   |
| 2008     |     |     |     |     |     |        |    |    |    |      |     |     | 0.7 | 0.4 | 0.1 |     | 0.1    |
| 2009     |     |     |     |     |     |        |    |    |    | 0.3  | 0.3 | 0.4 | 0.9 | 0.9 | 0.1 |     | 0.3    |
| 2010     |     |     |     |     |     |        |    |    |    | 0.3  | 1.4 | 1.3 | 0.4 |     | 0.1 |     | 0.4    |
| 2011     |     |     |     |     |     |        |    |    |    |      | 0.1 | 1.0 | 1.3 | 0.9 | 0.7 | 0.6 | 0.5    |
| 2012     |     |     |     |     |     |        |    |    |    | 0.1  | 0.3 | 0.1 |     |     | 0.1 | 0.4 | 0.1    |
| 2013     |     |     |     |     |     |        |    |    |    |      |     | 0.6 | 0.4 | 0.6 | 0.3 | 0.1 | 0.2    |
| 2014     |     |     |     |     |     |        |    |    |    |      |     |     | 0.9 | 1.4 | 0.9 | 0.2 | 0.3    |
| Mean     |     |     |     |     |     |        |    |    |    | 0.09 | 0.2 | 0.4 | 0.5 | 0.4 | 0.3 | 0.2 | 0.2    |

| Observed | Jun  | Jul  | Summer | F1   | F2 | F3   | F4   | F5   | F6 | F7   | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|------|------|--------|------|----|------|------|------|----|------|----|----|-----|-----|-----|-----|-------|
| 2005     | 0.06 | 0.06 | 0.06   |      |    |      |      |      |    |      |    |    |     |     |     |     |       |
| 2006     |      |      |        |      |    |      |      | 0.1  |    |      |    |    |     |     |     |     | 0.01  |
| 2007     |      |      |        |      |    | 0.1  | 0.1  |      |    |      |    |    |     |     |     |     | 0.02  |
| 2008     |      |      |        |      |    |      |      |      |    | 0.3  |    |    |     |     |     |     | 0.02  |
| 2009     | 0.3  | 0.3  | 0.3    | 0.1  |    |      |      |      |    |      |    |    |     |     |     |     | 0.01  |
| 2010     | 0.7  |      | 0.2    |      |    |      |      |      |    |      |    |    |     |     |     |     |       |
| 2011     |      |      |        |      |    |      |      |      |    |      |    |    |     |     |     |     |       |
| 2012     |      |      |        |      |    |      |      |      |    |      |    |    |     |     |     |     |       |
| 2013     |      | 0.3  | 0.1    |      |    |      |      |      |    |      |    |    |     |     |     |     |       |
| 2014     | 0.7  |      | 0.3    | 0.1  |    |      |      |      |    |      |    |    |     |     |     |     | 0.01  |
| Mean     | 0.1  | 0.05 | 0.07   | 0.03 |    | 0.01 | 0.01 | 0.01 |    | 0.03 |    |    |     |     |     |     | <0.01 |

Virginia Rail has been observed at MBO each spring, with sightings more regular since 2009, reflecting the presence of a breeding pair in Stoneycroft Pond in most of these years. Spring arrival has been between April 21 and 23 in four years, but delayed until May 1 to 10 in five others. In four of the past six years, as well as in 2005, observations have carried on into summer, and in both 2009 and 2014 even into the first week of fall. The only other fall sightings were migrants moving through between mid-August and mid-September from 2006 to 2008.

**SORA: Sora / Marouette de Caroline (*Porzana carolina*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak  | Last  | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|-------|-------|------|--------|------|-------|
| 2005     | May 16 | May 16 | May 27 | 12   | 2 (3%)   | 1    | 2     |       |       |       |      |        |      |       |
| 2006     |        |        |        |      |          |      |       |       |       |       |      |        |      |       |
| 2007     |        |        |        |      |          |      |       | Aug 4 | Aug 4 | Sep 8 | 36   | 2 (2%) | 1    | 2     |
| 2008     | May 11 | May 11 | May 30 | 20   | 3 (4%)   | 1    | 3     |       |       |       |      |        |      |       |
| 2009     |        |        |        |      |          |      |       |       |       |       |      |        |      |       |
| 2010     | May 9  | May 9  | Jun 4  | 27   | 12 (17%) | 2    | 15    |       |       |       |      |        |      |       |
| 2011     |        |        |        |      |          |      |       |       |       |       |      |        |      |       |
| 2012     |        |        |        |      |          |      |       |       |       |       |      |        |      |       |
| 2013     | May 27 | May 27 | May 27 | 1    | 1 (1%)   | 1    | 1     |       |       |       |      |        |      |       |
| 2014     | May 17 | May 17 | May 29 | 13   | 13 (19%) | 2    | 16    |       |       |       |      |        |      |       |
| Mean     | May 16 | May 16 | May 29 | 15   | 6 (9%)   | 1    | 3.7   | Aug 4 | Aug 4 | Sep 8 | 36   | 2 (2%) | 1    | 0.2   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7   | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|------|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.1 | 0.1 |      | 0.03   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |      |     |     |      |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |      |     |     |      |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  |     | 0.1 | 0.1  | 0.04   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |      |     |     |      |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    | 0.4  | 0.6 | 0.7 | 0.4  | 0.2    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |      |     |     |      |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |      |     |     |      |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |      |     | 0.1 |      | 0.01   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |      | 1.1 | 1.1 |      | 0.2    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.06 | 0.2 | 0.2 | 0.06 | 0.05   |

| Observed | Jun  | Jul | Summer | F1   | F2 | F3 | F4 | F5 | F6   | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|------|-----|--------|------|----|----|----|----|------|----|----|----|-----|-----|-----|-----|-------|
| 2005     |      |     |        |      |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2006     |      |     |        |      |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2007     |      |     |        | 0.1  |    |    |    |    | 0.1  |    |    |    |     |     |     |     | 0.02  |
| 2008     |      |     |        |      |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2009     |      |     |        |      |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2010     | 1.3  |     | 0.4    |      |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2011     |      |     |        |      |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2012     |      |     |        |      |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2013     |      |     |        |      |    |    |    |    |      |    |    |    |     |     |     |     |       |
| 2014     |      |     |        |      |    |    |    |    |      |    |    |    |     |     |     |     |       |
| Mean     | 0.07 |     | 0.03   | 0.01 |    |    |    |    | 0.01 |    |    |    |     |     |     |     | <0.01 |

Sora has occurred at MBO less regularly than Virginia Rail, with sightings in five of ten spring seasons, and only two fall sightings, both in 2007. Both in 2010 and 2014, a pair remained on site for an extended period in spring, with successful breeding in 2010 carrying over into June observations.

**COMO: Common Moorhen / Gallinule poule-d'eau (*Gallinula chloropus*)**

| Observed | First | Peak  | Last  | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|-------|-------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |       |       |      |        |      |       | Aug 18 | Aug 18 | Aug 18 | 1    | 1 (1%) | 1    | 1     |
| 2008     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2010     | May 5 | May 5 | May 9 | 5    | 3 (4%) | 1    | 3     |        |        |        |      |        |      |       |
| 2011     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | May 5 | May 5 | May 9 | 5    | 3 (4%) | 1    | 0.3   | Aug 18 | Aug 18 | Aug 18 | 1    | 1 (1%) | 1    | 0.1   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7   | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|------|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    | 0.3  | 0.1  |    |    |     | 0.04   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.03 | 0.01 |    |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2 | F3   | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|------|----|----|----|----|----|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |    |      |    |    |    |    |    |    |     |     |     |     |       |
| 2006     |     |     |        |    |    |      |    |    |    |    |    |    |     |     |     |     |       |
| 2007     |     |     |        |    |    | 0.1  |    |    |    |    |    |    |     |     |     |     | 0.01  |
| 2008     |     |     |        |    |    |      |    |    |    |    |    |    |     |     |     |     |       |
| 2009     |     |     |        |    |    |      |    |    |    |    |    |    |     |     |     |     |       |
| 2010     |     |     |        |    |    |      |    |    |    |    |    |    |     |     |     |     |       |
| 2011     |     |     |        |    |    |      |    |    |    |    |    |    |     |     |     |     |       |
| 2012     |     |     |        |    |    |      |    |    |    |    |    |    |     |     |     |     |       |
| 2013     |     |     |        |    |    |      |    |    |    |    |    |    |     |     |     |     |       |
| 2014     |     |     |        |    |    |      |    |    |    |    |    |    |     |     |     |     |       |
| Mean     |     |     |        |    |    | 0.01 |    |    |    |    |    |    |     |     |     |     | <0.01 |

Common Moorhen is a rare species at MBO, with a lone fall sighting in mid-August 2007, and an individual that was observed three times over a span of five days in early May 2010.

**SACR: Sandhill Crane / Grue du Canada (*Grus canadensis*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2007     | Apr 24 | Apr 24 | May 12 | 19   | 2 (3%) | 1    | 2     |       |      |      |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| Mean     | Apr 24 | Apr 24 | May 12 | 19   | 2 (3%) | 1    | 0.2   |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5 | S6 | S7   | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|----|----|------|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |    |    |      |    |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |      |    |    |      |    |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    | 0.1  |    |    | 0.1  |    |    |     | 0.03   |
| 2008     |     |     |     |     |     |        |    |    |    |      |    |    |      |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |      |    |    |      |    |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |      |    |    |      |    |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |      |    |    |      |    |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |      |    |    |      |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |      |    |    |      |    |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |      |    |    |      |    |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    | 0.01 |    |    | 0.01 |    |    |     | <0.01  |

Sightings of Sandhill Crane at MBO are limited to two lone individuals flying over MBO three weeks apart in spring 2007.

**BBPL: Black-bellied Plover / Pluvier argenté (*Pluvialis squatarola*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2012     | May 26 | May 26 | May 26 | 1    | 1 (1%) | 1    | 1     |       |      |      |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| Mean     | May 26 | May 26 | May 26 | 1    | 1 (1%) | 1    | 0.1   |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 0.1  |     | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 0.01 |     | <0.01  |

Black-bellied Plover is one of eight species with just a single individual observed to date. It was flying over MBO in late May 2012.

**SEPL: Semipalmated Plover / Pluvier semipalmé (*Charadrius semipalmatus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2006     | May 28 | May 28 | May 28 | 1    | 1 (1%) | 10   | 10    |       |      |      |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| Mean     | May 28 | May 28 | May 28 | 1    | 1 (1%) | 10   | 1.0   |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 1.4 |     | 0.1    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 0.1 |     | 0.01   |

Semipalmated Plover has only been observed at MBO once, a flock of ten flying overhead in late May 2006.

**KILL: Killdeer / Pluvier killdeer (*Charadrius vociferus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 8  | Apr 20 | Jun 2  | 56   | 18 (31%) | 4    | 27    | Oct 2  | Oct 2  | Oct 8  | 7    | 2 (2%) | 2    | 4     |
| 2006     | Mar 29 | Apr 28 | May 28 | 61   | 43 (62%) | 4    | 65    |        |        |        |      |        |      |       |
| 2007     | Mar 28 | Apr 10 | Jun 1  | 66   | 27 (39%) | 3    | 36    | Aug 15 | Aug 15 | Sep 11 | 28   | 5 (5%) | 1    | 5     |
| 2008     | Apr 4  | Apr 6  | Jun 1  | 59   | 26 (37%) | 3    | 31    | Aug 3  | Aug 3  | Sep 26 | 55   | 2 (2%) | 1    | 2     |
| 2009     | Mar 29 | Apr 2  | May 31 | 64   | 28 (41%) | 2    | 31    | Oct 18 | Oct 18 | Oct 18 | 1    | 1 (1%) | 1    | 1     |
| 2010     | Apr 2  | May 12 | May 24 | 53   | 16 (23%) | 3    | 21    | Sep 15 | Sep 15 | Sep 15 | 1    | 1 (1%) | 1    | 1     |
| 2011     | Apr 5  | May 24 | Jun 5  | 62   | 29 (41%) | 8    | 57    |        |        |        |      |        |      |       |
| 2012     | Apr 17 | May 7  | May 31 | 45   | 18 (26%) | 3    | 24    | Sep 19 | Sep 19 | Oct 4  | 16   | 2 (2%) | 1    | 2     |
| 2013     | Mar 31 | May 6  | May 22 | 53   | 27 (39%) | 4    | 41    | Aug 3  | Sep 20 | Oct 20 | 79   | 5 (5%) | 4    | 9     |
| 2014     | Apr 7  | Apr 25 | Jun 2  | 57   | 27 (40%) | 4    | 41    | Aug 17 | Aug 17 | Aug 17 | 1    | 1 (1%) | 1    | 1     |
| Mean     | Apr 3  | Apr 26 | May 30 | 58   | 26 (38%) | 4    | 37    | Sep 3  | Sep 9  | Sep 26 | 24   | 2 (3%) | 2    | 2.5   |

| Observed | Nov | Dec | Jan | Feb | Mar  | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |      |        |     | 0.2 | 0.4 | 1.5 |     | 0.4 | 0.3 | 0.6 | 0.3 | 0.6 | 0.5    |
| 2006     |     |     |     |     |      |        | 0.7 | 0.5 | 0.6 | 0.9 | 1.3 | 1.4 | 1.7 | 1.1 | 1.1 |     | 0.9    |
| 2007     |     |     |     |     |      |        | 0.3 | 0.4 |     | 1.0 | 0.3 | 0.6 | 1.1 | 0.6 | 0.6 | 0.3 | 0.5    |
| 2008     |     |     |     |     |      |        |     | 1.1 | 0.4 | 0.7 | 0.4 | 0.3 | 0.4 | 0.6 | 0.1 | 0.3 | 0.4    |
| 2009     |     |     |     |     | 0.07 | 0.03   | 0.6 | 0.3 | 0.1 | 0.9 | 0.1 | 0.9 | 0.6 | 0.4 | 0.4 | 0.1 | 0.4    |
| 2010     |     |     |     |     | 0.2  | 0.05   | 0.4 | 0.1 | 0.3 |     | 0.6 | 0.3 | 0.6 | 0.6 | 0.1 |     | 0.3    |
| 2011     |     |     |     |     |      |        |     | 0.3 | 0.1 | 0.4 | 0.3 | 1.0 | 1.0 | 0.9 | 2.9 | 1.3 | 0.8    |
| 2012     |     |     |     |     | 2.6  | 0.5    |     |     | 0.3 | 0.6 | 0.1 | 0.9 | 0.6 | 0.4 | 0.4 | 0.1 | 0.3    |
| 2013     |     |     |     |     | 0.07 | 0.02   | 0.1 | 0.4 | 0.6 | 0.7 | 0.4 | 1.7 | 0.9 | 1.0 |     |     | 0.6    |
| 2014     |     |     |     |     |      |        |     | 0.1 | 0.9 | 1.9 | 1.6 | 0.6 | 0.4 | 0.1 |     | 0.3 | 0.6    |
| Mean     |     |     |     |     | 0.2  | 0.05   | 0.2 | 0.4 | 0.4 | 0.8 | 0.5 | 0.8 | 0.8 | 0.6 | 0.6 | 0.3 | 0.5    |

| Observed | Jun  | Jul  | Summer | F1   | F2 | F3   | F4 | F5   | F6   | F7   | F8   | F9   | F10  | F11 | F12  | F13 | Fall |
|----------|------|------|--------|------|----|------|----|------|------|------|------|------|------|-----|------|-----|------|
| 2005     |      | 0.1  | 0.06   |      |    |      |    |      |      |      |      | 0.3  | 0.3  |     |      |     | 0.05 |
| 2006     |      |      |        |      |    |      |    |      |      |      |      |      |      |     |      |     |      |
| 2007     | 0.1  |      | 0.08   |      |    | 0.4  |    | 0.1  | 0.1  |      |      |      |      |     |      |     | 0.05 |
| 2008     |      |      |        | 0.1  |    |      |    |      |      |      |      | 0.1  |      |     |      |     | 0.02 |
| 2009     |      |      |        |      |    |      |    |      |      |      |      |      |      |     | 0.1  |     | 0.01 |
| 2010     |      |      |        |      |    |      |    |      |      | 0.1  |      |      |      |     |      |     | 0.01 |
| 2011     | 1.0  | 0.3  | 0.6    |      |    |      |    |      |      |      |      |      |      |     |      |     |      |
| 2012     |      |      |        |      |    |      |    |      |      |      | 0.1  |      | 0.1  |     |      |     | 0.02 |
| 2013     | 0.3  | 0.5  | 0.4    | 0.1  |    | 0.3  |    |      | 0.1  |      | 0.6  |      |      |     | 0.1  |     | 0.10 |
| 2014     |      |      |        |      |    | 0.1  |    |      |      |      |      |      |      |     |      |     | 0.01 |
| Mean     | 0.09 | 0.08 | 0.08   | 0.03 |    | 0.09 |    | 0.01 | 0.03 | 0.01 | 0.07 | 0.04 | 0.04 |     | 0.03 |     | 0.03 |

Killdeer is the second most frequently observed shorebird at MBO, although in generally small numbers. It is most common in spring, with a weak overall peak from late April to mid-May; occasionally migrants arrive already in late winter. Summer observations have been scattered over four years. Fall sightings range from week 1 to 12, with no pattern in occurrence. All records have been birds flying over or in the adjacent fields.

**SPSA: Spotted Sandpiper / Chevalier grivelé (*Actitis macularius*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | May 24 | May 26 | May 26 | 3    | 2 (3%) | 2    | 3     | Aug 3  | Aug 3  | Aug 3  | 1    | 1 (1%) | 1    | 1     |
| 2006     | May 11 | May 11 | May 11 | 1    | 1 (1%) | 1    | 1     | Aug 1  | Aug 1  | Aug 5  | 5    | 3 (3%) | 1    | 3     |
| 2007     | May 15 | May 15 | May 23 | 9    | 2 (3%) | 1    | 2     | Sep 14 | Sep 14 | Sep 14 | 1    | 1 (1%) | 1    | 1     |
| 2008     | May 15 | May 15 | May 27 | 13   | 5 (7%) | 1    | 5     | Aug 28 | Aug 28 | Aug 28 | 1    | 1 (1%) | 1    | 1     |
| 2009     | May 25 | May 25 | May 25 | 1    | 1 (1%) | 1    | 1     | Sep 8  | Sep 8  | Sep 8  | 1    | 1 (1%) | 1    | 1     |
| 2010     | May 4  | May 17 | May 17 | 14   | 2 (3%) | 2    | 3     |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |        |      |       | Aug 11 | Aug 11 | Aug 21 | 11   | 2 (2%) | 1    | 2     |
| 2012     | May 14 | May 14 | May 14 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |        |      |       | Aug 5  | Aug 5  | Aug 11 | 7    | 4 (4%) | 1    | 4     |
| 2014     | May 13 | May 13 | May 13 | 1    | 1 (1%) | 1    | 1     | Aug 1  | Aug 18 | Aug 18 | 18   | 7 (8%) | 4    | 10    |
| Mean     | May 15 | May 17 | May 19 | 5    | 2 (3%) | 1    | 1.7   | Aug 16 | Aug 18 | Aug 21 | 6    | 2 (3%) | 1    | 2.3   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7   | S8   | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|------|------|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |      |      | 0.4 |     | 0.05   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  |      |     |     | 0.01   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  |      | 0.1 |     | 0.03   |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  | 0.3  | 0.3 |     | 0.07   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |      |      |      | 0.1 |     | 0.01   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    | 0.1  |      | 0.3  |     |     | 0.04   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      |      |      |     |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  |      |     |     | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |      |      |     |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  |      |     |     | 0.01   |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.01 | 0.07 | 0.06 | 0.1 |     | 0.02   |

| Observed | Jun | Jul  | Summer | F1  | F2   | F3   | F4   | F5 | F6   | F7   | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|-----|------|------|------|----|------|------|----|----|-----|-----|-----|-----|------|
| 2005     |     |      |        | 0.1 |      |      |      |    |      |      |    |    |     |     |     |     | 0.01 |
| 2006     |     |      |        | 0.4 |      |      |      |    |      |      |    |    |     |     |     |     | 0.03 |
| 2007     |     |      |        |     |      |      |      |    |      | 0.1  |    |    |     |     |     |     | 0.01 |
| 2008     |     |      |        |     |      |      | 0.1  |    |      |      |    |    |     |     |     |     | 0.01 |
| 2009     |     |      |        |     |      |      |      |    | 0.1  |      |    |    |     |     |     |     | 0.01 |
| 2010     |     |      |        |     |      |      |      |    |      |      |    |    |     |     |     |     |      |
| 2011     |     |      |        |     | 0.1  | 0.1  |      |    |      |      |    |    |     |     |     |     | 0.02 |
| 2012     |     |      |        |     |      |      |      |    |      |      |    |    |     |     |     |     |      |
| 2013     |     |      |        | 0.4 | 0.1  |      |      |    |      |      |    |    |     |     |     |     | 0.04 |
| 2014     |     | 0.3  | 0.1    | 0.1 | 0.6  | 0.7  |      |    |      |      |    |    |     |     |     |     | 0.1  |
| Mean     |     | 0.02 | <0.01  | 0.1 | 0.09 | 0.09 | 0.01 |    | 0.01 | 0.01 |    |    |     |     |     |     | 0.03 |

Spotted Sandpiper is a regular but generally rare spring and fall migrant at MBO. Both in spring and fall, it has been missed entirely in two years, and limited to a single individual on one day in four others. The somewhat higher counts in some other years (notably spring 2008 and fall 2014) reflect an individual that stopped over and was recorded on multiple days.



**SOSA: Solitary Sandpiper / Chevalier solitaire (*Tringa solitaria*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 7  | May 14 | May 30 | 24   | 18 (31%) | 5    | 34    | Aug 7  | Aug 7  | Aug 23 | 17   | 4 (5%)   | 1    | 4     |
| 2006     | May 6  | May 21 | May 28 | 23   | 13 (19%) | 4    | 19    | Aug 12 | Aug 12 | Aug 13 | 2    | 2 (2%)   | 1    | 2     |
| 2007     | May 15 | May 22 | May 23 | 9    | 6 (9%)   | 2    | 7     | Aug 25 | Aug 25 | Sep 26 | 33   | 23 (25%) | 3    | 32    |
| 2008     | Apr 27 | May 9  | May 25 | 29   | 17 (24%) | 7    | 58    | Aug 16 | Aug 25 | Sep 18 | 34   | 18 (20%) | 2    | 21    |
| 2009     | Apr 18 | May 5  | May 24 | 37   | 15 (22%) | 3    | 24    | Aug 1  | Aug 29 | Sep 22 | 53   | 11 (12%) | 2    | 13    |
| 2010     | May 4  | May 16 | May 26 | 23   | 11 (16%) | 2    | 14    | Aug 4  | Aug 4  | Sep 17 | 45   | 10 (11%) | 1    | 10    |
| 2011     | May 5  | May 19 | May 20 | 16   | 15 (21%) | 3    | 19    | Aug 4  | Aug 4  | Oct 5  | 63   | 10 (11%) | 2    | 12    |
| 2012     | Apr 21 | May 5  | May 19 | 29   | 14 (20%) | 6    | 23    | Aug 23 | Aug 23 | Oct 12 | 51   | 10 (11%) | 1    | 10    |
| 2013     | May 1  | May 14 | May 30 | 30   | 19 (27%) | 5    | 38    | Aug 9  | Aug 17 | Sep 13 | 36   | 10 (11%) | 2    | 12    |
| 2014     | May 5  | May 21 | May 23 | 19   | 16 (24%) | 4    | 27    | Aug 11 | Aug 16 | Sep 21 | 42   | 30 (33%) | 3    | 44    |
| Mean     | May 1  | May 14 | May 24 | 24   | 14 (21%) | 4    | 26    | Aug 11 | Aug 16 | Sep 16 | 38   | 13 (14%) | 2    | 16    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5   | S6  | S7  | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|------|-----|-----|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |      | 0.1 | 1.7 | 1.9 | 1.0 | 0.2  | 0.6    |
| 2006     |     |     |     |     |     |        |    |    |    |      |      | 0.4 | 0.7 | 1.0 | 0.6 |      | 0.3    |
| 2007     |     |     |     |     |     |        |    |    |    |      |      |     | 0.1 | 0.7 | 0.1 |      | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |    |      | 0.1  | 0.9 | 3.7 | 3.1 | 0.4 |      | 0.8    |
| 2009     |     |     |     |     |     |        |    |    |    | 0.3  |      | 1.3 | 1.1 | 0.6 | 0.1 |      | 0.3    |
| 2010     |     |     |     |     |     |        |    |    |    |      |      | 0.3 | 0.6 | 0.7 | 0.4 |      | 0.2    |
| 2011     |     |     |     |     |     |        |    |    |    |      |      | 0.6 | 1.1 | 1.0 |     |      | 0.3    |
| 2012     |     |     |     |     |     |        |    |    |    | 0.3  |      | 2.0 | 0.7 | 0.3 |     |      | 0.3    |
| 2013     |     |     |     |     |     |        |    |    |    |      | 0.1  | 1.0 | 2.0 | 2.0 | 0.1 | 0.1  | 0.5    |
| 2014     |     |     |     |     |     |        |    |    |    |      |      | 0.3 | 1.9 | 1.6 | 0.1 |      | 0.4    |
| Mean     |     |     |     |     |     |        |    |    |    | 0.06 | 0.03 | 0.7 | 1.4 | 1.3 | 0.3 | 0.03 | 0.4    |

| Observed | Jun | Jul | Summer | F1   | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9   | F10  | F11  | F12 | F13 | Fall |
|----------|-----|-----|--------|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|-----|------|
| 2005     |     |     |        | 0.1  | 0.3 |     | 0.1 |     |     |     |     |      |      |      |     |     | 0.05 |
| 2006     |     |     |        |      | 0.3 |     |     |     |     |     |     |      |      |      |     |     | 0.02 |
| 2007     |     |     |        |      |     |     | 0.6 | 0.9 | 0.7 | 1.1 | 1.1 | 0.1  |      |      |     |     | 0.4  |
| 2008     |     |     |        |      |     | 0.3 | 0.7 | 0.9 | 0.9 | 0.3 |     |      |      |      |     |     | 0.2  |
| 2009     |     |     |        | 0.3  |     |     | 0.1 | 0.9 | 0.3 | 0.1 | 0.1 |      |      |      |     |     | 0.1  |
| 2010     |     |     |        | 0.1  | 0.3 |     |     |     | 0.3 | 0.7 |     |      |      |      |     |     | 0.1  |
| 2011     |     |     |        | 0.3  | 0.4 | 0.1 | 0.3 | 0.1 | 0.3 |     |     |      | 0.1  |      |     |     | 0.1  |
| 2012     |     |     |        |      |     |     | 0.1 |     |     | 0.6 | 0.1 | 0.4  |      | 0.1  |     |     | 0.1  |
| 2013     |     |     |        |      | 0.1 | 0.6 | 0.1 | 0.1 | 0.6 | 0.1 |     |      |      |      |     |     | 0.1  |
| 2014     |     |     |        |      | 0.4 | 1.7 | 1.4 | 1.7 | 0.4 | 0.4 | 0.1 |      |      |      |     |     | 0.5  |
| Mean     |     |     |        | 0.09 | 0.2 | 0.3 | 0.4 | 0.5 | 0.3 | 0.3 | 0.2 | 0.06 | 0.01 | 0.01 |     |     | 0.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |    |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |    |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |    |     | 1      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.2 | 0.1 |    |     | 0.3    |

By a small margin over Killdeer, Solitary Sandpiper is the most frequently observed shorebird at MBO. However, it differs in that it is strictly a spring and fall migrant, and that fall observations are much more regular. Spring arrivals have occasionally returned in late April, but most commonly show up in the first week of May. There is generally a distinct peak in weeks 7 and 8, and all three individuals banded have been during this period. Fall migrants have arrived as early as the first week of August in four years, and twice have lingered into early October, and the peak has varied from week 2 to 7, but overall numbers are highest from late August to mid-September.

**GRYE: Greater Yellowlegs / Grand Chevalier (*Tringa melanoleuca*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | May 27 | May 27 | May 27 | 1    | 1 (2%) | 1    | 1     | Aug 13 | Aug 13 | Oct 13 | 62   | 4 (5%) | 2    | 5     |
| 2006     | May 7  | May 7  | May 21 | 15   | 3 (4%) | 5    | 9     | Sep 6  | Sep 6  | Oct 22 | 47   | 3 (3%) | 2    | 4     |
| 2007     | May 10 | May 10 | May 11 | 2    | 2 (3%) | 1    | 2     |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       | Sep 23 | Sep 23 | Sep 23 | 1    | 1 (1%) | 1    | 1     |
| 2009     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       | Sep 12 | Sep 12 | Sep 12 | 1    | 1 (1%) | 1    | 1     |
| 2011     |        |        |        |      |        |      |       | Sep 1  | Oct 4  | Oct 4  | 34   | 4 (4%) | 12   | 16    |
| 2012     | Apr 20 | May 2  | May 19 | 30   | 5 (7%) | 2    | 6     | Oct 1  | Oct 1  | Oct 1  | 1    | 1 (1%) | 1    | 1     |
| 2013     | Apr 26 | Apr 26 | May 18 | 23   | 3 (4%) | 1    | 3     | Aug 13 | Aug 13 | Oct 30 | 79   | 2 (2%) | 1    | 2     |
| 2014     | May 15 | May 15 | May 15 | 1    | 1 (1%) | 1    | 1     | Aug 10 | Aug 10 | Sep 7  | 29   | 2 (2%) | 2    | 3     |
| Mean     | May 7  | May 9  | May 18 | 12   | 2 (4%) | 2    | 2.2   | Sep 2  | Sep 6  | Oct 2  | 32   | 2 (2%) | 3    | 3.3   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5   | S6  | S7   | S8   | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|------|-----|------|------|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |      |     |      |      | 0.1  |     | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    |      |      | 0.7 | 0.4  | 0.1  |      |     | 0.1    |
| 2007     |     |     |     |     |     |        |    |    |    |      |      |     | 0.3  |      |      |     | 0.03   |
| 2008     |     |     |     |     |     |        |    |    |    |      |      |     |      |      |      |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |      |      |     |      |      |      |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |      |      |     |      |      |      |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |      |      |     |      |      |      |     |        |
| 2012     |     |     |     |     |     |        |    |    |    | 0.3  |      | 0.4 |      | 0.1  |      |     | 0.09   |
| 2013     |     |     |     |     |     |        |    |    |    |      | 0.1  | 0.1 |      | 0.1  |      |     | 0.04   |
| 2014     |     |     |     |     |     |        |    |    |    |      |      |     | 0.1  |      |      |     | 0.01   |
| Mean     |     |     |     |     |     |        |    |    |    | 0.03 | 0.01 | 0.1 | 0.09 | 0.04 | 0.01 |     | 0.03   |

| Observed | Jun | Jul | Summer | F1 | F2   | F3 | F4 | F5   | F6   | F7   | F8   | F9   | F10 | F11  | F12  | F13  | Fall |
|----------|-----|-----|--------|----|------|----|----|------|------|------|------|------|-----|------|------|------|------|
| 2005     |     |     |        |    | 0.3  |    |    |      |      |      |      |      | 0.3 | 0.2  |      |      | 0.06 |
| 2006     |     |     |        |    |      |    |    |      | 0.3  |      |      |      |     |      | 0.3  |      | 0.04 |
| 2007     |     |     |        |    |      |    |    |      |      |      |      |      |     |      |      |      |      |
| 2008     |     |     |        |    |      |    |    |      |      |      | 0.1  |      |     |      |      |      | 0.01 |
| 2009     |     |     |        |    |      |    |    |      |      |      |      |      |     |      |      |      |      |
| 2010     |     |     |        |    |      |    |    |      |      | 0.1  |      |      |     |      |      |      | 0.01 |
| 2011     |     |     |        |    |      |    |    | 0.1  | 0.1  |      |      | 0.3  | 1.7 |      |      |      | 0.2  |
| 2012     |     |     |        |    |      |    |    |      |      |      |      | 0.1  |     |      |      |      | 0.01 |
| 2013     |     |     |        |    | 0.1  |    |    |      |      |      |      |      |     |      |      | 0.1  | 0.02 |
| 2014     |     |     |        |    | 0.3  |    |    |      | 0.1  |      |      |      |     |      |      |      | 0.03 |
| Mean     |     |     |        |    | 0.07 |    |    | 0.01 | 0.06 | 0.01 | 0.01 | 0.04 | 0.2 | 0.01 | 0.03 | 0.01 | 0.04 |

Greater Yellowlegs is a rare migrant at MBO, with sightings in six spring and eight fall seasons. Spring sightings have all been between weeks 4 and 9, with slightly more frequent records over the middle of that period. In fall, there have been three sightings in the second week of August, but otherwise observations have been from week 5 through the end of the season. If the unusually large flock observed on October 4, 2011 is omitted, there is no clear pattern to the timing of observations, nor any notable difference among years.

**LEYE: Lesser Yellowlegs / Petit Chevalier (*Tringa flavipes*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     | May 12 | May 12 | May 12 | 1    | 1 (1%) | 1    | 1     | Aug 10 | Aug 10 | Aug 10 | 1    | 1 (1%) | 1    | 1     |
| 2009     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     | May 13 | May 13 | May 13 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2012     | May 16 | May 16 | May 16 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | May 13 | May 13 | May 13 | 1    | 1 (1%) | 1    | 0.3   | Aug 10 | Aug 10 | Aug 10 | 1    | 1 (1%) | 1    | 0.1   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7   | S8   | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|------|------|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |      |      |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |      |      |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |      |      |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  |      |    |     | 0.01   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |      |      |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |      |      |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  |      |    |     | 0.01   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.1  |    |     | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |      |      |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |      |      |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.03 | 0.01 |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2   | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|------|----|----|----|----|----|----|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2006     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2007     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2008     |     |     |        |    | 0.1  |    |    |    |    |    |    |    |     |     |     |     | 0.01  |
| 2009     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2010     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2011     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2012     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2013     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2014     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| Mean     |     |     |        |    | 0.01 |    |    |    |    |    |    |    |     |     |     |     | <0.01 |

Lesser Yellowlegs is considerably rarer than Greater Yellowlegs, with only three individuals observed in spring, and one in fall. Although the sample size is small, timing of the spring migrants has been remarkably consistent, with all of them observed between May 12 and 16.

**DUNL: Dunlin / Bécasseau variable (*Calidris alpina*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First | Peak  | Last  | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|-------|-------|-------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       | Oct 8 | Oct 8 | Oct 8 | 1    | 1 (1%) | 30   | 30    |
| 2006     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2009     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2011     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2012     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2013     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| 2014     |       |      |      |      |        |      |       |       |       |       |      |        |      |       |
| Mean     |       |      |      |      |        |      |       | Oct 8 | Oct 8 | Oct 8 | 1    | 1 (1%) | 30   | 3.0   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    | 5.0 |     |     |     | 0.3  |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    | 0.4 |     |     |     | 0.03 |

The only observation of Dunlin at MBO was a flock of 30 individuals flying overhead on October 8, 2005.

**LESA: Least Sandpiper / Bécasseau minuscule (*Calidris minutilla*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       | Aug 11 | Aug 11 | Aug 11 | 1    | 1 (1%) | 1    | 1     |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |        |      |       | Aug 28 | Aug 28 | Aug 28 | 1    | 1 (1%) | 3    | 3     |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2013     | May 15 | May 15 | May 15 | 1    | 1 (1%) | 6    | 6     |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | May 15 | May 15 | May 15 | 1    | 1 (1%) | 6    | 0.6   | Aug 19 | Aug 19 | Aug 19 | 1    | 1 (1%) | 2    | 0.4   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7   | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|------|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    | 0.9  |    |    |     | 0.09   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.09 |    |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2   | F3 | F4   | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|------|----|------|----|----|----|----|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |      |    |      |    |    |    |    |    |     |     |     |     |       |
| 2006     |     |     |        |    |      |    |      |    |    |    |    |    |     |     |     |     |       |
| 2007     |     |     |        |    | 0.1  |    |      |    |    |    |    |    |     |     |     |     | 0.01  |
| 2008     |     |     |        |    |      |    |      |    |    |    |    |    |     |     |     |     |       |
| 2009     |     |     |        |    |      |    | 0.4  |    |    |    |    |    |     |     |     |     | 0.03  |
| 2010     |     |     |        |    |      |    |      |    |    |    |    |    |     |     |     |     |       |
| 2011     |     |     |        |    |      |    |      |    |    |    |    |    |     |     |     |     |       |
| 2012     |     |     |        |    |      |    |      |    |    |    |    |    |     |     |     |     |       |
| 2013     |     |     |        |    |      |    |      |    |    |    |    |    |     |     |     |     |       |
| 2014     |     |     |        |    |      |    |      |    |    |    |    |    |     |     |     |     |       |
| Mean     |     |     |        |    | 0.01 |    | 0.04 |    |    |    |    |    |     |     |     |     | <0.01 |

Least Sandpiper is a rare migrant at MBO, with observations limited to a small flock of six individuals feeding along the edge of Stoneycroft Pond on 15 May 2013, and lone individuals in August 2007 and 2009.

**WISN: Wilson's Snipe / Bécassine de Wilson (*Gallinago delicata*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       | Aug 15 | Aug 15 | Sep 5  | 22   | 3 (3%) | 1    | 3     |
| 2006     |        |        |        |      |        |      |       | Sep 9  | Sep 9  | Sep 25 | 17   | 3 (3%) | 1    | 3     |
| 2007     | Apr 22 | Apr 22 | May 15 | 24   | 4 (6%) | 1    | 4     | Aug 4  | Aug 4  | Oct 29 | 87   | 5 (5%) | 1    | 5     |
| 2008     | May 20 | May 20 | May 20 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |        |      |       | Oct 13 | Oct 13 | Oct 13 | 1    | 1 (1%) | 1    | 1     |
| 2010     | May 22 | May 22 | May 23 | 2    | 2 (3%) | 1    | 2     |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2013     | Apr 20 | Apr 20 | Apr 20 | 1    | 1 (1%) | 1    | 1     | Sep 17 | Sep 17 | Sep 17 | 1    | 1 (1%) | 3    | 3     |
| 2014     |        |        |        |      |        |      |       | Aug 31 | Aug 31 | Oct 9  | 40   | 2 (2%) | 1    | 2     |
| Mean     | May 6  | May 6  | May 12 | 7    | 2 (3%) | 1    | 0.8   | Sep 4  | Sep 4  | Oct 1  | 28   | 2 (3%) | 1    | 1.7   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5 | S6   | S7   | S8   | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|----|------|------|------|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |    |      |      |      |      |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |      |    |      |      |      |      |     |        |
| 2007     |     |     |     |     |     |        |    |    |    | 0.1  |    | 0.1  | 0.3  |      |      |     | 0.06   |
| 2008     |     |     |     |     |     |        |    |    |    |      |    |      |      | 0.1  |      |     | 0.01   |
| 2009     |     |     |     |     |     |        |    |    |    |      |    |      |      |      |      |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |      |    |      |      | 0.1  | 0.1  |     | 0.03   |
| 2011     |     |     |     |     |     |        |    |    |    |      |    |      |      |      |      |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |      |    |      |      |      |      |     |        |
| 2013     |     |     |     |     |     |        |    |    |    | 0.1  |    |      |      |      |      |     | 0.01   |
| 2014     |     |     |     |     |     |        |    |    |    |      |    |      |      |      |      |     |        |
| Mean     |     |     |     |     |     |        |    |    |    | 0.03 |    | 0.01 | 0.03 | 0.03 | 0.01 |     | 0.01   |

| Observed | Jun | Jul | Summer | F1   | F2 | F3   | F4   | F5   | F6   | F7   | F8   | F9 | F10  | F11  | F12 | F13  | Fall |
|----------|-----|-----|--------|------|----|------|------|------|------|------|------|----|------|------|-----|------|------|
| 2005     |     |     |        |      |    | 0.3  |      |      | 0.1  |      |      |    |      |      |     |      | 0.03 |
| 2006     |     |     |        |      |    |      |      |      | 0.1  |      | 0.3  |    |      |      |     |      | 0.03 |
| 2007     |     |     |        | 0.1  |    | 0.1  | 0.1  | 0.1  |      |      |      |    |      |      |     | 0.1  | 0.05 |
| 2008     |     |     |        |      |    |      |      |      |      |      |      |    |      |      |     |      |      |
| 2009     |     |     |        |      |    |      |      |      |      |      |      |    |      | 0.1  |     |      | 0.01 |
| 2010     |     |     |        |      |    |      |      |      |      |      |      |    |      |      |     |      |      |
| 2011     |     |     |        |      |    |      |      |      |      |      |      |    |      |      |     |      |      |
| 2012     |     |     |        |      |    |      |      |      |      |      |      |    |      |      |     |      |      |
| 2013     |     |     |        |      |    |      |      |      |      | 0.4  |      |    |      |      |     |      | 0.03 |
| 2014     |     |     |        |      |    |      |      | 0.1  |      |      |      |    | 0.1  |      |     |      | 0.02 |
| Mean     |     |     |        | 0.01 |    | 0.04 | 0.01 | 0.03 | 0.03 | 0.04 | 0.03 |    | 0.01 | 0.01 |     | 0.01 | 0.02 |

Wilson's Snipe has been observed in spring in four years, and in fall in six years. Spring sightings have ranged between April 20 and May 23, always involving lone individuals. Fall observations are more scattered, having ranged throughout the full season, but without any patterns of occurrence. Except for three individuals observed on September 17, 2013, all other sightings have also been of lone birds.

**AMWO: American Woodcock / Bécasse d'Amérique (*Scolopax minor*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     |        |        |        |      |          |      |       | Aug 1  | Aug 1  | Aug 1  | 1    | 1 (1%)   | 1    | 1     |
| 2006     |        |        |        |      |          |      |       | Aug 2  | Aug 2  | Aug 19 | 18   | 4 (4%)   | 1    | 4     |
| 2007     |        |        |        |      |          |      |       |        |        |        |      |          |      |       |
| 2008     | Apr 9  | Apr 9  | Apr 19 | 11   | 5 (7%)   | 2    | 6     | Aug 13 | Aug 13 | Aug 20 | 8    | 2 (2%)   | 1    | 2     |
| 2009     | Apr 10 | Apr 10 | Apr 10 | 1    | 1 (1%)   | 1    | 1     | Aug 15 | Aug 15 | Sep 19 | 36   | 6 (7%)   | 1    | 6     |
| 2010     |        |        |        |      |          |      |       | Aug 30 | Aug 30 | Aug 30 | 1    | 1 (1%)   | 1    | 1     |
| 2011     | Apr 1  | Apr 1  | May 4  | 34   | 3 (4%)   | 1    | 3     | Aug 8  | Aug 8  | Aug 8  | 1    | 1 (1%)   | 1    | 1     |
| 2012     | May 19 | May 19 | Jun 1  | 14   | 2 (3%)   | 1    | 2     | Aug 3  | Oct 7  | Oct 22 | 81   | 6 (7%)   | 2    | 8     |
| 2013     | Apr 3  | Apr 25 | May 15 | 43   | 11 (16%) | 2    | 13    | Aug 5  | Oct 5  | Oct 19 | 76   | 17 (19%) | 3    | 20    |
| 2014     | Apr 10 | Apr 21 | May 31 | 52   | 8 (12%)  | 3    | 12    | Oct 11 | Oct 11 | Oct 11 | 1    | 1 (1%)   | 1    | 1     |
| Mean     | Apr 13 | Apr 19 | May 8  | 26   | 5 (7%)   | 2    | 3.7   | Aug 16 | Aug 30 | Sep 9  | 25   | 4 (5%)   | 1    | 4.4   |

| Observed | Nov | Dec | Jan | Feb | Mar  | Winter | S1   | S2   | S3   | S4   | S5  | S6   | S7   | S8   | S9   | S10  | Spring |
|----------|-----|-----|-----|-----|------|--------|------|------|------|------|-----|------|------|------|------|------|--------|
| 2005     |     |     |     |     |      |        |      |      |      |      |     |      |      |      |      |      |        |
| 2006     |     |     |     |     |      |        |      |      |      |      |     |      |      |      |      |      |        |
| 2007     |     |     |     |     |      |        |      |      |      |      |     |      |      |      |      |      |        |
| 2008     |     |     |     |     |      |        |      | 0.3  | 0.4  | 0.1  |     |      |      |      |      |      | 0.09   |
| 2009     |     |     |     |     |      |        |      | 0.2  |      |      |     |      |      |      |      |      | 0.01   |
| 2010     |     |     |     |     |      |        |      |      |      |      |     |      |      |      |      |      |        |
| 2011     |     |     |     |     |      |        | 0.1  | 0.1  |      |      |     | 0.1  |      |      |      |      | 0.04   |
| 2012     |     |     |     |     | 0.2  | 0.04   |      |      |      |      |     |      |      | 0.1  |      | 0.1  | 0.03   |
| 2013     |     |     |     |     |      |        | 0.1  | 0.1  | 0.1  | 0.3  | 0.4 | 0.4  | 0.3  |      |      |      | 0.2    |
| 2014     |     |     |     |     |      |        |      | 0.1  | 0.1  | 0.4  | 0.6 | 0.1  |      |      | 0.3  | 0.2  | 0.2    |
| Mean     |     |     |     |     | 0.01 | <0.01  | 0.03 | 0.09 | 0.06 | 0.09 | 0.1 | 0.07 | 0.03 | 0.01 | 0.03 | 0.03 | 0.05   |

| Observed | Jun  | Jul  | Summer | F1   | F2  | F3  | F4   | F5   | F6   | F7   | F8   | F9  | F10  | F11  | F12  | F13 | Fall |
|----------|------|------|--------|------|-----|-----|------|------|------|------|------|-----|------|------|------|-----|------|
| 2005     |      | 0.1  | 0.06   | 0.1  |     |     |      |      |      |      |      |     |      |      |      |     | 0.01 |
| 2006     | 0.1  | 0.2  | 0.1    | 0.3  | 0.1 | 0.1 |      |      |      |      |      |     |      |      |      |     | 0.04 |
| 2007     |      |      |        |      |     |     |      |      |      |      |      |     |      |      |      |     |      |
| 2008     |      |      |        |      | 0.1 | 0.1 |      |      |      |      |      |     |      |      |      |     | 0.02 |
| 2009     | 0.3  |      | 0.1    |      |     | 0.1 | 0.1  |      | 0.1  | 0.3  | 0.1  |     |      |      |      |     | 0.07 |
| 2010     |      |      |        |      |     |     |      | 0.1  |      |      |      |     |      |      |      |     | 0.01 |
| 2011     |      |      |        |      | 0.1 |     |      |      |      |      |      |     |      |      |      |     | 0.01 |
| 2012     |      |      |        | 0.1  | 0.1 |     |      |      |      |      |      | 0.4 |      |      | 0.4  |     | 0.09 |
| 2013     |      |      |        | 0.3  | 0.6 | 0.6 | 0.3  |      | 0.1  | 0.1  | 0.1  |     | 0.4  | 0.1  | 0.1  |     | 0.2  |
| 2014     |      |      |        |      |     |     |      |      |      |      |      |     |      | 0.1  |      |     | 0.01 |
| Mean     | 0.04 | 0.06 | 0.05   | 0.09 | 0.1 | 0.1 | 0.04 | 0.01 | 0.03 | 0.04 | 0.03 |     | 0.09 | 0.03 | 0.06 |     | 0.05 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |    |    |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 |    |    |     | 0.1    |

American Woodcock was not observed in spring until 2008, but since then has been recorded in six of seven spring seasons. Only in 2013 and 2014 have sightings been regular through most of the season; the elevated season totals for these years reflect the repeated observations of the same individuals, presumably a pair. There were no summer observations in those two years, but there were in three years between 2005 and 2009. Fall sightings have spanned nearly the full season, with records as late as the second half of October in two of the past three years. Observations are most common in August though. There has been little change in fall numbers over time, aside from much more frequent sightings in 2013. Just one individual has been banded, in spring 2013.

**RBGU: Ring-billed Gull / Goéland à bec cerclé (*Larus delawarensis*)**

| Observed | First  | Peak   | Last  | Span | # days    | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|-----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | May 12 | Jun 3 | 60   | 58 (98%)  | 128  | 1176  | Aug 1 | Oct 24 | Oct 30 | 91   | 36 (41%) | 101  | 405   |
| 2006     | Mar 28 | May 2  | Jun 5 | 70   | 69 (100%) | 205  | 3583  | Aug 3 | Oct 7  | Oct 30 | 89   | 42 (46%) | 57   | 240   |
| 2007     | Mar 28 | Apr 24 | Jun 4 | 69   | 65 (93%)  | 102  | 1046  | Aug 8 | Aug 18 | Oct 30 | 84   | 47 (52%) | 31   | 264   |
| 2008     | Mar 28 | Apr 20 | Jun 5 | 70   | 65 (93%)  | 140  | 1362  | Aug 5 | Oct 23 | Oct 29 | 86   | 38 (42%) | 300  | 614   |
| 2009     | Mar 28 | May 19 | Jun 5 | 70   | 68 (99%)  | 130  | 1757  | Aug 1 | Oct 16 | Oct 30 | 91   | 44 (48%) | 39   | 216   |
| 2010     | Mar 28 | May 14 | Jun 4 | 69   | 65 (93%)  | 92   | 898   | Aug 1 | Sep 20 | Oct 30 | 91   | 28 (31%) | 47   | 190   |
| 2011     | Mar 28 | Jun 3  | Jun 5 | 70   | 66 (94%)  | 114  | 1123  | Aug 2 | Sep 21 | Oct 30 | 90   | 54 (59%) | 150  | 620   |
| 2012     | Mar 29 | May 12 | Jun 4 | 68   | 66 (94%)  | 150  | 1040  | Aug 2 | Oct 28 | Oct 30 | 90   | 50 (55%) | 330  | 2066  |
| 2013     | Mar 28 | May 15 | Jun 4 | 69   | 67 (96%)  | 230  | 1588  | Aug 4 | Oct 16 | Oct 30 | 88   | 52 (57%) | 250  | 825   |
| 2014     | Mar 29 | May 13 | Jun 4 | 68   | 64 (94%)  | 320  | 2826  | Aug 1 | Sep 13 | Oct 30 | 91   | 49 (54%) | 302  | 858   |
| Mean     | Mar 29 | May 10 | Jun 4 | 68   | 65 (95%)  | 161  | 1640  | Aug 2 | Oct 3  | Oct 29 | 89   | 44 (49%) | 161  | 630   |

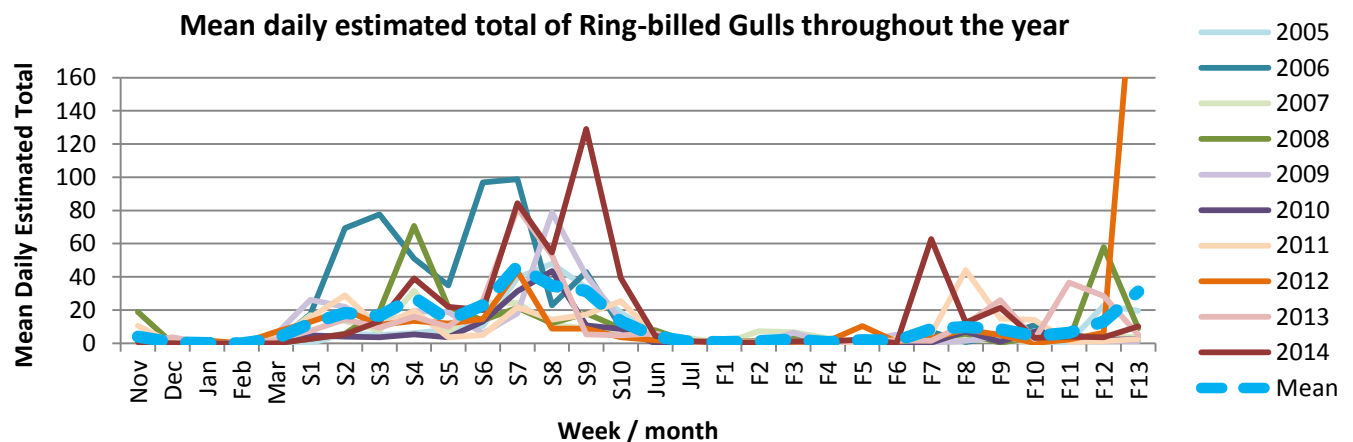
  

| Observed | Nov  | Dec  | Jan  | Feb | Mar | Winter | S1   | S2   | S3   | S4   | S5   | S6   | S7   | S8   | S9    | S10  | Spring |
|----------|------|------|------|-----|-----|--------|------|------|------|------|------|------|------|------|-------|------|--------|
| 2005     | 0.5  |      |      |     | 1.3 | 0.5    |      | 6.0  | 4.9  | 6.2  | 8.3  | 10.3 | 39.4 | 48.0 | 33.4  | 18.6 | 19.9   |
| 2006     | 2.1  | 0.07 |      |     | 0.5 | 0.6    | 17.4 | 69.3 | 77.7 | 51.1 | 34.9 | 96.9 | 98.9 | 22.9 | 43.0  | 9.7  | 51.9   |
| 2007     | 0.2  | 0.4  | 0.3  |     | 1.2 | 0.4    | 16.9 | 13.4 | 7.6  | 31.6 | 6.4  | 24.4 | 24.3 | 11.1 | 9.0   | 4.7  | 14.9   |
| 2008     | 18.9 |      |      |     |     | 6.3    | 2.7  | 5.7  | 19.4 | 70.6 | 21.9 | 13.9 | 21.3 | 12.0 | 18.0  | 9.1  | 19.5   |
| 2009     | 0.1  |      |      |     | 5.4 | 2.2    | 26.1 | 22.0 | 10.0 | 19.4 | 18.9 | 5.9  | 18.1 | 78.7 | 40.9  | 14.1 | 25.5   |
| 2010     | 4.1  | 0.1  |      |     | 3.7 | 2.0    | 4.7  | 3.9  | 3.7  | 5.3  | 3.6  | 13.0 | 31.3 | 43.6 | 10.7  | 8.6  | 12.8   |
| 2011     | 10.5 |      |      |     | 3.6 | 3.6    | 15.3 | 28.9 | 9.4  | 19.6 | 3.6  | 5.0  | 21.7 | 14.3 | 17.3  | 25.4 | 16.0   |
| 2012     | 1.8  |      | 1.7  |     | 6.8 | 2.3    | 12.9 | 19.9 | 11.1 | 13.4 | 11.9 | 14.6 | 43.4 | 8.9  | 8.9   | 3.7  | 14.9   |
| 2013     | 0.3  | 3.6  |      |     | 1.8 | 1.1    | 7.4  | 14.4 | 9.3  | 15.9 | 10.0 | 25.6 | 81.3 | 53.0 | 5.3   | 4.7  | 22.7   |
| 2014     | 0.8  |      |      |     |     | 0.1    | 2.7  | 5.4  | 13.3 | 39.0 | 21.9 | 20.0 | 84.3 | 54.7 | 129.1 | 39.3 | 41.6   |
| Mean     | 3.9  | 0.6  | 0.09 |     | 2.8 | 1.7    | 11.9 | 18.3 | 16.6 | 27.5 | 14.1 | 22.9 | 46.4 | 34.7 | 31.6  | 13.3 | 23.9   |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5   | F6  | F7   | F8   | F9   | F10  | F11  | F12  | F13   | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|------|-----|------|------|------|------|------|------|-------|------|
| 2005     | 4.9 | 1.6 | 3.2    | 0.9 | 1.1 | 1.4 | 0.3 | 0.3  |     | 1.9  | 3.3  | 6.3  | 0.5  | 0.8  | 22.6 | 19.6  | 4.6  |
| 2006     | 5.8 | 0.3 | 2.8    | 0.6 | 0.4 | 0.9 | 0.4 | 1.0  | 1.7 | 6.9  | 0.7  | 4.1  | 10.9 | 1.3  | 1.9  | 3.6   | 2.6  |
| 2007     | 1.4 | 3.0 | 2.2    |     | 7.3 | 6.6 | 3.0 | 0.7  | 1.6 | 1.7  | 2.0  | 2.1  | 0.9  | 4.1  | 4.0  | 3.7   | 2.9  |
| 2008     | 7.8 | 0.6 | 4.2    | 0.1 | 1.6 | 4.1 | 0.4 | 0.4  | 0.1 | 2.6  | 5.7  | 0.3  | 3.6  | 1.6  | 58.0 | 9.1   | 6.7  |
| 2009     |     |     |        | 1.6 | 0.1 | 6.3 | 0.7 | 1.6  | 5.1 | 0.4  | 1.4  | 4.1  | 0.7  | 6.0  | 1.4  | 1.3   | 2.4  |
| 2010     |     |     |        | 0.3 | 0.3 |     | 0.3 | 0.7  | 0.1 | 0.4  | 7.1  | 1.0  | 7.0  | 5.3  | 2.1  | 2.4   | 2.1  |
| 2011     | 5.0 | 1.0 | 2.7    | 0.4 | 1.1 | 0.1 |     | 0.4  | 2.7 | 5.7  | 44.1 | 15.0 | 14.1 | 1.0  | 1.3  | 2.4   | 6.8  |
| 2012     | 1.8 | 0.5 | 1.1    | 1.9 | 0.4 | 0.1 | 1.3 | 10.4 | 0.9 | 3.1  | 8.3  | 4.9  | 0.1  | 2.3  | 6.4  | 255.0 | 22.7 |
| 2013     | 6.0 | 1.0 | 3.1    | 0.9 | 0.6 | 1.1 | 0.7 | 1.4  | 1.7 | 1.4  | 11.6 | 25.9 | 2.4  | 36.6 | 28.4 | 5.1   | 9.1  |
| 2014     | 4.3 | 1.3 | 2.6    | 0.3 | 0.3 | 1.1 | 1.1 | 2.3  | 0.1 | 62.7 | 12.4 | 21.3 | 3.3  | 3.9  | 3.6  | 10.1  | 9.4  |
| Mean     | 4.2 | 1.0 | 2.5    | 0.7 | 1.3 | 2.2 | 0.8 | 1.9  | 1.4 | 8.7  | 9.7  | 8.5  | 4.4  | 6.4  | 13.0 | 31.2  | 6.9  |

Ring-billed Gull is by far the most common gull at MBO, with sightings usually extending from March through November, and occasionally as late as December and even January. Spring numbers have peaked as early as week 2 and as late as week 9, but overall are highest around weeks 7 and 8. Observations taper off considerably in summer, to the extent that none at all were recorded in 2009 or 2010. Low numbers generally persist for the first six weeks of fall before starting to build to a peak in late October. However, the pattern is quite variable from year to year, with the individual season peak as early as mid-August in 2007 and 2009, and in the second half of September in three other years. Spring numbers were unusually low from 2010 to 2012, contrasting with mean daily counts in 2006 and 2014 that were roughly double the long-term mean. Fall counts were relatively consistent from 2005 through 2010, aside from a modest spike in 2008, but have since been higher, most notably in 2012, driven by record high numbers throughout the final week of the season. High counts are usually correlated with active farming in the adjacent fields, both in spring and fall.





**HERG: Herring Gull / Goéland argenté (*Larus argentatus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 8  | Apr 18 | May 25 | 48   | 5 (8%)   | 3    | 10    | Aug 8  | Oct 10 | Oct 27 | 81   | 8 (9%)   | 4    | 12    |
| 2006     | Apr 5  | Apr 24 | May 12 | 38   | 8 (12%)  | 7    | 21    | Sep 13 | Sep 13 | Oct 29 | 47   | 6 (7%)   | 2    | 8     |
| 2007     | Mar 28 | May 10 | Jun 1  | 66   | 15 (21%) | 5    | 35    | Aug 9  | Oct 22 | Oct 30 | 83   | 10 (11%) | 3    | 18    |
| 2008     | Apr 5  | Apr 18 | May 30 | 56   | 10 (14%) | 6    | 18    | Sep 6  | Sep 6  | Oct 27 | 52   | 4 (4%)   | 1    | 4     |
| 2009     | Apr 27 | Apr 27 | Apr 27 | 1    | 1 (1%)   | 1    | 1     | Aug 27 | Oct 26 | Oct 26 | 61   | 4 (4%)   | 7    | 10    |
| 2010     | Apr 28 | May 18 | May 18 | 21   | 2 (3%)   | 4    | 5     | Sep 23 | Oct 3  | Oct 24 | 32   | 8 (9%)   | 5    | 16    |
| 2011     | Apr 24 | May 21 | May 21 | 28   | 3 (4%)   | 3    | 6     | Aug 23 | Aug 23 | Oct 4  | 43   | 5 (5%)   | 2    | 6     |
| 2012     | Apr 18 | May 5  | May 30 | 43   | 6 (9%)   | 3    | 10    | Aug 13 | Aug 13 | Sep 24 | 43   | 2 (2%)   | 1    | 2     |
| 2013     | Mar 29 | Mar 29 | Jun 3  | 67   | 6 (9%)   | 1    | 6     | Sep 14 | Sep 14 | Oct 19 | 36   | 6 (7%)   | 2    | 7     |
| 2014     | Apr 20 | Apr 20 | May 20 | 31   | 6 (9%)   | 3    | 10    | Aug 4  | Oct 2  | Oct 27 | 85   | 8 (9%)   | 2    | 10    |
| Mean     | Apr 13 | Apr 27 | May 21 | 40   | 6 (9%)   | 4    | 12    | Aug 26 | Sep 22 | Oct 20 | 56   | 6 (7%)   | 3    | 9.3   |

| Observed | Nov  | Dec | Jan | Feb | Mar  | Winter | S1  | S2  | S3   | S4  | S5  | S6  | S7  | S8  | S9   | S10  | Spring |
|----------|------|-----|-----|-----|------|--------|-----|-----|------|-----|-----|-----|-----|-----|------|------|--------|
| 2005     |      |     |     |     |      |        |     | 0.3 |      | 0.7 | 0.4 |     |     |     | 0.1  |      | 0.2    |
| 2006     | 0.07 |     | 1.6 |     |      | 0.3    |     | 0.7 |      | 1.7 |     | 0.3 | 0.4 |     |      |      | 0.3    |
| 2007     |      | 0.1 |     |     | 0.2  | 0.07   | 1.0 | 0.3 |      | 1.0 | 0.3 |     | 1.7 | 0.4 |      | 0.3  | 0.5    |
| 2008     | 0.1  | 1.5 |     |     |      | 0.3    |     | 0.1 | 0.1  | 1.3 | 0.1 | 0.1 | 0.4 | 0.1 |      | 0.1  | 0.3    |
| 2009     | 0.1  |     |     |     |      | 0.03   |     |     |      |     | 0.1 |     |     |     |      |      | 0.01   |
| 2010     | 0.2  | 0.1 |     |     |      | 0.08   |     |     |      |     | 0.1 |     |     | 0.6 |      |      | 0.07   |
| 2011     |      |     |     |     |      |        |     |     |      | 0.1 | 0.3 |     |     | 0.4 |      |      | 0.09   |
| 2012     |      |     |     |     |      |        |     |     |      | 0.4 |     | 0.4 | 0.3 | 0.1 |      | 0.1  | 0.1    |
| 2013     |      |     |     |     |      |        | 0.1 | 0.1 |      | 0.1 |     | 0.1 |     | 0.1 |      | 0.1  | 0.09   |
| 2014     |      |     |     |     |      |        |     |     |      | 0.9 | 0.1 |     |     | 0.4 |      |      | 0.1    |
| Mean     | 0.07 | 0.2 | 0.3 |     | 0.02 | 0.1    | 0.1 | 0.1 | 0.01 | 0.6 | 0.2 | 0.1 | 0.3 | 0.2 | 0.01 | 0.07 | 0.2    |

| Observed | Jun | Jul | Summer | F1   | F2   | F3 | F4   | F5   | F6   | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|------|------|----|------|------|------|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     |     |     |        |      | 0.1  |    |      |      |      |     | 0.1 |     | 0.2 | 1.0 | 0.1 | 0.3 | 0.1  |
| 2006     |     |     |        |      |      |    |      |      |      | 0.3 | 0.3 |     |     | 0.3 | 0.1 | 0.1 | 0.09 |
| 2007     |     |     |        |      | 0.1  |    |      |      | 0.1  | 0.1 | 0.1 | 0.1 |     |     | 0.4 | 1.4 | 0.2  |
| 2008     |     |     |        |      |      |    |      |      | 0.1  |     |     |     |     |     | 0.3 | 0.1 | 0.04 |
| 2009     |     |     |        |      |      |    | 0.3  |      |      |     |     |     |     |     |     | 1.1 | 0.1  |
| 2010     |     |     |        |      |      |    |      |      |      |     | 0.1 | 0.3 | 1.6 | 0.1 |     | 0.1 | 0.2  |
| 2011     |     |     |        |      |      |    | 0.3  |      |      | 0.1 |     | 0.1 | 0.3 |     |     |     | 0.07 |
| 2012     |     |     |        |      | 0.1  |    |      |      |      |     | 0.1 |     |     |     |     |     | 0.02 |
| 2013     |     |     |        |      |      |    |      |      |      | 0.3 | 0.1 | 0.3 | 0.1 |     | 0.1 |     | 0.08 |
| 2014     |     |     |        | 0.1  |      |    |      | 0.1  |      | 0.1 |     | 0.3 | 0.1 | 0.3 | 0.1 | 0.1 | 0.1  |
| Mean     |     |     |        | 0.01 | 0.04 |    | 0.06 | 0.01 | 0.03 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.3 | 0.1  |

Herring Gull has been observed at MBO each spring and fall in low numbers, and also in winter from 2006 through 2010. Peak counts have ranged as high as 7 in both spring and fall, but are usually even smaller. In both spring and fall, sightings have spanned the full season, while in winter there have been observations in each month except February. Spring sightings have peaked between weeks 1 and 8, but most often in week 4. Fall has been even more variable, with the peak ranging from week 2 to 13, although sightings are weighted toward the second half of the season overall.

**ICGU: Iceland Gull / Goéland arctique (*Larus glaucooides*)**

| Observed | First | Peak  | Last  | Span | # days | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|-------|-------|-------|------|--------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     | Apr 7 | Apr 7 | Apr 7 | 1    | 1 (2%) | 1    | 1     |       |      |      |      |        |      |       |
| 2006     |       |       |       |      |        |      |       |       |      |      |      |        |      |       |
| 2007     |       |       |       |      |        |      |       |       |      |      |      |        |      |       |
| 2008     |       |       |       |      |        |      |       |       |      |      |      |        |      |       |
| 2009     |       |       |       |      |        |      |       |       |      |      |      |        |      |       |
| 2010     |       |       |       |      |        |      |       |       |      |      |      |        |      |       |
| 2011     |       |       |       |      |        |      |       |       |      |      |      |        |      |       |
| 2012     |       |       |       |      |        |      |       |       |      |      |      |        |      |       |
| 2013     |       |       |       |      |        |      |       |       |      |      |      |        |      |       |
| 2014     |       |       |       |      |        |      |       |       |      |      |      |        |      |       |
| Mean     | Apr 7 | Apr 7 | Apr 7 | 1    | 1 (2%) | 1    | 0.1   |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2   | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|------|----|----|----|----|----|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    | 0.2  |    |    |    |    |    |    |    |     | 0.02   |
| 2006     |     |     |     |     |     |        |    |      |    |    |    |    |    |    |    |     |        |
| 2007     |     |     |     |     |     |        |    |      |    |    |    |    |    |    |    |     |        |
| 2008     |     |     |     |     |     |        |    |      |    |    |    |    |    |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |      |    |    |    |    |    |    |    |     |        |
| 2010     |     |     |     |     |     |        |    |      |    |    |    |    |    |    |    |     |        |
| 2011     |     |     |     |     |     |        |    |      |    |    |    |    |    |    |    |     |        |
| 2012     |     |     |     |     |     |        |    |      |    |    |    |    |    |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |      |    |    |    |    |    |    |    |     |        |
| 2014     |     |     |     |     |     |        |    |      |    |    |    |    |    |    |    |     |        |
| Mean     |     |     |     |     |     |        |    | 0.01 |    |    |    |    |    |    |    |     | <0.01  |

Iceland Gull is one of eight species with only a single individual observed at MBO to date, in this case flying overhead with other gulls on April 7, 2005.

**GDBG: Great Black-backed Gull / Goéland marin (*Larus marinus*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 5  | Apr 7  | Apr 18 | 14   | 3 (5%)  | 2    | 5     | Sep 25 | Oct 11 | Oct 11 | 17   | 3 (3%) | 3    | 5     |
| 2006     | Apr 19 | Apr 19 | May 12 | 24   | 3 (4%)  | 1    | 3     | Sep 6  | Sep 6  | Oct 7  | 32   | 2 (2%) | 1    | 2     |
| 2007     |        |        |        |      |         |      |       | Sep 24 | Oct 23 | Oct 29 | 36   | 4 (4%) | 2    | 5     |
| 2008     | May 30 | May 30 | May 30 | 1    | 1 (1%)  | 2    | 2     | Oct 2  | Oct 2  | Oct 2  | 1    | 1 (1%) | 1    | 1     |
| 2009     |        |        |        |      |         |      |       | Oct 17 | Oct 19 | Oct 23 | 7    | 3 (3%) | 2    | 5     |
| 2010     | Apr 21 | Apr 21 | Apr 21 | 1    | 1 (1%)  | 1    | 1     | Oct 3  | Oct 3  | Oct 3  | 1    | 1 (1%) | 2    | 2     |
| 2011     | Apr 24 | May 1  | May 10 | 17   | 3 (4%)  | 4    | 7     | Sep 27 | Oct 3  | Oct 7  | 11   | 7 (8%) | 2    | 9     |
| 2012     | Apr 19 | Apr 19 | Apr 29 | 11   | 2 (3%)  | 2    | 3     | Sep 22 | Sep 30 | Oct 13 | 22   | 6 (7%) | 6    | 14    |
| 2013     | Mar 29 | Mar 30 | Jun 5  | 69   | 7 (10%) | 12   | 24    | Aug 4  | Aug 4  | Oct 25 | 83   | 7 (8%) | 2    | 8     |
| 2014     | Apr 1  | Apr 1  | Apr 24 | 24   | 4 (6%)  | 4    | 7     | Oct 12 | Oct 12 | Oct 27 | 16   | 3 (3%) | 1    | 3     |
| Mean     | Apr 18 | Apr 19 | May 7  | 20   | 3 (4%)  | 4    | 5.2   | Sep 23 | Sep 29 | Oct 14 | 23   | 4 (4%) | 2    | 5.4   |

| Observed | Nov | Dec | Jan  | Feb | Mar  | Winter | S1  | S2   | S3 | S4  | S5   | S6 | S7   | S8 | S9   | S10 | Spring |
|----------|-----|-----|------|-----|------|--------|-----|------|----|-----|------|----|------|----|------|-----|--------|
| 2005     |     |     |      |     |      |        |     | 0.5  |    | 0.3 |      |    |      |    |      |     | 0.08   |
| 2006     |     |     | 0.4  |     | 0.2  | 0.1    |     |      |    | 0.1 |      |    | 0.3  |    |      |     | 0.04   |
| 2007     |     | 1.0 |      |     |      | 0.2    |     |      |    |     |      |    |      |    |      |     |        |
| 2008     |     |     |      | 0.1 |      | 0.04   |     |      |    |     |      |    |      |    |      | 0.3 | 0.03   |
| 2009     |     |     |      | 0.3 |      | 0.08   |     |      |    |     |      |    |      |    |      |     |        |
| 2010     | 0.6 |     |      | 0.5 |      | 0.3    |     |      |    | 0.1 |      |    |      |    |      |     | 0.01   |
| 2011     |     |     |      |     |      |        |     |      |    | 0.1 | 0.6  |    | 0.3  |    |      |     | 0.1    |
| 2012     | 0.1 |     |      | 0.3 | 0.2  | 0.1    |     |      |    | 0.3 | 0.1  |    |      |    |      |     | 0.04   |
| 2013     |     |     |      |     | 0.07 | 0.02   | 1.9 | 0.3  |    | 0.1 | 0.1  |    |      |    | 0.1  | 0.9 | 0.3    |
| 2014     |     |     |      |     | 0.2  | 0.03   | 0.7 |      |    | 0.4 |      |    |      |    |      |     | 0.1    |
| Mean     | 0.1 | 0.1 | 0.07 | 0.2 | 0.06 | 0.1    | 0.3 | 0.07 |    | 0.2 | 0.09 |    | 0.06 |    | 0.01 | 0.1 | 0.08   |

| Observed | Jun | Jul | Summer | F1   | F2 | F3 | F4 | F5 | F6   | F7 | F8  | F9  | F10 | F11  | F12 | F13  | Fall |
|----------|-----|-----|--------|------|----|----|----|----|------|----|-----|-----|-----|------|-----|------|------|
| 2005     |     |     |        |      |    |    |    |    |      |    | 0.1 |     | 0.2 | 0.5  |     |      | 0.06 |
| 2006     |     |     |        |      |    |    |    |    | 0.1  |    |     |     | 0.1 |      |     |      | 0.02 |
| 2007     |     |     |        |      |    |    |    |    |      |    | 0.3 |     |     |      | 0.3 | 0.1  | 0.05 |
| 2008     |     |     |        |      |    |    |    |    |      |    |     | 0.1 |     |      |     |      | 0.01 |
| 2009     |     |     |        |      |    |    |    |    |      |    |     |     |     |      | 0.7 |      | 0.05 |
| 2010     |     |     |        |      |    |    |    |    |      |    |     |     | 0.3 |      |     |      | 0.02 |
| 2011     |     |     |        |      |    |    |    |    |      |    |     | 0.4 | 0.9 |      |     |      | 0.10 |
| 2012     |     |     |        |      |    |    |    |    |      |    | 0.9 | 0.9 | 0.1 | 0.1  |     |      | 0.2  |
| 2013     |     |     |        | 0.3  |    |    |    |    | 0.1  |    | 0.1 |     |     | 0.1  | 0.3 | 0.1  | 0.09 |
| 2014     |     |     |        |      |    |    |    |    |      |    |     |     |     | 0.1  | 0.1 | 0.1  | 0.03 |
| Mean     |     |     |        | 0.03 |    |    |    |    | 0.03 |    | 0.1 | 0.1 | 0.2 | 0.09 | 0.1 | 0.04 | 0.06 |

Great Black-backed Gull is a rare fall, winter, and spring bird at MBO. In all seasons, observations have spanned the full period, but spring records have been more frequent in the first half of the season, while in fall the majority of sightings have been in the second half. Numbers have not shown a trend over the years.

**CATE: Caspian Tern / Sterne caspienne (*Hydroprogne caspia*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |       |      |      |      |        |      |       | Aug 13 | Aug 13 | Aug 13 | 1    | 1 (1%) | 1    | 1     |
| 2007     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| Mean     |       |      |      |      |        |      |       | Aug 13 | Aug 13 | Aug 13 | 1    | 1 (1%) | 1    | 0.1   |

| Observed | Jun | Jul | Summer | F1 | F2   | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|------|----|----|----|----|----|----|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2006     |     |     |        |    | 0.1  |    |    |    |    |    |    |    |     |     |     |     | 0.01  |
| 2007     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2008     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2009     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2010     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2011     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2012     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2013     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2014     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| Mean     |     |     |        |    | 0.01 |    |    |    |    |    |    |    |     |     |     |     | <0.01 |

Caspian Tern is one of eight species with only a single individual observed once at MBO, flying past on August 13, 2006.

**BLTE: Black Tern / Guifette noire (*Chlidonias niger*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak  | Last  | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|-------|-------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2008     | May 15 | May 15 | May 15 | 1    | 1 (1%) | 1    | 1     |       |       |       |      |        |      |       |
| 2009     | May 8  | May 8  | May 8  | 1    | 1 (1%) | 2    | 2     |       |       |       |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2012     |        |        |        |      |        |      |       | Aug 7 | Aug 7 | Aug 7 | 1    | 1 (1%) | 1    | 1     |
| 2013     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |       |       |       |      |        |      |       |
| Mean     | May 11 | May 11 | May 11 | 1    | 1 (1%) | 2    | 0.3   | Aug 7 | Aug 7 | Aug 7 | 1    | 1 (1%) | 1    | 0.1   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7   | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|------|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  |    |    |     | 0.01   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.3  |      |    |    |     | 0.03   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      |      |    |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.03 | 0.01 |    |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2   | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|------|----|----|----|----|----|----|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2006     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2007     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2008     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2009     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2010     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2011     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2012     |     |     |        |    | 0.1  |    |    |    |    |    |    |    |     |     |     |     | 0.01  |
| 2013     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| 2014     |     |     |        |    |      |    |    |    |    |    |    |    |     |     |     |     |       |
| Mean     |     |     |        |    | 0.01 |    |    |    |    |    |    |    |     |     |     |     | <0.01 |

Black Tern has been observed at MBO on three occasions, twice between May 8 and 15, and once in fall on August 7.

**COTE: Common Tern / Sterne pierregarin (*Sterna hirundo*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       | Aug 10 | Aug 10 | Aug 10 | 1    | 1 (1%) | 2    | 2     |
| 2011     |        |        |        |      |        |      |       | Sep 12 | Sep 12 | Sep 12 | 1    | 1 (1%) | 2    | 2     |
| 2012     |        |        |        |      |        |      |       | Aug 7  | Sep 6  | Sep 6  | 31   | 6 (7%) | 3    | 8     |
| 2013     | May 11 | May 11 | May 11 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2014     | May 31 | May 31 | May 31 | 1    | 1 (1%) | 2    | 2     | Aug 16 | Aug 16 | Aug 29 | 14   | 2 (2%) | 4    | 5     |
| Mean     | May 21 | May 21 | May 21 | 1    | 1 (1%) | 2    | 0.3   | Aug 19 | Aug 26 | Aug 29 | 12   | 2 (3%) | 3    | 1.7   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7   | S8 | S9 | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|------|----|----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  |    |    |      | 0.01   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    | 0.3  | 0.03   |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.01 |    |    | 0.03 | <0.01  |

| Observed | Jun | Jul | Summer | F1   | F2   | F3  | F4   | F5   | F6   | F7   | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|------|------|-----|------|------|------|------|----|----|-----|-----|-----|-----|------|
| 2005     |     |     |        |      |      |     |      |      |      |      |    |    |     |     |     |     |      |
| 2006     |     |     |        |      |      |     |      |      |      |      |    |    |     |     |     |     |      |
| 2007     |     |     |        |      |      |     |      |      |      |      |    |    |     |     |     |     |      |
| 2008     |     |     |        |      |      |     |      |      |      |      |    |    |     |     |     |     |      |
| 2009     |     |     |        |      |      |     |      |      |      |      |    |    |     |     |     |     |      |
| 2010     |     |     |        |      |      | 0.3 |      |      |      |      |    |    |     |     |     |     | 0.02 |
| 2011     |     |     |        |      |      |     |      |      |      | 0.3  |    |    |     |     |     |     | 0.02 |
| 2012     |     |     |        | 0.1  |      | 0.4 | 0.1  |      | 0.4  |      |    |    |     |     |     |     | 0.09 |
| 2013     |     |     |        |      |      |     |      |      |      |      |    |    |     |     |     |     |      |
| 2014     |     |     |        |      |      | 0.6 |      | 0.1  |      |      |    |    |     |     |     |     | 0.05 |
| Mean     |     |     |        | 0.01 | 0.03 | 0.1 | 0.01 | 0.01 | 0.04 | 0.03 |    |    |     |     |     |     | 0.02 |

Common Tern has been observed at MBO more frequently than other terns, with sightings in two spring and four fall seasons. Although sightings have been scarce overall, there appears to be an increasing trend, with all sightings having occurred since 2010, and multiple observations per season only since 2012. All fall observations have been in the first half of the season.

**ROPI: Rock Pigeon / Pigeon biset (*Columba livia*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 7  | Apr 18 | May 16 | 40   | 10 (17%) | 7    | 27    | Aug 3  | Oct 13 | Oct 30 | 89   | 27 (31%) | 51   | 204   |
| 2006     | Mar 28 | Apr 26 | Jun 2  | 67   | 45 (65%) | 23   | 224   | Aug 2  | Sep 17 | Oct 30 | 90   | 49 (54%) | 20   | 137   |
| 2007     | Apr 18 | May 29 | May 31 | 44   | 16 (23%) | 12   | 63    | Aug 8  | Sep 2  | Oct 30 | 84   | 21 (23%) | 16   | 96    |
| 2008     | Mar 29 | May 1  | May 14 | 47   | 14 (20%) | 6    | 35    | Aug 1  | Aug 12 | Oct 28 | 89   | 20 (22%) | 7    | 53    |
| 2009     | Apr 9  | May 12 | Jun 1  | 54   | 9 (13%)  | 49   | 65    | Aug 3  | Oct 27 | Oct 27 | 86   | 33 (36%) | 16   | 120   |
| 2010     | Mar 29 | May 26 | May 31 | 64   | 7 (10%)  | 4    | 15    | Aug 4  | Sep 2  | Oct 30 | 88   | 10 (11%) | 25   | 92    |
| 2011     | Apr 19 | May 2  | May 30 | 42   | 11 (16%) | 6    | 38    | Aug 5  | Oct 27 | Oct 28 | 85   | 31 (34%) | 14   | 116   |
| 2012     | Apr 5  | Apr 5  | May 30 | 56   | 6 (9%)   | 4    | 16    | Aug 10 | Oct 28 | Oct 29 | 81   | 27 (30%) | 22   | 132   |
| 2013     | May 12 | May 12 | May 30 | 19   | 7 (10%)  | 6    | 17    | Aug 2  | Aug 16 | Oct 29 | 89   | 29 (32%) | 24   | 166   |
| 2014     | Apr 21 | May 19 | May 31 | 41   | 10 (15%) | 7    | 33    | Aug 19 | Aug 20 | Oct 28 | 71   | 23 (25%) | 12   | 89    |
| Mean     | Apr 11 | May 6  | May 27 | 47   | 14 (20%) | 12   | 53    | Aug 5  | Sep 19 | Oct 28 | 85   | 27 (30%) | 21   | 121   |

| Observed | Nov | Dec  | Jan | Feb | Mar  | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|------|-----|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     | 0.5 |      |     |     |      | 0.1    |     | 0.8 |     | 1.5 | 0.6 |     | 1.0 | 0.3 |     |     | 0.5    |
| 2006     | 0.1 | 10.7 | 3.0 | 0.5 | 0.7  | 3.2    | 0.3 | 0.7 | 2.0 | 2.6 | 7.6 | 5.1 | 5.1 | 2.3 | 3.0 | 3.4 | 3.2    |
| 2007     | 0.1 | 1.4  | 1.2 |     | 0.2  | 0.5    |     |     |     | 1.4 | 0.9 | 0.4 | 2.4 | 0.9 | 2.1 | 0.9 | 0.9    |
| 2008     | 0.5 | 1.0  |     | 0.4 |      | 0.5    | 0.3 | 0.4 | 0.6 | 0.7 | 1.6 | 0.6 | 0.9 |     |     |     | 0.5    |
| 2009     |     | 5.0  |     |     |      | 0.3    |     | 0.3 | 0.1 | 0.4 | 0.3 |     | 7.0 | 0.9 | 0.1 | 0.1 | 0.9    |
| 2010     | 0.5 |      | 0.2 |     | 0.08 | 0.2    | 0.3 | 0.3 |     |     | 0.4 |     |     | 0.1 | 0.9 | 0.1 | 0.2    |
| 2011     | 2.4 |      | 0.4 |     |      | 0.8    |     |     |     | 0.1 | 1.1 | 1.0 | 0.4 | 1.7 | 0.7 | 0.3 | 0.5    |
| 2012     | 5.9 | 1.3  |     |     |      | 2.6    |     | 0.6 | 0.6 |     | 0.9 |     |     |     |     | 0.3 | 0.2    |
| 2013     |     |      |     |     | 0.2  | 0.06   |     |     |     |     |     |     | 0.9 | 1.1 | 0.1 | 0.3 | 0.2    |
| 2014     |     |      |     |     |      |        |     |     |     | 0.1 |     | 1.1 |     | 1.3 | 1.3 | 1.0 | 0.5    |
| Mean     | 1.0 | 3.4  | 0.7 | 0.1 | 0.2  | 0.9    | 0.1 | 0.3 | 0.3 | 0.7 | 1.3 | 0.8 | 1.8 | 0.9 | 0.8 | 0.7 | 0.8    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11  | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|------|
| 2005     | 0.4 | 0.2 | 0.3    | 0.6 |     | 1.0 | 3.3 | 0.4 | 0.4 | 0.4 | 0.4 | 3.3 | 0.7 | 12.3 | 4.9 | 3.7 | 2.3  |
| 2006     | 0.1 | 1.0 | 0.6    | 1.7 | 1.1 | 2.0 | 1.7 | 1.1 | 2.1 | 3.3 | 0.7 | 0.6 | 1.9 | 0.6  | 1.3 | 1.4 | 1.5  |
| 2007     | 1.0 |     | 0.5    |     | 0.7 | 0.6 | 2.4 | 3.9 | 2.6 | 0.7 |     |     | 0.1 | 0.3  |     | 2.4 | 1.1  |
| 2008     |     |     |        | 1.0 | 1.0 | 2.0 |     |     | 0.4 | 0.7 | 0.1 | 1.0 | 0.6 |      | 0.4 | 0.3 | 0.6  |
| 2009     |     |     |        | 0.3 | 0.7 | 0.9 | 2.1 |     | 2.3 | 0.1 | 0.3 | 0.1 |     | 3.4  | 4.1 | 2.7 | 1.3  |
| 2010     |     |     |        | 0.1 |     | 1.7 | 0.4 | 7.0 | 0.6 |     |     |     |     | 0.1  |     | 3.1 | 1.0  |
| 2011     | 1.0 |     | 0.4    | 0.1 | 0.6 | 1.0 | 0.7 | 0.1 | 1.4 | 0.9 | 1.6 | 1.3 | 2.0 | 1.7  | 1.6 | 3.6 | 1.3  |
| 2012     |     |     |        |     | 0.7 | 2.0 | 1.6 | 1.1 | 5.1 | 0.4 | 0.9 |     | 0.4 | 0.4  |     | 6.1 | 1.5  |
| 2013     |     |     |        | 2.0 | 1.1 | 5.1 | 0.9 | 1.0 | 1.6 | 1.4 | 0.1 | 0.6 | 6.7 | 0.4  |     | 2.7 | 1.8  |
| 2014     |     |     |        |     |     | 2.9 |     | 0.3 | 1.0 | 1.1 | 1.9 | 1.7 | 0.4 | 1.0  | 0.1 | 2.3 | 1.0  |
| Mean     | 0.3 | 0.2 | 0.3    | 0.6 | 0.6 | 1.9 | 1.3 | 1.5 | 1.8 | 0.9 | 0.6 | 0.8 | 1.3 | 1.9  | 1.2 | 2.8 | 1.3  |

Rock Pigeon is uncommon at MBO in all seasons, with sightings scarcest in summer. All observations have been of birds flying past, usually in small flocks. Spring observations are scattered throughout the season, and only in 2006 were Rock Pigeons observed in all weeks. Spring numbers tend to be somewhat higher from late April through May. Summer observations were more regular in the early years, with only one sighting after 2007. Fall sightings are also scattered, with weekly observations throughout the season only in 2006 and 2011, and no defined peak. In both spring and fall, numbers have declined somewhat over time.

**MOD0: Mourning Dove / Tourterelle triste (*Zenaida macroura*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 20 | Jun 2  | 59   | 37 (63%) | 5    | 59    | Aug 1 | Oct 29 | Oct 30 | 91   | 55 (62%) | 75   | 539   |
| 2006     | Mar 28 | Apr 29 | Jun 3  | 68   | 57 (83%) | 11   | 161   | Aug 2 | Aug 25 | Oct 30 | 90   | 72 (79%) | 12   | 231   |
| 2007     | Mar 30 | May 21 | May 31 | 63   | 42 (60%) | 8    | 92    | Aug 1 | Oct 30 | Oct 30 | 91   | 66 (73%) | 16   | 226   |
| 2008     | Mar 30 | May 6  | Jun 4  | 67   | 33 (47%) | 6    | 65    | Aug 1 | Oct 18 | Oct 26 | 87   | 46 (51%) | 8    | 81    |
| 2009     | Mar 28 | Mar 28 | May 27 | 61   | 13 (19%) | 2    | 16    | Aug 2 | Sep 23 | Oct 30 | 90   | 58 (64%) | 13   | 215   |
| 2010     | Mar 28 | Apr 7  | May 28 | 62   | 22 (31%) | 3    | 32    | Aug 1 | Oct 27 | Oct 30 | 91   | 51 (56%) | 18   | 153   |
| 2011     | Mar 28 | Apr 19 | Jun 1  | 66   | 16 (23%) | 4    | 26    | Aug 2 | Oct 11 | Oct 30 | 90   | 59 (65%) | 18   | 203   |
| 2012     | Apr 6  | Apr 18 | May 27 | 52   | 12 (17%) | 3    | 20    | Aug 2 | Oct 27 | Oct 30 | 90   | 73 (80%) | 44   | 727   |
| 2013     | Mar 28 | Mar 28 | Jun 4  | 69   | 42 (60%) | 8    | 71    | Aug 1 | Aug 27 | Oct 30 | 91   | 51 (56%) | 5    | 109   |
| 2014     | Mar 29 | Mar 29 | Jun 1  | 65   | 30 (44%) | 4    | 53    | Aug 3 | Oct 30 | Oct 30 | 89   | 46 (51%) | 12   | 121   |
| Mean     | Mar 30 | Apr 17 | May 31 | 63   | 30 (44%) | 5    | 60    | Aug 1 | Oct 9  | Oct 29 | 90   | 58 (64%) | 22   | 261   |

| Observed | Nov  | Dec  | Jan  | Feb  | Mar | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|------|------|------|------|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     | 0.5  | 1.0  |      | 0.3  | 1.5 | 0.8    |     | 0.7 | 0.6 | 1.5 | 0.3 | 1.4 | 1.1 | 1.9 | 0.7 | 0.8 | 1.0    |
| 2006     | 8.4  | 3.4  | 4.4  | 4.9  | 2.2 | 4.7    | 0.4 | 3.3 | 2.3 | 3.7 | 6.1 | 3.4 | 1.1 | 1.0 | 1.3 | 0.7 | 2.3    |
| 2007     | 2.8  | 6.7  | 14.5 | 5.0  | 4.2 | 5.5    | 0.6 | 0.6 | 0.7 | 3.6 | 1.1 | 1.6 | 1.3 | 1.9 | 1.7 | 0.1 | 1.3    |
| 2008     | 1.4  |      |      |      |     | 0.5    | 0.6 | 0.3 | 1.0 | 1.7 | 1.1 | 1.1 | 1.6 | 1.1 | 0.1 | 0.6 | 0.9    |
| 2009     | 1.9  | 11.0 | 3.3  | 2.2  | 1.3 | 2.4    | 0.6 |     |     | 0.1 | 0.6 | 0.1 |     | 0.4 | 0.4 |     | 0.2    |
| 2010     | 10.7 | 13.9 | 5.7  | 11.4 | 2.8 | 8.8    | 0.6 | 0.7 | 0.1 | 0.9 | 0.3 | 0.3 | 0.7 | 0.4 | 0.6 |     | 0.5    |
| 2011     | 2.7  | 1.0  | 1.8  | 1.8  | 1.6 | 2.0    | 0.3 | 0.1 |     | 0.6 | 0.3 | 0.4 | 0.7 | 0.4 | 0.7 | 0.1 | 0.4    |
| 2012     | 5.1  | 12.0 | 2.7  | 5.7  | 1.6 | 5.3    |     | 0.3 | 0.3 | 0.7 | 0.6 | 0.3 | 0.1 | 0.4 | 0.1 |     | 0.3    |
| 2013     | 2.4  | 5.1  | 16.0 | 9.4  | 3.9 | 7.9    | 2.0 | 1.3 | 1.1 | 1.3 | 0.7 | 0.4 | 1.1 | 1.0 | 0.6 | 0.6 | 1.0    |
| 2014     | 4.0  | 7.5  | 2.1  | 2.4  | 4.2 | 3.6    | 1.7 | 0.9 | 0.3 | 1.1 | 0.6 | 0.7 | 0.6 | 0.7 | 1.1 | 0.2 | 0.8    |
| Mean     | 5.0  | 6.5  | 6.5  | 4.7  | 2.6 | 4.9    | 0.7 | 0.8 | 0.6 | 1.5 | 1.2 | 1.0 | 0.8 | 0.9 | 0.7 | 0.3 | 0.9    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9   | F10  | F11  | F12  | F13  | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| 2005     | 0.3 | 0.7 | 0.5    | 0.3 | 1.4 | 1.6 | 1.0 | 1.3 | 1.1 | 0.6 | 2.3 | 2.0  | 1.7  | 6.7  | 22.3 | 36.3 | 6.1  |
| 2006     | 0.4 | 1.4 | 1.0    | 1.4 | 1.1 | 0.6 | 4.0 | 1.6 | 4.1 | 2.7 | 2.1 | 2.0  | 2.3  | 3.9  | 4.1  | 3.0  | 2.5  |
| 2007     | 0.1 | 0.2 | 0.2    | 1.6 | 1.1 | 1.0 | 2.9 | 0.7 | 1.6 | 2.1 | 3.4 | 1.6  | 2.7  | 2.1  | 4.6  | 6.9  | 2.5  |
| 2008     |     |     |        | 0.7 | 0.3 | 1.1 | 0.6 | 0.6 | 0.4 | 0.3 | 1.9 | 1.7  | 0.4  | 0.9  | 2.1  | 0.6  | 0.9  |
| 2009     | 0.3 | 0.3 | 0.3    | 1.6 | 0.9 | 0.3 | 1.1 | 0.6 | 1.6 | 2.4 | 2.7 | 2.7  | 1.7  | 3.7  | 5.4  | 6.0  | 2.4  |
| 2010     |     | 0.3 | 0.2    | 0.1 | 0.6 |     | 0.4 | 0.4 | 0.4 | 0.9 | 1.3 | 2.3  | 2.7  | 2.3  | 2.7  | 7.7  | 1.7  |
| 2011     | 0.7 | 0.3 | 0.4    | 1.0 | 0.9 | 1.6 | 0.9 | 1.0 | 0.3 | 0.4 | 1.9 | 1.7  | 3.4  | 5.7  | 5.0  | 5.3  | 2.2  |
| 2012     | 0.5 |     | 0.2    | 0.9 | 1.0 | 0.7 | 0.7 | 3.7 | 1.6 | 2.3 | 5.7 | 12.4 | 16.4 | 17.6 | 16.3 | 24.6 | 8.0  |
| 2013     | 0.7 | 0.3 | 0.4    | 1.6 | 1.1 | 1.7 | 1.7 | 1.1 | 0.6 | 1.1 | 1.3 | 0.6  | 0.1  | 1.4  | 1.9  | 1.3  | 1.2  |
| 2014     |     | 0.5 | 0.3    | 1.4 | 1.0 | 0.1 | 0.3 | 1.1 | 1.9 | 0.9 | 0.1 | 0.4  | 0.3  | 1.3  | 2.9  | 5.6  | 1.3  |
| Mean     | 0.3 | 0.6 | 0.4    | 1.1 | 0.9 | 0.9 | 1.4 | 1.2 | 1.4 | 1.4 | 2.3 | 2.8  | 3.2  | 4.5  | 6.7  | 9.7  | 2.9  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|----|----|----|-----|--------|
| 2005   | 1   |     |     |     | 1   | 2      |    |    |    |    |    | 1   |    |    |    |     | 1      |
| 2006   | 8   |     | 1   | 1   | 1   | 11     |    |    |    |    |    |     |    |    |    |     |        |
| 2007   | 4   | 1   | 1   |     |     | 6      |    |    |    |    |    |     |    |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |     |    |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |     |    |    |    |     |        |
| 2010   | 10  |     |     | 6   | 1   | 17     |    |    |    |    |    |     |    |    |    |     |        |
| 2011   | 1   |     |     |     | 1   | 2      |    |    |    |    |    |     |    |    |    |     |        |
| 2012   | 5   |     |     |     |     | 5      |    |    |    |    |    |     |    |    |    |     |        |
| 2013   |     |     |     |     | 1   | 1      |    |    |    |    |    |     |    |    |    |     |        |
| 2014   |     | 1   |     |     |     | 1      |    |    |    |    |    |     |    |    |    |     |        |
| Mean   | 3.6 | 0.3 | 0.7 | 1.2 | 0.6 | 5.0    |    |    |    |    |    | 0.1 |    |    |    |     | 0.1    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |    |     | 1   |     |     | 1    |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        |    |    |    |    |    |    |    |    |    |     | 0.1 |     |     | 0.1  |

Mourning Dove is a permanent resident at MBO, with only occasional gaps in observations over the course of ten years. Numbers are highest in winter when Mourning Doves frequent the feeders, and all of the individuals banded have been in winter except one each in spring and fall. Overall, spring numbers are highest in the second half of April. In fall, counts increase steadily throughout the season, peaking in the second half of October and spilling over into November; nearly two-thirds of individuals banded in winter have been in November. Fall numbers have been relatively consistent over the years except for high counts in 2005 and 2012 that were two to three times the long-term mean.

**YBCU: Yellow-billed Cuckoo / Coulicou à bec jaune (*Coccyzus americanus*)**

| Observed | First | Peak  | Last  | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|-------|-------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Jun 1 | Jun 1 | Jun 1 | 1    | 1 (2%) | 1    | 1     | Oct 12 | Oct 12 | Oct 12 | 1    | 1 (1%) | 1    | 1     |
| 2006     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |       |       |      |        |      |       | Aug 20 | Aug 20 | Aug 20 | 1    | 1 (1%) | 1    | 1     |
| 2011     |       |       |       |      |        |      |       | Sep 4  | Sep 4  | Sep 4  | 1    | 1 (1%) | 1    | 1     |
| 2012     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |       |       |      |        |      |       | Sep 7  | Sep 7  | Sep 7  | 1    | 1 (1%) | 1    | 1     |
| 2014     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | Jun 1 | Jun 1 | Jun 1 | 1    | 1 (2%) | 1    | 0.1   | Sep 10 | Sep 10 | Sep 10 | 1    | 1 (1%) | 1    | 0.4   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    | 0.2  | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    | 0.01 | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2 | F3   | F4 | F5   | F6   | F7 | F8 | F9 | F10 | F11  | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|------|----|------|------|----|----|----|-----|------|-----|-----|-------|
| 2005     |     |     |        |    |    |      |    |      |      |    |    |    |     | 0.2  |     |     | 0.01  |
| 2006     |     |     |        |    |    |      |    |      |      |    |    |    |     |      |     |     |       |
| 2007     |     |     |        |    |    |      |    |      |      |    |    |    |     |      |     |     |       |
| 2008     |     |     |        |    |    |      |    |      |      |    |    |    |     |      |     |     |       |
| 2009     |     |     |        |    |    |      |    |      |      |    |    |    |     |      |     |     |       |
| 2010     |     |     |        |    |    | 0.1  |    |      |      |    |    |    |     |      |     |     | 0.01  |
| 2011     |     |     |        |    |    |      |    | 0.1  |      |    |    |    |     |      |     |     | 0.01  |
| 2012     |     |     |        |    |    |      |    |      |      |    |    |    |     |      |     |     |       |
| 2013     |     |     |        |    |    |      |    |      | 0.1  |    |    |    |     |      |     |     | 0.01  |
| 2014     |     |     |        |    |    |      |    |      |      |    |    |    |     |      |     |     |       |
| Mean     |     |     |        |    |    | 0.01 |    | 0.01 | 0.01 |    |    |    |     | 0.01 |     |     | <0.01 |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |    |     | 1   |     |     | 1    |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        |    |    |    |    |    |    |    |    |    |     | 0.1 |     |     | 0.1  |

Yellow-billed Cuckoo is a rare species at MBO, with just five observations in ten years. The lone spring observation was in early June 2005, while three of the four fall sightings have come between August 20 and September 7. The lone individual observed later, in mid-October, was the only one banded to date.



**BBCU: Black-billed Cuckoo / Coulicou à bec noir (*Coccyzus erythrophthalmus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     | May 28 | May 28 | May 30 | 3    | 3 (4%) | 1    | 3     | Aug 6  | Aug 6  | Aug 6  | 1    | 1 (1%) | 1    | 1     |
| 2007     | May 22 | May 22 | May 22 | 1    | 1 (1%) | 1    | 1     | Aug 27 | Aug 27 | Sep 1  | 6    | 3 (3%) | 1    | 3     |
| 2008     | May 24 | May 25 | Jun 1  | 9    | 5 (7%) | 2    | 7     | Aug 1  | Aug 1  | Sep 1  | 32   | 3 (3%) | 1    | 3     |
| 2009     |        |        |        |      |        |      |       | Sep 5  | Sep 5  | Sep 17 | 13   | 2 (2%) | 1    | 2     |
| 2010     | May 29 | May 29 | May 29 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2011     | May 29 | May 29 | May 31 | 3    | 3 (4%) | 1    | 3     |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       | Aug 13 | Aug 13 | Sep 20 | 39   | 2 (2%) | 1    | 2     |
| 2013     | May 19 | May 19 | Jun 4  | 17   | 2 (3%) | 1    | 2     | Aug 7  | Aug 7  | Oct 8  | 63   | 5 (5%) | 1    | 5     |
| 2014     | May 24 | May 24 | May 25 | 2    | 2 (3%) | 1    | 2     | Aug 18 | Aug 18 | Aug 18 | 1    | 1 (1%) | 1    | 1     |
| Mean     | May 25 | May 25 | May 29 | 5    | 2 (3%) | 1    | 1.9   | Aug 15 | Aug 15 | Sep 5  | 22   | 2 (3%) | 1    | 1.7   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8   | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|------|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |     |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.3 | 0.1 | 0.04   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1  |     |     | 0.01   |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.6 | 0.4 | 0.1    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |     |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.1 |     | 0.01   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.1 | 0.3 | 0.04   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |     |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1  |     | 0.1 | 0.03   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.3 |     | 0.03   |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.03 | 0.1 | 0.1 | 0.03   |

| Observed | Jun  | Jul  | Summer | F1   | F2   | F3   | F4   | F5   | F6   | F7   | F8   | F9   | F10  | F11 | F12 | F13 | Fall |
|----------|------|------|--------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|------|
| 2005     |      | 0.06 | 0.03   |      |      |      |      |      |      |      |      |      |      |     |     |     |      |
| 2006     |      |      |        | 0.1  |      |      |      |      |      |      |      |      |      |     |     |     | 0.01 |
| 2007     |      |      |        |      |      |      | 0.3  | 0.1  |      |      |      |      |      |     |     |     | 0.03 |
| 2008     | 0.2  |      | 0.1    | 0.1  |      | 0.1  |      | 0.1  |      |      |      |      |      |     |     |     | 0.03 |
| 2009     |      |      |        |      |      |      |      |      | 0.1  | 0.1  |      |      |      |     |     |     | 0.02 |
| 2010     |      |      |        |      |      |      |      |      |      |      |      |      |      |     |     |     |      |
| 2011     |      |      |        |      |      |      |      |      |      |      |      |      |      |     |     |     |      |
| 2012     |      |      |        |      | 0.1  |      |      |      |      |      | 0.1  |      |      |     |     |     | 0.02 |
| 2013     |      |      |        | 0.1  |      |      |      |      |      |      |      | 0.1  | 0.4  |     |     |     | 0.05 |
| 2014     |      | 0.5  | 0.3    |      |      | 0.1  |      |      |      |      |      |      |      |     |     |     | 0.01 |
| Mean     | 0.02 | 0.05 | 0.03   | 0.04 | 0.01 | 0.03 | 0.03 | 0.03 | 0.01 | 0.01 | 0.01 | 0.01 | 0.04 |     |     |     | 0.02 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   |     | 1      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |     |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1 | 0.1 |     | 0.2    |

| Banded | Jun | Jul | Summer | F1  | F2 | F3  | F4  | F5  | F6 | F7  | F8  | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|----|-----|-----|-----|----|-----|-----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |    |     |     |     |    |     |     |    |     |     |     |     |      |
| 2006   |     |     |        | 1   |    |     |     |     |    |     |     |    |     |     |     |     | 1    |
| 2007   |     |     |        |     |    |     | 1   |     |    |     |     |    |     |     |     |     | 1    |
| 2008   |     |     |        |     |    | 1   |     | 1   |    |     |     |    |     |     |     |     | 2    |
| 2009   |     |     |        |     |    |     |     |     |    | 1   |     |    |     |     |     |     | 1    |
| 2010   |     |     |        |     |    |     |     |     |    |     |     |    |     |     |     |     |      |
| 2011   |     |     |        |     |    |     |     |     |    |     |     |    |     |     |     |     |      |
| 2012   |     |     |        |     |    |     |     |     |    |     | 1   |    |     |     |     |     | 1    |
| 2013   |     |     |        |     |    |     |     |     |    |     |     |    | 1   |     |     |     | 1    |
| 2014   |     | 1   | 1      |     |    |     |     |     |    |     |     |    |     |     |     |     |      |
| Mean   |     | 0.1 | 0.1    | 0.1 |    | 0.1 | 0.1 | 0.1 |    | 0.1 | 0.1 |    | 0.1 |     |     |     | 0.7  |

Although considerably more numerous than Yellow-billed Cuckoo, Black-billed Cuckoo is also a rare bird at MBO, with observations in only seven spring, three summer, and seven fall seasons. All spring sightings have been in the final three weeks of the season, most commonly in the last week of May. Conversely, fall sightings are scattered across the first ten weeks of the season, and curiously, the seven Black-billed Cuckoos banded in fall have each been banded in a different week. Numbers have been similarly low over the years.

Note: for owls, nocturnal observations (i.e., during the fall owl banding program) are presented as a supplement to the standard results. In some years, the owl banding program has extended for as much as three weeks beyond the end of the Fall Migration Monitoring Program, therefore owl banding and observation results are presented for additional weeks 14 to 16, representing Oct 31 - Nov 6, Nov 7-13, and Nov 14-20, respectively.

**EASO: Eastern Screech-Owl / Petit-duc maculé (*Megascops asio*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       | Sep 18 | Sep 18 | Sep 18 | 1    | 1 (1%) | 1    | 1     |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |      |      |      |        |      |       | Sep 5  | Sep 5  | Sep 17 | 13   | 2 (2%) | 1    | 2     |
| 2014     |       |      |      |      |        |      |       | Sep 29 | Sep 29 | Sep 29 | 1    | 1 (1%) | 1    | 1     |
| Mean     |       |      |      |      |        |      |       | Sep 17 | Sep 17 | Sep 21 | 5    | 1 (1%) | 1    | 0.4   |

| Observed | Nov | Dec | Jan | Feb  | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|------|-----|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005     |     |     |     |      |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2006     |     |     |     |      |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2007     |     |     |     |      |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2008     |     |     |     |      |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009     |     |     |     |      |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2010     |     |     |     |      |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2011     |     |     |     | 0.2  |     | 0.03   |    |    |    |    |    |    |    |    |    |     |        |
| 2012     |     |     |     |      |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2013     |     |     |     |      |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2014     |     |     |     |      |     |        |    |    |    |    |    |    |    |    |    |     |        |
| Mean     |     |     |     | 0.01 |     | <0.01  |    |    |    |    |    |    |    |    |    |     |        |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6   | F7   | F8 | F9   | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|------|------|----|------|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |    |    |    |    |      | 0.1  |    |      |     |     |     |     | 0.01  |
| 2006     |     |     |        |    |    |    |    |    |      |      |    |      |     |     |     |     |       |
| 2007     |     |     |        |    |    |    |    |    |      |      |    |      |     |     |     |     |       |
| 2008     |     |     |        |    |    |    |    |    |      |      |    |      |     |     |     |     |       |
| 2009     |     |     |        |    |    |    |    |    |      |      |    |      |     |     |     |     |       |
| 2010     |     |     |        |    |    |    |    |    |      |      |    |      |     |     |     |     |       |
| 2011     |     |     |        |    |    |    |    |    |      |      |    |      |     |     |     |     |       |
| 2012     |     |     |        |    |    |    |    |    |      |      |    |      |     |     |     |     |       |
| 2013     |     |     |        |    |    |    |    |    | 0.1  | 0.1  |    |      |     |     |     |     | 0.02  |
| 2014     |     |     |        |    |    |    |    |    |      |      |    | 0.1  |     |     |     |     | 0.01  |
| Mean     |     |     |        |    |    |    |    |    | 0.01 | 0.03 |    | 0.01 |     |     |     |     | <0.01 |

| Observed (night) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8  | F9  | F10 | F11 | F12 | F13 | F14  | F15 | F16 | Fall |
|------------------|-----|-----|--------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|------|-----|-----|------|
| 2005             |     |     |        |    |    |    |    |    |    |    |     |     |     | 1   |     |     |      |     |     | 0.1  |
| 2006             |     |     |        |    |    |    |    |    |    |    |     |     |     |     |     |     |      |     |     |      |
| 2007             |     |     |        |    |    |    |    |    |    |    |     |     |     | 1   |     | 1   |      |     |     | 0.2  |
| 2008             |     |     |        |    |    |    |    |    |    |    |     |     |     |     |     |     |      |     |     |      |
| 2009             |     |     |        |    |    |    |    |    |    |    |     |     |     | 1   | 2   | 1   |      |     |     | 0.1  |
| 2010             |     |     |        |    |    |    |    |    |    |    |     | 1   | 2   | 1   | 1   |     |      |     |     | 0.1  |
| 2011             |     |     |        |    |    |    |    |    |    |    |     |     |     |     |     |     |      |     |     |      |
| 2012             |     |     |        |    |    |    |    |    |    |    | 3   | 1   | 1   |     | 1   |     |      |     |     | 0.1  |
| 2013             |     |     |        |    |    |    |    |    |    |    |     | 4   | 1   |     |     |     |      |     |     | 0.1  |
| 2014             |     |     |        |    |    |    |    |    |    |    | 3   |     | 1   | 1   |     |     |      |     |     | 0.2  |
| Mean             |     |     |        |    |    |    |    |    |    |    | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.04 |     |     | 0.1  |

| Banded (night) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9  | F10 | F11 | F12 | F13 | F14 | F15 | F16 | Fall |
|----------------|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005           |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2006           |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2007           |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2008           |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2009           |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     | 1   | 1   |     | 2    |
| 2010           |     |     |        |    |    |    |    |    |    |    |    | 1   |     |     |     |     | 1   |     |     | 2    |
| 2011           |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2012           |     |     |        |    |    |    |    |    |    |    |    | 3   |     |     |     |     |     |     |     | 3    |
| 2013           |     |     |        |    |    |    |    |    |    |    |    |     | 1   |     | 1   |     |     |     |     | 2    |
| 2014           |     |     |        |    |    |    |    |    |    |    |    |     |     | 1   |     |     |     |     |     | 1    |
| Mean           |     |     |        |    |    |    |    |    |    |    |    | 0.5 | 0.1 | 0.1 | 0.1 |     | 0.5 | 0.3 |     | 1.3  |

Eastern Screech-Owl is an uncommon resident species, with a few daytime observations in fall and one in winter, and regular but infrequent detections during the owl banding season each year except 2011.

# **GHOW: Great Horned Owl / Grand-duc d'Amérique (*Bubo virginianus*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 30 | Apr 30 | Apr 30 | 1    | 1 (2%)  | 1    | 1     | Sep 3  | Sep 15 | Sep 15 | 13   | 4 (5%)   | 2    | 5     |
| 2006     | Apr 9  | Apr 9  | May 19 | 41   | 4 (6%)  | 2    | 5     |        |        |        |      |          |      |       |
| 2007     |        |        |        |      |         |      |       | Aug 10 | Aug 10 | Oct 28 | 80   | 2 (2%)   | 1    | 2     |
| 2008     |        |        |        |      |         |      |       |        |        |        |      |          |      |       |
| 2009     |        |        |        |      |         |      |       | Aug 27 | Aug 27 | Aug 27 | 1    | 1 (1%)   | 1    | 1     |
| 2010     | May 14 | May 14 | May 14 | 1    | 1 (1%)  | 1    | 1     | Oct 2  | Oct 2  | Oct 4  | 3    | 2 (2%)   | 1    | 2     |
| 2011     | May 8  | May 8  | May 8  | 1    | 1 (1%)  | 1    | 1     | Aug 8  | Sep 6  | Oct 30 | 84   | 14 (15%) | 2    | 15    |
| 2012     | May 23 | May 23 | May 23 | 1    | 1 (1%)  | 1    | 1     | Aug 1  | Sep 9  | Oct 30 | 91   | 10 (11%) | 2    | 12    |
| 2013     | May 14 | May 14 | May 14 | 1    | 1 (1%)  | 2    | 2     | Aug 6  | Sep 22 | Oct 30 | 86   | 37 (41%) | 2    | 43    |
| 2014     | Apr 20 | Apr 27 | May 19 | 30   | 9 (13%) | 2    | 10    | Aug 22 | Aug 31 | Oct 30 | 70   | 41 (45%) | 3    | 52    |
| Mean     | May 4  | May 5  | May 13 | 11   | 3 (4%)  | 1    | 2.1   | Aug 21 | Sep 7  | Oct 12 | 54   | 14 (15%) | 2    | 13    |

| Observed | Nov | Dec  | Jan | Feb  | Mar  | Winter | S1 | S2   | S3   | S4   | S5   | S6   | S7   | S8   | S9   | S10 | Spring |
|----------|-----|------|-----|------|------|--------|----|------|------|------|------|------|------|------|------|-----|--------|
| 2005     |     |      |     |      |      |        |    |      |      |      | 0.1  |      |      |      |      |     | 0.02   |
| 2006     |     |      |     |      |      |        |    | 0.3  | 0.1  |      |      | 0.1  |      | 0.1  |      |     | 0.07   |
| 2007     |     |      |     |      |      |        |    |      |      |      |      |      |      |      |      |     |        |
| 2008     |     |      |     |      |      |        |    |      |      |      |      |      |      |      |      |     |        |
| 2009     |     |      |     |      |      |        |    |      |      |      |      |      |      |      |      |     |        |
| 2010     |     |      |     |      |      |        |    |      |      |      |      |      | 0.1  |      |      |     | 0.01   |
| 2011     |     |      |     | 0.3  |      | 0.05   |    |      |      |      |      | 0.1  |      |      |      |     | 0.01   |
| 2012     |     | 0.3  |     |      |      | 0.04   |    |      |      |      |      |      |      |      | 0.1  |     | 0.01   |
| 2013     |     |      |     |      | 0.07 | 0.02   |    |      |      |      |      |      | 0.3  |      |      |     | 0.03   |
| 2014     |     |      |     |      | 0.2  | 0.03   |    |      |      | 0.6  | 0.6  | 0.1  |      | 0.1  |      |     | 0.1    |
| Mean     |     | 0.02 |     | 0.03 | 0.02 | 0.01   |    | 0.03 | 0.01 | 0.06 | 0.07 | 0.04 | 0.04 | 0.03 | 0.01 |     | 0.03   |

| Observed (day) | Jun | Jul  | Summer | F1   | F2   | F3   | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------------|-----|------|--------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005           |     |      |        |      |      |      |     | 0.1 | 0.3 | 0.3 |     |     |     |     |     |     | 0.06 |
| 2006           |     |      |        |      |      |      |     |     |     |     |     |     |     |     |     |     |      |
| 2007           |     |      |        |      | 0.1  |      |     |     |     |     |     |     |     |     |     | 0.1 | 0.02 |
| 2008           |     |      |        |      |      |      |     |     |     |     |     |     |     |     |     |     |      |
| 2009           |     |      |        |      |      |      | 0.1 |     |     |     |     |     |     |     |     |     | 0.01 |
| 2010           |     | 0.2  | 0.1    |      |      |      |     |     |     |     |     | 0.1 | 0.1 |     |     |     | 0.02 |
| 2011           |     |      |        |      | 0.1  | 0.1  |     | 0.1 | 0.3 | 0.3 |     | 0.4 | 0.1 | 0.3 | 0.1 | 0.1 | 0.2  |
| 2012           |     |      |        | 0.1  |      |      |     |     | 0.4 | 0.1 | 0.1 | 0.3 | 0.3 |     |     | 0.3 | 0.1  |
| 2013           |     |      |        | 0.1  | 0.1  | 0.1  |     |     | 0.6 | 0.4 | 0.7 | 0.9 | 0.9 | 0.9 | 0.7 | 0.7 | 0.5  |
| 2014           |     |      |        |      |      |      | 1.0 | 1.4 | 0.7 | 0.6 | 1.0 | 1.0 | 0.6 | 0.1 | 0.3 | 0.7 | 0.6  |
| Mean           |     | 0.02 | <0.01  | 0.03 | 0.04 | 0.03 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1  |

| Observed (night) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9  | F10 | F11 | F12 | F13 | F14 | F15 | F16 | Fall |
|------------------|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005             |     |     |        |    |    |    |    |    |    |    |    |     |     | 1.0 |     |     |     |     |     | 0.3  |
| 2006             |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2007             |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2008             |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2009             |     |     |        |    |    |    |    |    |    |    |    | 1.0 |     | 0.5 | 0.3 | 0.6 | 0.3 | 0.2 |     | 0.3  |
| 2010             |     |     |        |    |    |    |    |    |    |    |    | 0.2 |     | 0.2 |     | 0.3 |     |     |     | 0.1  |
| 2011             |     |     |        |    |    |    |    |    |    |    |    |     | 0.4 | 0.8 | 0.6 | 0.7 | 0.3 | 0.7 | 0.5 | 0.5  |
| 2012             |     |     |        |    |    |    |    |    |    |    |    | 0.5 | 0.1 | 0.5 | 0.3 | 0.7 | 0.6 | 0.2 |     | 0.3  |
| 2013             |     |     |        |    |    |    |    |    |    |    |    | 1.4 | 1.8 | 1.0 | 1.0 | 1.0 | 1.0 |     |     | 1.2  |
| 2014             |     |     |        |    |    |    |    |    |    |    |    | 0.9 | 0.3 | 1.0 | 0.3 | 0.8 | 0.8 |     |     | 0.7  |
| Mean             |     |     |        |    |    |    |    |    |    |    |    | 0.6 | 0.4 | 0.5 | 0.4 | 0.7 | 0.5 | 0.3 | 0.1 | 0.5  |

Great Horned Owl is the most regularly observed owl at MBO, with records in all seasons, mostly the local pair and their offspring. Most daytime observations are in early morning as the nets are being opened. The peak of daytime observations in mid-late fall seems to coincidentally align with the saw-whet owl banding season, during which Great Horned Owls are also regularly observed. The number observed at night has been higher since 2011, but this might in part reflect increased attention to noting nocturnal observations. However, daytime observations have also become more frequent over this period, suggesting perhaps that the local breeding owls (and/or their offspring) are spending more time at/near MBO than in previous years. This in turn may be due to the Great Horned Owl that has been housed in the back area of the Ecomuseum in recent years, and receives visits from its wild neighbours. Great Horned Owl is one of just two owl species observed at MBO but not banded; this may simply be a function of their size relative to the nets used for owl banding.

**BDOW: Barred Owl / Chouette rayée (*Strix varia*)**

| Observed | First | Peak  | Last  | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|-------|-------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2009     | May 2 | May 2 | May 2 | 1    | 1 (1%) | 1    | 1     | Sep 25 | Sep 25 | Oct 19 | 25   | 2 (2%) | 1    | 2     |
| 2010     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | May 2 | May 2 | May 2 | 1    | 1 (1%) | 1    | 0.1   | Sep 25 | Sep 25 | Oct 19 | 25   | 2 (2%) | 1    | 0.2   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|----|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |    |    |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |    |    |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |    |    |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      |    |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.1  |    |    |    |     | 0.01   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      |    |    |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      |    |    |    |     |        |
| 0.04     |     |     |     |     |     |        |    |    |    |    |    |      |    |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |    |    |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      |    |    |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.01 |    |    |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8   | F9 | F10 | F11 | F12  | F13 | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|----|------|----|-----|-----|------|-----|-------|
| 2005     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |      |     |       |
| 2006     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |      |     |       |
| 2007     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |      |     |       |
| 2008     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |      |     |       |
| 2009     |     |     |        |    |    |    |    |    |    |    | 0.1  |    |     |     | 0.1  |     | 0.02  |
| 2010     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |      |     |       |
| 2011     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |      |     |       |
| 2012     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |      |     |       |
| 2013     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |      |     |       |
| 2014     |     |     |        |    |    |    |    |    |    |    |      |    |     |     |      |     |       |
| Mean     |     |     |        |    |    |    |    |    |    |    | 0.01 |    |     |     | 0.01 |     | <0.01 |

| Observed (night) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9   | F10  | F11  | F12 | F13 | F14  | F15 | F16 | Fall |
|------------------|-----|-----|--------|----|----|----|----|----|----|----|----|------|------|------|-----|-----|------|-----|-----|------|
| 2005             |     |     |        |    |    |    |    |    |    |    |    |      |      |      |     |     |      |     |     |      |
| 2006             |     |     |        |    |    |    |    |    |    |    |    |      |      |      |     |     |      |     |     |      |
| 2007             |     |     |        |    |    |    |    |    |    |    |    | 0.3  |      | 1.0  |     |     |      |     |     | 0.2  |
| 2008             |     |     |        |    |    |    |    |    |    |    |    |      |      |      |     |     |      |     |     |      |
| 2009             |     |     |        |    |    |    |    |    |    |    |    |      | 0.3  |      |     |     |      |     |     | 0.03 |
| 2010             |     |     |        |    |    |    |    |    |    |    |    |      |      |      |     |     |      |     |     |      |
| 2011             |     |     |        |    |    |    |    |    |    |    |    |      |      |      |     |     |      |     |     |      |
| 2012             |     |     |        |    |    |    |    |    |    |    |    |      |      | 0.2  |     |     | 0.1  |     |     | 0.04 |
| 2013             |     |     |        |    |    |    |    |    |    |    |    |      |      |      |     |     |      |     |     |      |
| 2014             |     |     |        |    |    |    |    |    |    |    |    |      |      |      |     |     |      |     |     |      |
| Mean             |     |     |        |    |    |    |    |    |    |    |    | 0.02 | 0.02 | 0.04 |     |     | 0.03 |     |     | 0.02 |

| Banded (night) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | F14 | F15 | F16 | Fall |
|----------------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2006           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2007           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2008           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2009           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2010           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2011           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2012           |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 1   |     |     |     |     | 1    |
| 2013           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2014           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| Mean           |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 0.1 |     |     |     |     | 0.1  |

Barred Owl is a rare species at MBO, with just three daytime sightings (all in 2009), and five during the owl banding program in 2007, 2009, and 2012. One of the two individuals detected in 2012 was banded.

**GGOW: Great Gray Owl / Chouette lapone (*Strix nebulosa*)**

| Observed | Nov | Dec | Jan | Feb  | Mar  | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|------|------|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005     |     |     |     |      | 0.3  | 0.07   |    |    |    |    |    |    |    |    |    |     |        |
| 2006     |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2007     |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2008     |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009     |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2010     |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2011     |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2012     |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2013     |     |     | 0.6 | 0.2  |      | 0.2    |    |    |    |    |    |    |    |    |    |     |        |
| 2014     |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| Mean     |     |     | 0.1 | 0.01 | 0.01 | 0.03   |    |    |    |    |    |    |    |    |    |     |        |

Great Gray Owl is the only one of the seven owl species recorded at MBO that has not been observed during the fall owl monitoring program. Sightings have been limited to a single individual in March 2005 and at least two birds in early 2013, corresponding to the two most recent major winter irruptions of the species.

**LEOW: Long-eared Owl / Hibou moyen-duc (*Asio otus*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |      |      |      |        |      |       | Oct 26 | Oct 26 | Oct 26 | 1    | 1 (1%) | 1    | 1     |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| Mean     |       |      |      |      |        |      |       | Oct 26 | Oct 26 | Oct 26 | 1    | 1 (1%) | 1    | 0.1   |

| Observed (day) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13  | Fall  |
|----------------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|------|-------|
| 2005           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2006           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2007           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2008           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2009           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.1  | 0.01  |
| 2010           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2011           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2012           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2013           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2014           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| Mean           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.01 | <0.01 |

| Observed (night) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9  | F10 | F11 | F12 | F13 | F14 | F15 | F16 | Fall |
|------------------|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005             |     |     |        |    |    |    |    |    |    |    |    |     |     |     | 0.5 |     |     |     |     | 0.1  |
| 2006             |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2007             |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2008             |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2009             |     |     |        |    |    |    |    |    |    |    |    |     |     | 1.0 | 0.3 | 0.8 | 0.3 |     |     | 0.4  |
| 2010             |     |     |        |    |    |    |    |    |    |    |    | 0.8 | 2.3 | 1.2 | 1.0 | 1.7 | 0.8 | 0.6 |     | 1.2  |
| 2011             |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2012             |     |     |        |    |    |    |    |    |    |    |    | 0.2 |     | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 |     | 0.3  |
| 2013             |     |     |        |    |    |    |    |    |    |    |    |     |     |     | 0.2 |     |     |     |     | 0.03 |
| 2014             |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     | 0.4 |     |     | 0.06 |
| Mean             |     |     |        |    |    |    |    |    |    |    |    | 0.1 | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 |     | 0.3  |

| Banded (night) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | F14 | F15 | F16 | Fall |
|----------------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2006           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2007           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2008           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2009           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2010           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2011           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2012           |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 2   |     |     |     |     | 2    |
| 2013           |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 1   |     |     |     |     | 1    |
| 2014           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| Mean           |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 0.4 |     |     |     |     | 0.4  |

Long-eared Owl has only been observed once at MBO during the day, but has been recorded frequently during the owl banding program, most notably in 2009 and especially 2010. Only 3 individuals have been banded, all in week 12 in 2012 and 2013.

**NSWO: Northern Saw-whet Owl / Petite Nyctale (*Aegolius acadicus*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       | Oct 4  | Oct 4  | Oct 23 | 20   | 2 (2%) | 1    | 2     |
| 2012     |       |      |      |      |        |      |       | Sep 16 | Sep 16 | Oct 23 | 38   | 6 (7%) | 2    | 10    |
| 2013     |       |      |      |      |        |      |       | Sep 7  | Sep 7  | Sep 7  | 1    | 1 (1%) | 1    | 1     |
| 2014     |       |      |      |      |        |      |       | Aug 21 | Aug 21 | Oct 22 | 63   | 3 (3%) | 1    | 3     |
| Mean     |       |      |      |      |        |      |       | Sep 11 | Sep 11 | Oct 11 | 30   | 3 (3%) | 1    | 1.6   |

| Observed (day) | Jun | Jul | Summer | F1 | F2 | F3   | F4 | F5 | F6   | F7   | F8 | F9   | F10  | F11  | F12  | F13 | Fall |
|----------------|-----|-----|--------|----|----|------|----|----|------|------|----|------|------|------|------|-----|------|
| 2005           |     |     |        |    |    |      |    |    |      |      |    |      |      |      |      |     |      |
| 2006           |     |     |        |    |    |      |    |    |      |      |    |      |      |      |      |     |      |
| 2007           |     |     |        |    |    |      |    |    |      |      |    |      |      |      |      |     |      |
| 2008           |     |     |        |    |    |      |    |    |      |      |    |      |      |      |      |     |      |
| 2009           |     |     |        |    |    |      |    |    |      |      |    |      |      |      |      |     |      |
| 2010           |     |     |        |    |    |      |    |    |      |      |    |      |      |      |      |     |      |
| 2011           |     |     |        |    |    |      |    |    |      |      |    |      | 0.1  |      | 0.1  |     | 0.02 |
| 2012           |     |     |        |    |    |      |    |    |      | 0.3  |    | 0.7  |      | 0.1  | 0.3  |     | 0.1  |
| 2013           |     |     |        |    |    |      |    |    | 0.1  |      |    |      |      |      |      |     | 0.01 |
| 2014           |     |     |        |    |    | 0.1  |    |    |      |      |    |      |      |      | 0.3  |     | 0.03 |
| Mean           |     |     |        |    |    | 0.01 |    |    | 0.01 | 0.03 |    | 0.07 | 0.01 | 0.01 | 0.07 |     | 0.02 |

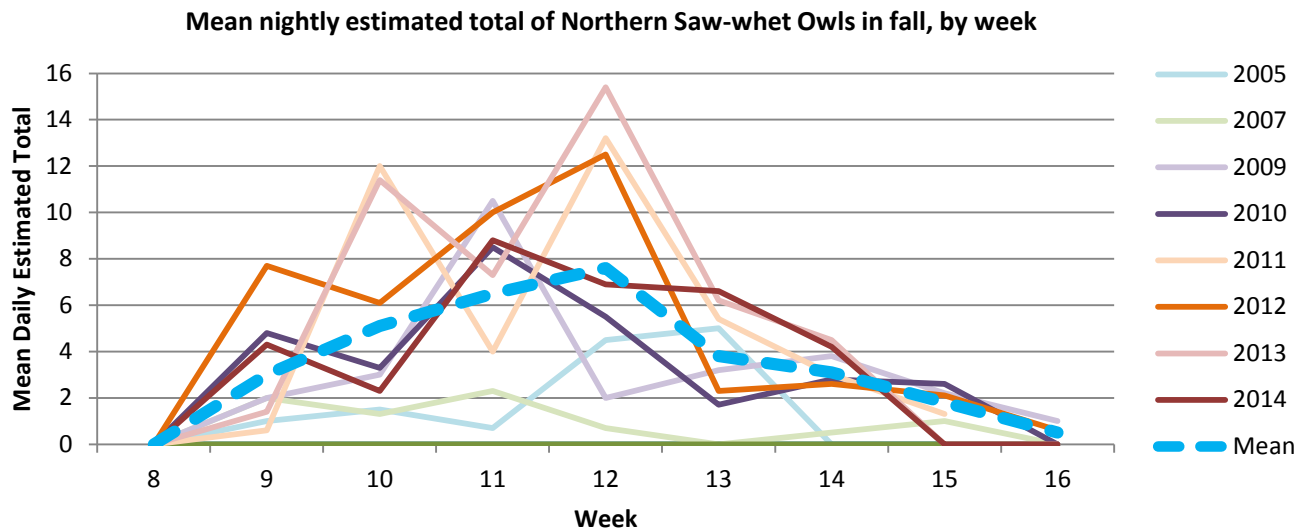
| Observed (night) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9  | F10  | F11  | F12  | F13 | F14 | F15 | F16 | Fall |
|------------------|-----|-----|--------|----|----|----|----|----|----|----|----|-----|------|------|------|-----|-----|-----|-----|------|
| 2005             |     |     |        |    |    |    |    |    |    |    |    | 1.0 | 1.5  | 0.7  | 4.5  | 5.0 |     |     |     | 2.4  |
| 2006             |     |     |        |    |    |    |    |    |    |    |    |     |      |      |      |     |     |     |     |      |
| 2007             |     |     |        |    |    |    |    |    |    |    |    | 2.0 | 1.3  | 2.3  | 0.7  |     | 0.5 | 1.0 |     | 1.5  |
| 2008             |     |     |        |    |    |    |    |    |    |    |    |     |      |      |      |     |     |     |     |      |
| 2009             |     |     |        |    |    |    |    |    |    |    |    | 2.0 | 3.0  | 10.5 | 2.0  | 3.2 | 3.8 | 2.2 | 1.0 | 3.7  |
| 2010             |     |     |        |    |    |    |    |    |    |    |    | 4.8 | 3.3  | 8.5  | 5.5  | 1.7 | 2.8 | 2.6 |     | 4.5  |
| 2011             |     |     |        |    |    |    |    |    |    |    |    | 0.6 | 12.0 | 4.0  | 13.2 | 5.4 | 3.0 | 1.3 |     | 5.5  |
| 2012             |     |     |        |    |    |    |    |    |    |    |    | 7.7 | 6.1  | 10.0 | 12.5 | 2.3 | 2.6 | 2.1 | 0.6 | 5.4  |
| 2013             |     |     |        |    |    |    |    |    |    |    |    | 1.4 | 11.4 | 7.3  | 15.4 | 6.2 | 4.5 |     |     | 6.1  |
| 2014             |     |     |        |    |    |    |    |    |    |    |    | 4.3 | 2.3  | 8.8  | 6.9  | 6.6 | 4.2 |     |     | 5.6  |
| Mean             |     |     |        |    |    |    |    |    |    |    |    | 3.0 | 5.1  | 6.5  | 7.6  | 3.8 | 3.1 | 1.8 | 0.5 | 4.3  |

| Banded (day) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7  | F8 | F9  | F10 | F11 | F12 | F13 | Fall |
|--------------|-----|-----|--------|----|----|----|----|----|----|-----|----|-----|-----|-----|-----|-----|------|
| 2005         |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| 2006         |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| 2007         |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| 2008         |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| 2009         |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| 2010         |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| 2011         |     |     |        |    |    |    |    |    |    |     |    |     |     | 1   |     | 1   | 2    |
| 2012         |     |     |        |    |    |    |    |    |    | 1   |    | 2   |     |     | 1   | 1   | 5    |
| 2013         |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| 2014         |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| Mean         |     |     |        |    |    |    |    |    |    | 0.1 |    | 0.2 | 0.1 | 0.1 | 0.2 |     | 0.7  |

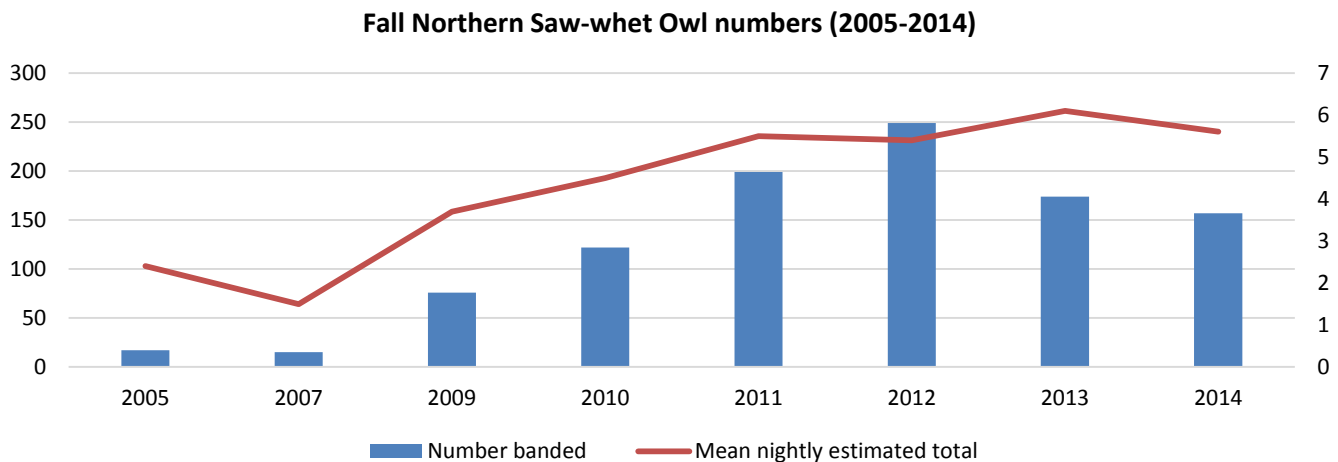
| Banded (night) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9   | F10  | F11  | F12  | F13  | F14 | F15 | F16 | Fall  |
|----------------|-----|-----|--------|----|----|----|----|----|----|----|----|------|------|------|------|------|-----|-----|-----|-------|
| 2005           |     |     |        |    |    |    |    |    |    |    |    | 1    | 3    | 2    | 7    | 4    |     |     |     | 17    |
| 2006           |     |     |        |    |    |    |    |    |    |    |    |      |      |      |      |      |     |     |     |       |
| 2007           |     |     |        |    |    |    |    |    |    |    |    | 1    | 4    | 6    | 2    |      | 1   | 1   |     | 15    |
| 2008           |     |     |        |    |    |    |    |    |    |    |    |      |      |      |      |      |     |     |     |       |
| 2009           |     |     |        |    |    |    |    |    |    |    |    | 2    | 6    | 42   | 7    | 9    | 6   | 4   |     | 76    |
| 2010           |     |     |        |    |    |    |    |    |    |    |    | 19   | 16   | 39   | 24   | 1    | 11  | 13  |     | 123   |
| 2011           |     |     |        |    |    |    |    |    |    |    |    | 2    | 75   | 14   | 63   | 30   | 9   | 4   |     | 197   |
| 2012           |     |     |        |    |    |    |    |    |    |    |    | 41   | 42   | 57   | 73   | 12   | 10  | 11  | 3   | 249   |
| 2013           |     |     |        |    |    |    |    |    |    |    |    | 8    | 50   | 42   | 30   | 30   | 14  |     |     | 174   |
| 2014           |     |     |        |    |    |    |    |    |    |    |    | 28   | 7    | 40   | 36   | 30   | 16  |     |     | 157   |
| Mean           |     |     |        |    |    |    |    |    |    |    |    | 12.8 | 25.4 | 30.3 | 30.3 | 14.5 | 9.6 | 6.6 | 1.0 | 126.1 |

Northern Saw-whet Owl is by far the most frequently banded owl at MBO, with 1015 individuals banded over this ten-year period, all of them during fall migration, and all but 7 of them during targeted banding at night, using an audiolure. Diurnal records have been annual since 2011, but there are no records outside of fall.





The figure above shows that the peak of Northern Saw-whet Owl migration is variable, and that in most years there are in fact two peaks, 2-3 weeks apart. However, the overall numbers show a steady increase until week 12, and then a sharper decline thereafter. The figure below highlights the variability in number banded annually, although this is biased by the fact that effort has been significantly higher since 2010 than in previous years. The mean number of owls observed per night (strongly influenced by the number banded) provides a better indication of numbers in relation to effort, and shows a more modest amount of variability, especially over the past four years. Lower counts in earlier years may in part reflect more limited effort during the peak of migration. This contrasts with results from many other saw-whet owl banding programs in northeastern North America, where there is a fairly pronounced four-year cycle.



**BOOW: Boreal Owl / Nyctale de Tengmalm (*Aegolius funereus*)**

| Observed (night) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | F14 | F15 | F16 | Fall |
|------------------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005             |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2006             |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2007             |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2008             |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2009             |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2010             |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2011             |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2012             |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     | 0.8 |     |     | 0.08 |
| 2013             |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2014             |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| Mean             |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     | 0.1 |     |     | 0.02 |

| Banded (night) | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | F14 | F15 | F16 | Fall |
|----------------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2006           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2007           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2008           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2009           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2010           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2011           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2012           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     | 4   |     |     | 4    |
| 2013           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| 2014           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |      |
| Mean           |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     | 0.6 |     |     | 0.5  |

The only confirmed records of Boreal Owl at MBO are four individuals banded in week 14 of 2012, a season when Boreal Owls were migrating in strong numbers farther north, and a Boreal Owl broadcast was being used at a secondary site within MBO.

**CONI: Common Nighthawk / Engoulevent d'Amérique (*Chordeiles minor*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |      |      |      |        |      |       | Aug 27 | Aug 27 | Aug 27 | 1    | 1 (1%) | 1    | 1     |
| 2009     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |      |      |      |        |      |       | Aug 18 | Aug 18 | Aug 21 | 4    | 2 (2%) | 1    | 2     |
| 2011     |       |      |      |      |        |      |       | Aug 22 | Aug 22 | Sep 19 | 29   | 2 (2%) | 1    | 2     |
| 2012     |       |      |      |      |        |      |       | Aug 27 | Aug 27 | Sep 14 | 19   | 5 (5%) | 3    | 7     |
| 2013     |       |      |      |      |        |      |       | Aug 24 | Aug 24 | Aug 24 | 1    | 1 (1%) | 1    | 1     |
| 2014     |       |      |      |      |        |      |       | Aug 21 | Sep 2  | Sep 6  | 17   | 4 (4%) | 14   | 19    |
| Mean     |       |      |      |      |        |      |       | Aug 23 | Aug 25 | Sep 3  | 12   | 2 (3%) | 4    | 3.2   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3   | F4  | F5  | F6   | F7   | F8   | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|----|----|------|-----|-----|------|------|------|----|-----|-----|-----|-----|------|
| 2005     |     |     |        |    |    |      |     |     |      |      |      |    |     |     |     |     |      |
| 2006     |     |     |        |    |    |      |     |     |      |      |      |    |     |     |     |     |      |
| 2007     |     |     |        |    |    |      |     |     |      |      |      |    |     |     |     |     |      |
| 2008     |     |     |        |    |    |      | 0.1 |     |      |      |      |    |     |     |     |     | 0.01 |
| 2009     |     |     |        |    |    |      |     |     |      |      |      |    |     |     |     |     |      |
| 2010     |     |     |        |    |    | 0.3  |     |     |      |      |      |    |     |     |     |     | 0.02 |
| 2011     |     |     |        |    |    |      | 0.1 |     |      |      | 0.1  |    |     |     |     |     | 0.02 |
| 2012     |     |     |        |    |    |      | 0.6 |     | 0.3  | 0.1  |      |    |     |     |     |     | 0.08 |
| 2013     |     |     |        |    |    |      | 0.1 |     |      |      |      |    |     |     |     |     | 0.01 |
| 2014     |     |     |        |    |    | 0.1  |     | 2.1 | 0.4  |      |      |    |     |     |     |     | 0.2  |
| Mean     |     |     |        |    |    | 0.04 | 0.1 | 0.2 | 0.07 | 0.01 | 0.01 |    |     |     |     |     | 0.04 |

Common Nighthawk is a generally rare fall migrant, with annual observations since 2010, as well as one earlier one in 2008. All sightings have been between August 18 and September 19.

**CHSW: Chimney Swift / Martinet ramoneur (*Chaetura pelagica*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 8  | May 8  | May 8  | 1    | 1 (2%) | 2    | 2     | Aug 2  | Aug 11 | Sep 20 | 50   | 10 (11%) | 4    | 18    |
| 2006     | May 18 | May 18 | May 25 | 8    | 3 (4%) | 1    | 3     | Aug 1  | Aug 22 | Aug 23 | 23   | 10 (11%) | 7    | 29    |
| 2007     | May 19 | May 19 | May 19 | 1    | 1 (1%) | 3    | 3     | Aug 1  | Aug 3  | Sep 8  | 39   | 16 (18%) | 4    | 36    |
| 2008     | May 9  | May 9  | May 29 | 21   | 5 (7%) | 2    | 8     | Aug 1  | Aug 14 | Sep 4  | 35   | 13 (14%) | 4    | 23    |
| 2009     | May 21 | May 21 | May 26 | 6    | 2 (3%) | 1    | 2     | Aug 12 | Aug 21 | Aug 26 | 15   | 6 (7%)   | 25   | 44    |
| 2010     | May 26 | May 26 | May 26 | 1    | 1 (1%) | 2    | 2     | Aug 4  | Aug 4  | Aug 4  | 1    | 1 (1%)   | 1    | 1     |
| 2011     | May 24 | May 24 | May 24 | 1    | 1 (1%) | 1    | 1     | Aug 4  | Aug 11 | Aug 19 | 16   | 9 (10%)  | 8    | 38    |
| 2012     | May 6  | May 6  | May 21 | 16   | 2 (3%) | 1    | 2     | Aug 1  | Aug 10 | Aug 22 | 22   | 10 (11%) | 16   | 51    |
| 2013     | May 17 | May 17 | May 19 | 3    | 2 (3%) | 2    | 3     | Aug 11 | Aug 16 | Aug 16 | 6    | 3 (3%)   | 6    | 8     |
| 2014     | May 16 | May 16 | Jun 1  | 17   | 3 (4%) | 1    | 3     | Aug 19 | Aug 19 | Aug 19 | 1    | 1 (1%)   | 5    | 5     |
| Mean     | May 16 | May 16 | May 22 | 8    | 2 (3%) | 2    | 2.9   | Aug 5  | Aug 13 | Aug 25 | 21   | 8 (9%)   | 8    | 25    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7   | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|------|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    | 0.3  |      |     |     |      | 0.03   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.1 | 0.3 |      | 0.04   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.4 |     |      | 0.04   |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      | 0.7  | 0.1 | 0.3 |      | 0.1    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.1 | 0.1 |      | 0.03   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      |      |     | 0.3 |      | 0.03   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      |      |     | 0.1 |      | 0.01   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    | 0.1  |      | 0.1 |     |      | 0.03   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.4 |     |      | 0.04   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.3 |     | 0.2  | 0.04   |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.04 | 0.07 | 0.2 | 0.1 | 0.01 | 0.04   |

| Observed | Jun  | Jul  | Summer | F1  | F2  | F3  | F4  | F5   | F6   | F7 | F8   | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|------|------|--------|-----|-----|-----|-----|------|------|----|------|----|-----|-----|-----|-----|------|
| 2005     |      | 0.06 | 0.03   | 0.4 | 1.4 | 0.3 | 0.3 |      |      |    | 0.1  |    |     |     |     |     | 0.2  |
| 2006     |      | 0.3  | 0.2    | 1.7 | 0.6 | 0.7 | 1.1 |      |      |    |      |    |     |     |     |     | 0.3  |
| 2007     |      |      |        | 2.0 | 1.4 | 1.0 | 0.6 |      | 0.1  |    |      |    |     |     |     |     | 0.4  |
| 2008     |      |      |        | 0.9 | 1.4 | 0.9 |     | 0.1  |      |    |      |    |     |     |     |     | 0.3  |
| 2009     |      |      |        |     | 0.3 | 3.7 | 2.3 |      |      |    |      |    |     |     |     |     | 0.5  |
| 2010     |      |      |        | 0.1 |     |     |     |      |      |    |      |    |     |     |     |     | 0.01 |
| 2011     |      | 0.8  | 0.4    | 2.1 | 1.4 | 1.9 |     |      |      |    |      |    |     |     |     |     | 0.4  |
| 2012     | 0.3  |      | 0.1    | 0.9 | 4.6 | 1.6 | 0.3 |      |      |    |      |    |     |     |     |     | 0.6  |
| 2013     |      |      |        |     | 0.1 | 1.0 |     |      |      |    |      |    |     |     |     |     | 0.09 |
| 2014     |      |      |        |     |     | 0.7 |     |      |      |    |      |    |     |     |     |     | 0.05 |
| Mean     | 0.02 | 0.1  | 0.07   | 0.8 | 1.1 | 1.2 | 0.5 | 0.01 | 0.01 |    | 0.01 |    |     |     |     |     | 0.3  |

Chimney Swift is a rare spring and summer migrant at MBO, with a few summer sightings. Except for three early records between May 6 and 9, all spring sightings have been between May 16 and June 1, with numbers fairly stable across years. Fall counts peak around mid-August, but have been scarce in three of the past five years.

**RTHU: Ruby-throated Hummingbird / Colibri à gorge rubis (*Archilochus colubris*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 17 | May 25 | May 30 | 14   | 9 (15%)  | 7    | 19    | Aug 1 | Aug 10 | Sep 18 | 49   | 42 (48%) | 10   | 133   |
| 2006     | May 10 | May 25 | Jun 5  | 27   | 14 (20%) | 5    | 33    | Aug 5 | Aug 13 | Sep 16 | 43   | 34 (37%) | 12   | 184   |
| 2007     | May 11 | May 23 | Jun 5  | 26   | 13 (19%) | 4    | 21    | Aug 1 | Aug 9  | Sep 10 | 41   | 39 (43%) | 5    | 92    |
| 2008     | May 6  | May 25 | Jun 4  | 30   | 19 (27%) | 4    | 36    | Aug 1 | Aug 17 | Sep 11 | 42   | 40 (44%) | 10   | 163   |
| 2009     | May 9  | May 18 | Jun 3  | 26   | 21 (30%) | 4    | 36    | Aug 1 | Aug 21 | Sep 12 | 43   | 41 (45%) | 9    | 153   |
| 2010     | May 15 | May 29 | Jun 5  | 22   | 13 (19%) | 3    | 18    | Aug 1 | Aug 15 | Sep 14 | 45   | 39 (43%) | 9    | 108   |
| 2011     | May 11 | May 22 | Jun 5  | 26   | 17 (24%) | 3    | 29    | Aug 1 | Aug 24 | Sep 23 | 54   | 45 (49%) | 16   | 171   |
| 2012     | May 8  | May 26 | Jun 3  | 27   | 22 (31%) | 4    | 40    | Aug 1 | Aug 14 | Sep 17 | 48   | 45 (49%) | 12   | 193   |
| 2013     | May 16 | May 31 | Jun 3  | 19   | 13 (19%) | 4    | 26    | Aug 1 | Aug 21 | Sep 15 | 46   | 43 (47%) | 15   | 214   |
| 2014     | May 15 | May 24 | Jun 4  | 21   | 15 (22%) | 6    | 27    | Aug 2 | Aug 26 | Sep 23 | 53   | 46 (51%) | 10   | 168   |
| Mean     | May 11 | May 24 | Jun 3  | 24   | 16 (23%) | 4    | 29    | Aug 1 | Aug 17 | Sep 15 | 46   | 41 (46%) | 11   | 158   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.6 | 1.9 | 0.4 | 0.3    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      | 0.9 | 0.9 | 2.3 | 0.7 | 0.5    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 0.4 | 1.9 | 0.6 | 0.3    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.3 | 1.9 | 2.1 | 0.7 | 0.5    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |      | 1.0 | 2.3 | 0.9 | 1.0 | 0.5    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 0.4 | 1.3 | 0.7 | 0.3    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      | 0.6 | 1.1 | 1.1 | 1.3 | 0.4    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 1.0 | 1.3 | 2.1 | 1.1 | 0.6    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |     | 1.7 | 0.9 | 1.1 | 0.4    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 1.1 | 2.1 | 0.5 | 0.4    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.03 | 0.4 | 1.2 | 1.7 | 0.8 | 0.4    |

| Captured | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |     | 4   | 7   | 1   | 12     |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     | 11  |     | 12     |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 2   | 2   | 1   | 6      |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 3   | 6   | 3   | 13     |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 9   | 3   | 1   | 14     |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 3   | 1   | 4      |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |     | 6   | 9   | 2   | 17     |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |     | 5   | 1   | 2   | 8      |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 4   | 3   | 2   | 10     |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.5 | 3.3 | 4.5 | 1.3 | 9.6    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8   | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|------|----|-----|-----|-----|-----|------|
| 2005     | 0.3 | 0.4 | 0.3    | 2.0 | 5.3 | 2.6 | 2.6 | 2.7 | 3.1 | 0.7 |      |    |     |     |     |     | 1.5  |
| 2006     | 0.6 | 0.7 | 0.6    | 2.4 | 6.1 | 7.0 | 5.4 | 4.0 | 1.0 | 0.3 |      |    |     |     |     |     | 2.0  |
| 2007     | 0.7 | 0.2 | 0.5    | 2.7 | 3.1 | 2.0 | 3.0 | 1.3 | 1.0 |     |      |    |     |     |     |     | 1.0  |
| 2008     | 0.6 | 1.0 | 0.8    | 3.6 | 4.0 | 6.1 | 4.0 | 2.9 | 2.7 |     |      |    |     |     |     |     | 1.8  |
| 2009     | 2.0 | 1.3 | 1.6    | 3.7 | 3.7 | 4.7 | 3.7 | 3.9 | 2.0 | 0.1 |      |    |     |     |     |     | 1.7  |
| 2010     | 0.7 | 0.7 | 0.7    | 1.6 | 2.7 | 4.3 | 3.7 | 2.0 | 0.9 | 0.3 |      |    |     |     |     |     | 1.2  |
| 2011     | 1.7 | 0.8 | 1.1    | 3.4 | 3.9 | 5.7 | 5.4 | 3.0 | 2.0 | 0.9 | 0.1  |    |     |     |     |     | 1.9  |
| 2012     | 1.3 | 1.3 | 1.2    | 3.1 | 5.3 | 6.4 | 5.0 | 3.7 | 2.7 | 1.3 |      |    |     |     |     |     | 2.1  |
| 2013     | 1.7 | 0.8 | 1.1    | 2.9 | 3.7 | 8.1 | 7.4 | 4.4 | 3.4 | 0.6 |      |    |     |     |     |     | 2.4  |
| 2014     | 2.3 | 1.8 | 2.0    | 1.7 | 4.3 | 3.4 | 5.7 | 3.4 | 3.7 | 1.4 | 0.3  |    |     |     |     |     | 1.8  |
| Mean     | 0.8 | 0.7 | 0.8    | 2.7 | 4.2 | 5.0 | 4.6 | 3.1 | 2.3 | 0.6 | 0.04 |    |     |     |     |     | 1.7  |

| Captured | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|
| 2005     |     |     |        | 4   | 17  | 8   | 9   | 9   | 7   | 3   |     |    |     |     |     |     | 57   |
| 2006     |     |     |        | 3   | 4   | 1   |     | 8   | 1   | 1   |     |    |     |     |     |     | 18   |
| 2007     |     |     |        | 6   | 4   | 4   | 9   | 4   | 5   |     |     |    |     |     |     |     | 32   |
| 2008     |     |     |        | 7   | 2   | 8   | 7   | 3   | 4   |     |     |    |     |     |     |     | 31   |
| 2009     |     |     |        | 11  | 6   | 16  | 6   | 7   | 3   | 1   |     |    |     |     |     |     | 50   |
| 2010     |     |     |        |     | 2   | 8   | 10  | 2   | 1   |     |     |    |     |     |     |     | 23   |
| 2011     |     |     |        | 6   | 5   | 1   | 1   | 1   | 3   | 2   |     |    |     |     |     |     | 19   |
| 2012     |     |     |        | 9   | 9   | 7   | 18  | 17  | 10  | 5   |     |    |     |     |     |     | 75   |
| 2013     |     |     |        | 4   | 6   | 19  | 13  | 11  | 10  | 2   |     |    |     |     |     |     | 65   |
| 2014     |     |     |        | 1   | 8   | 5   | 13  | 11  | 9   | 7   | 1   |    |     |     |     |     | 55   |
| Mean     |     |     |        | 5.1 | 6.3 | 7.7 | 8.6 | 7.3 | 5.3 | 2.1 | 0.1 |    |     |     |     |     | 42.5 |

Ruby-throated Hummingbird is the only species captured at MBO but not banded, due to the requirement for specialized equipment and training. As such, the tables above report the number of individuals captured rather than banded, and very likely include some individuals captured more than once. These numbers generally correlate well with the observations, which typically peak around week 9 in spring and week 3 in fall, although the fall observations have been shifting slightly later over the years. There has been relatively little variation in numbers over time in either spring or fall, but summer observations have become more common, and the number captured in fall has been well above average since 2012.

**BEKI: Belted Kingfisher / Martin-pêcheur d'Amérique (*Megasceryle alcyon*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 10 | Apr 10 | May 12 | 33   | 9 (15%)  | 2    | 11    | Sep 2  | Sep 2  | Sep 2  | 1    | 1 (1%)   | 1    | 1     |
| 2006     | Apr 11 | May 10 | Jun 1  | 52   | 10 (14%) | 4    | 14    | Aug 2  | Aug 2  | Sep 7  | 37   | 10 (11%) | 1    | 10    |
| 2007     | Apr 12 | Apr 12 | May 29 | 48   | 5 (7%)   | 1    | 5     | Aug 28 | Aug 28 | Sep 12 | 16   | 3 (3%)   | 1    | 3     |
| 2008     | Apr 17 | Apr 17 | May 12 | 26   | 9 (13%)  | 1    | 9     | Aug 1  | Aug 1  | Sep 19 | 50   | 3 (3%)   | 1    | 3     |
| 2009     | Apr 18 | Apr 27 | May 31 | 44   | 9 (13%)  | 2    | 10    | Aug 7  | Aug 7  | Sep 26 | 51   | 10 (11%) | 1    | 10    |
| 2010     | Apr 20 | Apr 20 | May 7  | 18   | 3 (4%)   | 2    | 4     | Aug 9  | Aug 27 | Oct 4  | 57   | 7 (8%)   | 2    | 8     |
| 2011     | Apr 22 | May 22 | Jun 1  | 41   | 14 (20%) | 3    | 18    | Aug 17 | Aug 18 | Oct 5  | 50   | 7 (8%)   | 2    | 9     |
| 2012     | Apr 6  | Apr 6  | May 27 | 52   | 3 (4%)   | 1    | 3     | Aug 3  | Aug 3  | Oct 20 | 79   | 7 (8%)   | 1    | 7     |
| 2013     | Apr 10 | Apr 10 | Apr 24 | 15   | 3 (4%)   | 1    | 3     | Aug 6  | Aug 6  | Sep 24 | 50   | 6 (7%)   | 1    | 6     |
| 2014     | Apr 17 | Apr 27 | May 7  | 21   | 9 (13%)  | 2    | 10    | Aug 7  | Aug 7  | Sep 25 | 50   | 18 (20%) | 1    | 18    |
| Mean     | Apr 14 | Apr 22 | May 18 | 35   | 7 (11%)  | 2    | 8.7   | Aug 11 | Aug 13 | Sep 23 | 44   | 7 (8%)   | 1    | 7.5   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2   | S3   | S4  | S5  | S6  | S7  | S8   | S9   | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|------|------|-----|-----|-----|-----|------|------|------|--------|
| 2005     |     |     |     |     |     |        |    | 0.3  |      | 0.3 | 0.4 | 0.3 | 0.3 |      |      |      | 0.2    |
| 2006     |     |     |     |     |     |        |    |      | 0.3  | 0.1 |     | 0.4 | 0.6 | 0.1  | 0.1  | 0.3  | 0.2    |
| 2007     |     |     |     |     |     |        |    |      | 0.3  | 0.1 |     | 0.1 |     |      | 0.1  |      | 0.07   |
| 2008     |     |     |     |     |     |        |    |      | 0.1  | 0.6 | 0.3 | 0.1 | 0.1 |      |      |      | 0.1    |
| 2009     |     |     |     |     |     |        |    |      |      | 0.6 | 0.6 | 0.1 |     |      |      | 0.1  | 0.1    |
| 2010     |     |     |     |     |     |        |    |      |      | 0.3 |     | 0.3 |     |      |      |      | 0.06   |
| 2011     |     |     |     |     |     |        |    |      |      | 0.4 | 0.3 | 0.7 | 0.3 | 0.4  | 0.1  | 0.3  | 0.3    |
| 2012     |     |     |     |     |     |        |    | 0.1  |      |     |     |     |     | 0.1  | 0.1  |      | 0.04   |
| 2013     |     |     |     |     |     |        |    | 0.1  |      | 0.3 |     |     |     |      |      |      | 0.04   |
| 2014     |     |     |     |     |     |        |    |      | 0.1  | 0.6 | 0.4 | 0.3 |     |      |      |      | 0.1    |
| Mean     |     |     |     |     |     |        |    | 0.06 | 0.09 | 0.3 | 0.2 | 0.2 | 0.1 | 0.07 | 0.06 | 0.07 | 0.1    |

| Observed | Jun  | Jul  | Summer | F1  | F2  | F3  | F4   | F5  | F6   | F7  | F8   | F9   | F10  | F11 | F12  | F13 | Fall |
|----------|------|------|--------|-----|-----|-----|------|-----|------|-----|------|------|------|-----|------|-----|------|
| 2005     |      |      |        |     |     |     |      | 0.1 |      |     |      |      |      |     |      |     | 0.01 |
| 2006     |      |      |        | 0.4 | 0.3 | 0.3 |      | 0.3 | 0.1  |     |      |      |      |     |      |     | 0.1  |
| 2007     |      |      |        |     |     |     | 0.1  | 0.1 |      | 0.1 |      |      |      |     |      |     | 0.03 |
| 2008     |      |      |        | 0.1 |     |     |      | 0.1 |      |     | 0.1  |      |      |     |      |     | 0.03 |
| 2009     |      |      |        | 0.1 | 0.4 | 0.1 |      |     | 0.1  | 0.3 | 0.1  | 0.1  |      |     |      |     | 0.1  |
| 2010     |      |      |        |     | 0.3 | 0.3 | 0.3  |     |      |     | 0.1  |      | 0.1  |     |      |     | 0.09 |
| 2011     | 0.3  | 0.3  | 0.3    |     |     | 0.4 |      | 0.3 | 0.3  | 0.1 |      |      | 0.1  |     |      |     | 0.10 |
| 2012     |      |      |        | 0.1 | 0.3 |     | 0.1  |     |      | 0.1 |      | 0.1  |      |     | 0.1  |     | 0.08 |
| 2013     |      |      |        | 0.1 | 0.1 | 0.1 | 0.1  | 0.1 |      |     | 0.1  |      |      |     |      |     | 0.07 |
| 2014     |      |      |        | 0.1 | 0.9 | 0.6 |      | 0.1 | 0.3  | 0.3 | 0.3  |      |      |     |      |     | 0.2  |
| Mean     | 0.02 | 0.02 | 0.02   | 0.1 | 0.2 | 0.2 | 0.07 | 0.1 | 0.09 | 0.1 | 0.09 | 0.03 | 0.03 |     | 0.01 |     | 0.08 |

Belted Kingfisher is an uncommon and somewhat irregular spring and fall visitor to MBO, with summer observations only occurring in 2011. Spring sightings typically being around mid-April, and most commonly peak in week 4, although sightings regularly remain frequent through weeks 5 and 6 as well before tapering off. In fall, sightings are somewhat more frequent over the first three weeks of the season, but as in spring, numbers are always low and there is rarely a strong peak. In both seasons, numbers have fluctuated to some extent among years, but without any clear pattern.

**RBWO: Red-bellied Woodpecker / Pic à ventre roux (*Melanerpes carolinus*)**

| Observed | First | Peak  | Last  | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|-------|-------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |       |       |      |        |      |       | Aug 4  | Aug 4  | Aug 16 | 13   | 3 (3%) | 1    | 3     |
| 2011     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |       |       |      |        |      |       | Aug 26 | Aug 26 | Oct 24 | 60   | 4 (4%) | 1    | 4     |
| 2013     | Jun 4 | Jun 4 | Jun 4 | 1    | 1 (1%) | 1    | 1     | Aug 24 | Aug 24 | Aug 24 | 1    | 1 (1%) | 1    | 1     |
| 2014     |       |       |       |      |        |      |       | Aug 30 | Aug 30 | Aug 30 | 1    | 1 (1%) | 1    | 1     |
| Mean     | Jun 4 | Jun 4 | Jun 4 | 1    | 1 (1%) | 1    | 0.1   | Aug 21 | Aug 21 | Sep 7  | 19   | 2 (2%) | 1    | 0.9   |

| Observed | Nov | Dec | Jan | Feb | Mar  | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10  | Spring |
|----------|-----|-----|-----|-----|------|--------|----|----|----|----|----|----|----|----|----|------|--------|
| 2005     |     |     |     |     |      |        |    |    |    |    |    |    |    |    |    |      |        |
| 2006     |     |     |     |     |      |        |    |    |    |    |    |    |    |    |    |      |        |
| 2007     |     |     |     |     |      |        |    |    |    |    |    |    |    |    |    |      |        |
| 2008     |     |     |     |     |      |        |    |    |    |    |    |    |    |    |    |      |        |
| 2009     |     |     |     |     |      |        |    |    |    |    |    |    |    |    |    |      |        |
| 2010     |     |     |     |     |      |        |    |    |    |    |    |    |    |    |    |      |        |
| 2011     |     |     |     |     | 0.1  | 0.03   |    |    |    |    |    |    |    |    |    |      |        |
| 2012     |     |     |     |     |      |        |    |    |    |    |    |    |    |    |    |      |        |
| 2013     |     |     |     |     |      |        |    |    |    |    |    |    |    |    |    | 0.1  | 0.01   |
| 2014     |     |     |     |     |      |        |    |    |    |    |    |    |    |    |    |      |        |
| Mean     |     |     |     |     | 0.01 | <0.01  |    |    |    |    |    |    |    |    |    | 0.01 | <0.01  |

| Observed | Jun | Jul | Summer | F1   | F2 | F3   | F4   | F5   | F6   | F7 | F8 | F9   | F10 | F11 | F12 | F13  | Fall |
|----------|-----|-----|--------|------|----|------|------|------|------|----|----|------|-----|-----|-----|------|------|
| 2005     |     |     |        |      |    |      |      |      |      |    |    |      |     |     |     |      |      |
| 2006     |     |     |        |      |    |      |      |      |      |    |    |      |     |     |     |      |      |
| 2007     |     |     |        |      |    |      |      |      |      |    |    |      |     |     |     |      |      |
| 2008     |     |     |        |      |    |      |      |      |      |    |    |      |     |     |     |      |      |
| 2009     |     |     |        |      |    |      |      |      |      |    |    |      |     |     |     |      |      |
| 2010     |     |     |        | 0.3  |    | 0.1  |      |      |      |    |    |      |     |     |     |      | 0.03 |
| 2011     |     |     |        |      |    |      |      |      |      |    |    |      |     |     |     |      |      |
| 2012     |     |     |        |      |    |      | 0.1  |      | 0.1  |    |    | 0.1  |     |     | 0.1 |      | 0.04 |
| 2013     |     |     |        |      |    |      | 0.1  |      |      |    |    |      |     |     |     |      | 0.01 |
| 2014     |     |     |        |      |    |      |      | 0.1  |      |    |    |      |     |     |     |      | 0.01 |
| Mean     |     |     |        | 0.03 |    | 0.01 | 0.03 | 0.01 | 0.01 |    |    | 0.01 |     |     |     | 0.01 | 0.01 |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 1   | 1    |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.1 | 0.1  |

The least common of the six woodpecker species observed at MBO, observed for the first time in 2010, and annually ever since; this reflects the northward expansion of the species into southern Quebec, and in particular the establishment of a breeding pair in the adjacent Morgan Arboretum. Aside from one observation in March and one on the second-last day of spring, all others have been in fall, and mostly in August – perhaps reflecting post-breeding dispersal from the neighbouring pair. Only one individual has been banded to date, near the end of fall 2012.

**YBSA: Yellow-bellied Sapsucker / *Pic maculé (Sphyrapicus varius)***

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 11 | Apr 19 | May 31 | 51   | 31 (53%) | 3    | 43    | Aug 15 | Aug 15 | Oct 6  | 53   | 10 (11%) | 1    | 10    |
| 2006     | Apr 6  | May 3  | Jun 2  | 58   | 45 (65%) | 5    | 77    | Aug 2  | Aug 11 | Oct 2  | 62   | 20 (22%) | 2    | 25    |
| 2007     | Apr 7  | May 1  | May 30 | 54   | 28 (40%) | 5    | 46    | Aug 2  | Aug 5  | Oct 8  | 68   | 18 (20%) | 2    | 25    |
| 2008     | Apr 18 | May 6  | May 30 | 43   | 35 (50%) | 4    | 53    | Aug 2  | Sep 22 | Oct 6  | 66   | 15 (16%) | 2    | 17    |
| 2009     | Apr 14 | Apr 20 | May 31 | 48   | 34 (49%) | 4    | 65    | Aug 1  | Oct 1  | Oct 11 | 72   | 9 (10%)  | 2    | 10    |
| 2010     | Apr 7  | May 12 | May 31 | 55   | 27 (39%) | 5    | 41    | Aug 2  | Aug 18 | Sep 11 | 41   | 7 (8%)   | 2    | 10    |
| 2011     | Apr 14 | Apr 30 | May 30 | 47   | 23 (33%) | 5    | 44    | Aug 17 | Sep 18 | Sep 25 | 40   | 4 (4%)   | 3    | 6     |
| 2012     | Apr 15 | Apr 18 | May 24 | 40   | 23 (33%) | 3    | 35    | Aug 8  | Aug 8  | Sep 20 | 44   | 5 (5%)   | 1    | 5     |
| 2013     | Apr 17 | Apr 21 | May 15 | 29   | 18 (26%) | 3    | 22    | Aug 7  | Aug 7  | Sep 30 | 55   | 5 (5%)   | 1    | 5     |
| 2014     | Apr 19 | Apr 24 | Jun 4  | 47   | 23 (34%) | 3    | 36    | Aug 1  | Aug 9  | Oct 26 | 87   | 8 (9%)   | 2    | 11    |
| Mean     | Apr 12 | Apr 27 | May 29 | 47   | 29 (42%) | 4    | 46    | Aug 5  | Aug 23 | Oct 2  | 59   | 10 (11%) | 2    | 12    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2   | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|------|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |      | 0.3 | 1.5 | 1.0 | 1.3 | 1.0 | 0.7 | 0.3 | 0.4 | 0.7    |
| 2006     |     |     |     |     |     |        |    | 0.2  | 0.7 | 1.7 | 2.3 | 2.9 | 0.9 | 0.7 | 1.1 | 0.6 | 1.1    |
| 2007     |     |     |     |     |     |        |    | 0.1  |     | 0.6 | 1.3 | 2.0 | 1.3 | 0.9 | 0.3 | 0.1 | 0.7    |
| 2008     |     |     |     |     |     |        |    |      |     | 1.6 | 1.3 | 1.7 | 1.1 | 1.1 | 0.6 | 0.1 | 0.8    |
| 2009     |     |     |     |     |     |        |    |      | 0.6 | 1.9 | 1.3 | 1.6 | 1.9 | 0.7 | 1.1 | 0.3 | 0.9    |
| 2010     |     |     |     |     |     |        |    | 0.1  | 0.4 | 1.0 | 0.3 |     | 1.3 | 1.6 | 1.0 | 0.1 | 0.6    |
| 2011     |     |     |     |     |     |        |    |      | 0.4 | 1.6 | 1.7 | 0.4 | 1.0 | 0.3 | 0.7 | 0.1 | 0.6    |
| 2012     |     |     |     |     |     |        |    |      | 0.3 | 0.7 | 1.1 | 1.7 | 0.3 | 0.7 | 0.1 |     | 0.5    |
| 2013     |     |     |     |     |     |        |    |      | 0.1 | 1.0 | 0.6 | 0.7 | 0.7 |     |     |     | 0.3    |
| 2014     |     |     |     |     |     |        |    |      |     | 1.1 | 0.6 | 1.0 | 1.7 | 0.4 | 0.1 | 0.2 | 0.5    |
| Mean     |     |     |     |     |     |        |    | 0.04 | 0.3 | 1.3 | 1.1 | 1.3 | 1.1 | 0.7 | 0.5 | 0.2 | 0.7    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4   | F5  | F6  | F7  | F8  | F9  | F10 | F11  | F12 | F13  | Fall |
|----------|-----|-----|--------|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|------|-----|------|------|
| 2005     | 0.3 | 0.5 | 0.4    |     |     | 0.1 |      |     | 0.3 | 0.1 | 0.1 | 0.5 | 0.3 |      |     |      | 0.1  |
| 2006     | 0.1 | 0.3 | 0.2    | 0.3 | 0.6 | 0.1 | 0.4  | 0.4 | 0.7 |     | 0.3 | 0.7 |     |      |     |      | 0.3  |
| 2007     | 0.1 | 0.3 | 0.2    | 0.4 |     |     |      |     | 0.1 | 0.4 | 1.3 | 0.3 | 1.0 |      |     |      | 0.3  |
| 2008     | 0.4 |     | 0.2    | 0.3 | 0.1 | 0.1 |      | 0.1 | 0.3 | 0.1 | 0.4 | 0.3 | 0.6 |      |     |      | 0.2  |
| 2009     | 0.3 |     | 0.1    | 0.3 | 0.1 | 0.1 |      | 0.1 |     |     |     | 0.4 | 0.1 | 0.1  |     |      | 0.1  |
| 2010     |     |     |        | 0.3 |     | 0.3 |      | 0.6 | 0.3 |     |     |     |     |      |     |      | 0.1  |
| 2011     | 0.3 |     | 0.1    |     |     | 0.1 |      | 0.1 |     | 0.4 | 0.1 |     |     |      |     |      | 0.07 |
| 2012     |     |     |        |     | 0.3 | 0.1 | 0.1  |     |     |     | 0.1 |     |     |      |     |      | 0.05 |
| 2013     | 0.3 | 0.3 | 0.3    | 0.1 |     | 0.1 |      | 0.1 | 0.1 |     |     | 0.1 |     |      |     |      | 0.05 |
| 2014     |     |     |        | 0.1 | 0.3 | 0.3 | 0.1  |     | 0.1 | 0.3 |     |     | 0.1 |      |     | 0.1  | 0.1  |
| Mean     | 0.2 | 0.2 | 0.2    | 0.2 | 0.1 | 0.2 | 0.07 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.01 |     | 0.01 | 0.1  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     |     |     | 1   |     | 1   |     | 2      |
| 2006   |     |     |     |     |     |        |    |    |    |     |     |     |     |     | 1   |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |     |     |     |     |     |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |     | 2   | 1   |     |     |     |     | 3      |
| 2009   |     |     |     |     |     |        |    |    |    |     |     |     | 2   |     |     | 1   | 3      |
| 2010   |     |     |     |     |     |        |    |    |    |     |     |     | 2   | 1   |     |     | 3      |
| 2011   |     |     |     |     |     |        |    |    |    |     |     |     |     |     | 3   |     | 3      |
| 2012   |     |     |     |     |     |        |    |    |    |     |     | 2   |     |     |     |     | 2      |
| 2013   |     |     |     |     |     |        |    |    |    |     |     | 1   |     |     |     |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    | 1   |     |     | 1   |     |     |     | 2      |
| Mean   |     |     |     |     |     |        |    |    |    | 0.1 | 0.2 | 0.4 | 0.6 | 0.1 | 0.5 | 0.1 | 2.0    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8 | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     |     |     |     |     |     |    |     |     |     |     |     |      |
| 2006   |     |     |        | 1   |     |     |     |     |     |     |    | 1   |     |     |     |     | 2    |
| 2007   |     |     |        |     |     |     |     |     |     |     |    |     | 1   |     |     |     | 1    |
| 2008   |     |     |        | 2   |     | 1   |     |     |     | 1   |    | 2   |     |     |     |     | 6    |
| 2009   |     |     |        | 1   |     |     |     |     |     |     |    | 1   | 1   |     |     |     | 3    |
| 2010   |     |     |        | 1   |     |     |     |     | 1   |     |    |     |     |     |     |     | 2    |
| 2011   |     |     |        |     |     |     |     | 1   |     | 1   |    |     |     |     |     |     | 2    |
| 2012   |     |     |        |     |     |     | 1   |     |     |     |    |     |     |     |     |     | 1    |
| 2013   |     |     |        | 1   |     |     |     |     |     |     |    |     |     |     |     |     | 1    |
| 2014   |     |     |        | 1   | 1   |     |     |     |     |     |    |     |     |     |     |     | 2    |
| Mean   |     |     |        | 0.7 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 |    | 0.4 | 0.2 |     |     |     | 2.0  |

Yellow-bellied Sapsucker is the least common of the five woodpeckers observed at MBO annually. Spring arrivals usually return by week 2 or 3, peaking in late April or early May. Small numbers have been observed in summer, although missed in three of the five most recent years. Counts are distinctly lower in fall, and more scattered without a peak of migration, although generally tapering off by early October. In both spring and fall, numbers show a declining trend over the past decade.



**DOWO: Downy Woodpecker / Pic mineur (*Picoides pubescens*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | May 11 | Jun 2  | 59   | 37 (63%) | 3    | 47    | Aug 1 | Oct 28 | Oct 30 | 91   | 78 (89%) | 7    | 202   |
| 2006     | Apr 2  | Apr 28 | Jun 5  | 65   | 53 (77%) | 7    | 114   | Aug 1 | Oct 24 | Oct 30 | 91   | 87 (96%) | 8    | 294   |
| 2007     | Mar 29 | May 7  | Jun 5  | 69   | 50 (71%) | 5    | 99    | Aug 1 | Aug 14 | Oct 30 | 91   | 85 (93%) | 7    | 272   |
| 2008     | Mar 28 | May 10 | Jun 2  | 67   | 46 (66%) | 7    | 98    | Aug 1 | Sep 7  | Oct 30 | 91   | 84 (92%) | 6    | 219   |
| 2009     | Mar 30 | Apr 16 | Jun 1  | 64   | 44 (64%) | 4    | 69    | Aug 1 | Aug 28 | Oct 30 | 91   | 88 (97%) | 6    | 232   |
| 2010     | Mar 30 | Apr 4  | May 29 | 61   | 32 (46%) | 3    | 42    | Aug 1 | Aug 2  | Oct 30 | 91   | 69 (76%) | 4    | 146   |
| 2011     | Mar 28 | Apr 15 | May 30 | 64   | 45 (64%) | 6    | 92    | Aug 1 | Aug 19 | Oct 30 | 91   | 84 (92%) | 7    | 206   |
| 2012     | Mar 29 | May 3  | Jun 1  | 65   | 57 (81%) | 8    | 146   | Aug 1 | Sep 24 | Oct 30 | 91   | 88 (97%) | 10   | 255   |
| 2013     | Mar 28 | Apr 2  | Jun 5  | 70   | 61 (87%) | 5    | 119   | Aug 1 | Aug 21 | Oct 30 | 91   | 88 (97%) | 8    | 211   |
| 2014     | Mar 29 | Apr 3  | Jun 3  | 67   | 57 (84%) | 4    | 124   | Aug 1 | Oct 27 | Oct 30 | 91   | 86 (95%) | 6    | 202   |
| Mean     | Mar 30 | Apr 21 | Jun 2  | 65   | 48 (70%) | 5    | 95    | Aug 1 | Sep 12 | Oct 30 | 91   | 84 (92%) | 7    | 224   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     | 0.3 |     |     | 0.8 | 0.5 | 0.4    |     | 0.8 | 1.1 | 1.2 | 0.6 | 1.1 | 1.0 | 0.7 | 0.1 | 0.4 | 0.8    |
| 2006     | 0.9 | 0.5 |     | 0.3 | 0.3 | 0.4    | 0.3 | 0.8 | 1.0 | 2.1 | 3.0 | 3.1 | 1.4 | 1.7 | 2.1 | 0.7 | 1.7    |
| 2007     | 1.1 | 0.9 | 0.5 | 0.3 | 1.0 | 0.8    | 1.6 | 1.3 | 1.0 | 2.3 | 0.9 | 3.0 | 1.3 | 0.7 | 1.4 | 0.7 | 1.4    |
| 2008     | 1.0 | 1.3 | 0.2 | 0.4 |     | 0.7    | 1.3 |     | 0.7 | 2.4 | 2.7 | 1.7 | 3.0 | 1.0 | 0.9 | 0.3 | 1.4    |
| 2009     | 0.7 | 1.0 | 0.5 | 0.4 | 1.1 | 0.8    | 0.7 | 0.5 | 1.3 | 2.1 | 1.6 | 1.1 | 1.0 | 0.9 | 0.4 | 0.3 | 1.0    |
| 2010     | 1.3 | 0.1 | 0.3 | 1.5 | 0.4 | 0.8    | 0.6 | 1.1 | 0.9 | 1.1 | 0.6 | 0.6 | 0.6 | 0.3 | 0.3 |     | 0.6    |
| 2011     | 0.7 | 1.0 | 0.6 | 1.5 | 0.5 | 0.8    | 1.0 | 0.3 | 1.9 | 1.7 | 2.0 | 1.7 | 2.1 | 1.7 | 0.6 | 0.1 | 1.3    |
| 2012     | 0.8 | 0.8 | 1.3 | 1.3 | 1.6 | 1.1    | 2.9 | 2.0 | 1.6 | 2.6 | 3.1 | 3.4 | 2.7 | 1.1 | 0.6 | 0.9 | 2.1    |
| 2013     | 1.5 | 1.4 | 2.4 | 3.4 | 2.4 | 2.2    | 2.6 | 1.6 | 2.1 | 2.9 | 1.7 | 1.7 | 1.0 | 1.7 | 0.9 | 0.9 | 1.7    |
| 2014     | 2.2 | 2.8 | 2.3 | 2.4 | 1.4 | 2.2    | 1.5 | 1.4 | 2.0 | 2.3 | 2.3 | 2.0 | 2.3 | 2.1 | 1.1 | 1.0 | 1.8    |
| Mean     | 1.0 | 0.9 | 0.9 | 1.2 | 1.0 | 1.0    | 1.4 | 1.0 | 1.4 | 2.1 | 1.8 | 2.0 | 1.6 | 1.2 | 0.8 | 0.5 | 1.4    |

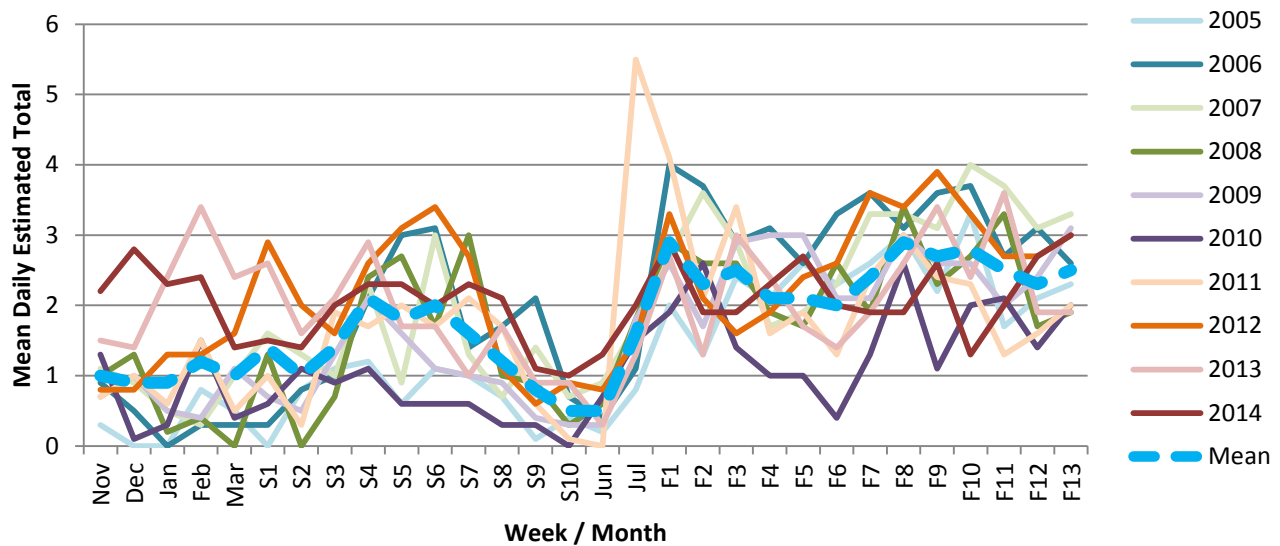
| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     | 0.2 | 0.8 | 0.5    | 2.0 | 1.3 | 2.4 | 2.1 | 2.6 | 2.3 | 2.6 | 3.0 | 2.2 | 3.3 | 1.7 | 2.1 | 2.3 | 2.3  |
| 2006     | 0.4 | 1.1 | 0.8    | 4.0 | 3.7 | 2.9 | 3.1 | 2.6 | 3.3 | 3.6 | 3.1 | 3.6 | 3.7 | 2.7 | 3.1 | 2.6 | 3.2  |
| 2007     | 0.9 | 1.7 | 1.2    | 2.7 | 3.6 | 2.9 | 1.7 | 1.9 | 2.3 | 3.3 | 3.3 | 3.1 | 4.0 | 3.7 | 3.1 | 3.3 | 3.0  |
| 2008     | 0.6 | 1.8 | 1.2    | 2.9 | 2.6 | 2.6 | 1.9 | 1.7 | 2.6 | 1.9 | 3.4 | 2.3 | 2.7 | 3.3 | 1.7 | 1.9 | 2.4  |
| 2009     | 0.3 | 1.8 | 1.1    | 2.6 | 1.7 | 2.9 | 3.0 | 3.0 | 2.1 | 2.1 | 3.0 | 2.6 | 2.6 | 2.0 | 2.4 | 3.1 | 2.5  |
| 2010     | 0.7 | 1.5 | 1.2    | 1.9 | 2.6 | 1.4 | 1.0 | 1.0 | 0.4 | 1.3 | 2.6 | 1.1 | 2.0 | 2.1 | 1.4 | 2.0 | 1.6  |
| 2011     |     | 5.5 | 3.1    | 4.1 | 2.1 | 3.4 | 1.6 | 1.9 | 1.3 | 2.4 | 3.0 | 2.4 | 2.3 | 1.3 | 1.6 | 2.0 | 2.3  |
| 2012     | 0.8 | 1.5 | 1.1    | 3.3 | 2.1 | 1.6 | 1.9 | 2.4 | 2.6 | 3.6 | 3.4 | 3.9 | 3.3 | 2.7 | 2.7 | 3.0 | 2.8  |
| 2013     | 0.3 | 1.3 | 0.9    | 2.7 | 1.3 | 3.0 | 2.4 | 1.7 | 1.4 | 1.9 | 2.6 | 3.4 | 2.4 | 3.6 | 1.9 | 1.9 | 2.3  |
| 2014     | 1.3 | 2.0 | 1.7    | 2.9 | 1.9 | 1.9 | 2.3 | 2.7 | 2.0 | 1.9 | 1.9 | 2.6 | 1.3 | 2.0 | 2.7 | 3.0 | 2.2  |
| Mean     | 0.5 | 1.6 | 1.1    | 2.9 | 2.3 | 2.5 | 2.1 | 2.1 | 2.0 | 2.4 | 2.9 | 2.7 | 2.8 | 2.5 | 2.3 | 2.5 | 2.5  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     | 1   |     | 1      |    |    |     | 1   | 1   |     |     | 1   |     |     | 3      |
| 2006   | 2   |     |     |     |     | 2      |    |    | 1   | 3   |     | 1   |     |     |     |     | 5      |
| 2007   |     |     |     |     |     |        |    |    |     | 3   |     | 2   | 2   |     |     |     | 7      |
| 2008   |     |     |     |     |     |        |    |    |     | 2   | 1   |     | 1   |     | 1   |     | 5      |
| 2009   |     |     |     |     |     |        |    |    |     |     |     |     |     |     |     |     |        |
| 2010   |     |     |     |     |     |        |    |    |     |     |     |     |     |     |     | 1   | 1      |
| 2011   | 1   |     |     |     |     | 1      |    |    |     | 1   |     | 1   | 2   | 1   |     |     | 5      |
| 2012   |     |     |     | 2   |     | 2      |    |    |     | 1   | 1   |     |     |     | 1   |     | 3      |
| 2013   | 1   |     |     |     | 2   | 3      |    |    |     | 2   |     |     |     |     |     |     | 2      |
| 2014   | 2   |     |     |     |     | 2      |    |    |     |     | 1   | 1   | 2   | 1   |     |     | 5      |
| Mean   | 0.8 |     |     | 0.5 | 0.3 | 1.2    |    |    | 0.5 | 1.3 | 0.4 | 0.5 | 0.7 | 0.3 | 0.3 |     | 3.6    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6 | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     | 2   |     | 1   |    | 1   | 1   | 1   | 1   | 1   |     |     | 8    |
| 2006   |     |     |        | 5   | 3   |     |     |     |    | 1   |     | 1   | 2   | 1   | 1   |     | 14   |
| 2007   |     |     |        | 5   | 9   |     | 1   |     |    | 1   |     | 1   |     | 1   |     | 1   | 19   |
| 2008   |     |     |        | 1   | 4   | 2   |     | 2   |    |     | 1   |     |     |     |     |     | 10   |
| 2009   |     | 6   | 6      | 4   | 1   | 1   | 3   |     |    |     | 1   |     |     |     |     | 2   | 12   |
| 2010   | 2   | 4   | 6      |     | 5   | 1   |     | 1   |    |     | 2   |     |     | 1   | 1   |     | 11   |
| 2011   |     | 6   | 6      | 6   |     | 1   | 1   | 1   |    |     | 1   | 2   |     |     | 1   |     | 13   |
| 2012   | 1   | 1   | 2      | 4   | 3   |     | 3   |     |    | 3   |     | 2   | 1   | 1   |     |     | 17   |
| 2013   |     | 4   | 4      | 6   | 1   | 1   | 1   |     |    |     |     | 1   |     | 3   |     |     | 13   |
| 2014   |     | 4   | 4      | 3   | 2   | 2   |     |     |    |     |     |     | 2   |     | 2   |     | 11   |
| Mean   | 0.5 | 2.8 | 3.1    | 3.4 | 2.8 | 1.0 | 0.9 | 0.5 |    | 0.6 | 0.6 | 0.8 | 0.6 | 0.8 | 0.5 | 0.3 | 12.8 |

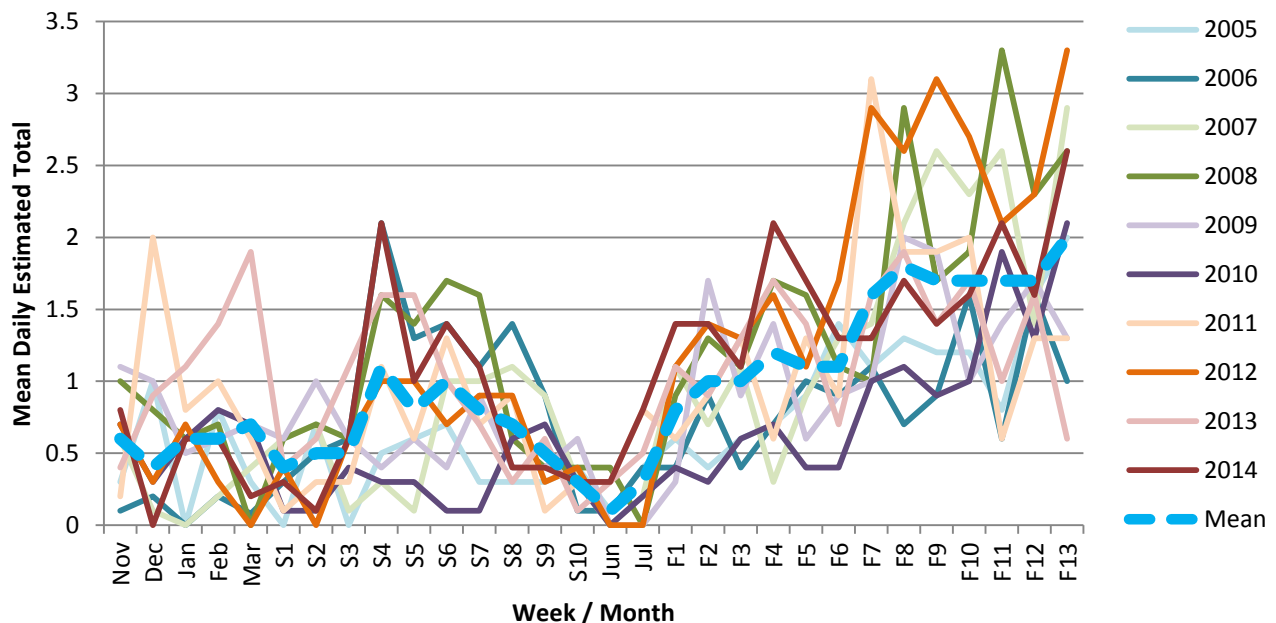
Downy Woodpecker is the most common woodpecker at MBO, and a resident species that has been observed in all periods except December 2004, January 2006, week 2 of spring 2008, week 10 of spring 2010, and June 2011. Daily counts are relatively similar through most of winter, spring, and summer, aside from a small increase from mid-April to early May that may reflect increased detectability due to courtship more than a true spike in numbers. Fall numbers are consistent throughout the season, but roughly double those of spring, presumably representing the influx of juveniles. Numbers have been relatively consistent across years except for a dip in 2010.

**Mean daily estimated total of Downy Woodpeckers throughout the year**



The figures for Downy Woodpecker (above) and Hairy Woodpecker (below) show many similarities in patterns of abundance throughout the year, although Downy Woodpecker is consistently somewhat more numerous. Despite being permanent residents, both species reach a low in late spring and early summer, reflecting their tendency to be quieter and less conspicuous during the breeding season. The higher counts throughout fall presumably reflect the adults returning to regular behaviour, as well as the presence of their offspring. The most notable difference in pattern of occurrence is that Hairy Woodpecker numbers tend to increase for the second half of fall; whether this is due to an influx of local dispersal from nearby sites, or greater detectability of individuals on site is unclear, but further analysis of recapture data might allow for some insights.

**Mean daily estimated total of Hairy Woodpeckers throughout the year**



# HAWO: Hairy Woodpecker / Pic chevelu (*Picoides villosus*)

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 10 | May 31 | 57   | 20 (34%) | 2    | 24    | Aug 1 | Sep 21 | Oct 30 | 91   | 57 (65%) | 5    | 93    |
| 2006     | Mar 30 | Apr 22 | May 30 | 62   | 42 (61%) | 5    | 68    | Aug 5 | Sep 9  | Oct 30 | 87   | 61 (67%) | 3    | 82    |
| 2007     | Apr 3  | Apr 3  | Jun 1  | 60   | 30 (43%) | 4    | 43    | Aug 4 | Oct 3  | Oct 30 | 88   | 66 (73%) | 6    | 145   |
| 2008     | Mar 29 | Apr 27 | Jun 3  | 67   | 41 (59%) | 4    | 67    | Aug 1 | Sep 20 | Oct 30 | 91   | 76 (84%) | 6    | 163   |
| 2009     | Mar 28 | Apr 7  | Jun 5  | 70   | 30 (43%) | 3    | 40    | Aug 6 | Sep 24 | Oct 30 | 86   | 67 (74%) | 5    | 112   |
| 2010     | Mar 28 | Apr 15 | Jun 3  | 68   | 18 (26%) | 2    | 22    | Aug 2 | Oct 28 | Oct 30 | 90   | 54 (59%) | 4    | 85    |
| 2011     | Mar 31 | May 3  | Jun 5  | 67   | 30 (43%) | 4    | 40    | Aug 1 | Sep 12 | Oct 30 | 91   | 63 (69%) | 9    | 122   |
| 2012     | Mar 31 | Apr 15 | Jun 5  | 67   | 36 (51%) | 2    | 43    | Aug 1 | Oct 2  | Oct 30 | 91   | 88 (97%) | 6    | 191   |
| 2013     | Mar 29 | Apr 20 | May 31 | 64   | 36 (51%) | 4    | 56    | Aug 1 | Oct 17 | Oct 29 | 90   | 71 (78%) | 5    | 118   |
| 2014     | Apr 1  | Apr 21 | Jun 1  | 62   | 39 (57%) | 4    | 55    | Aug 1 | Aug 25 | Oct 30 | 91   | 82 (90%) | 4    | 150   |
| Mean     | Mar 30 | Apr 17 | Jun 2  | 64   | 32 (47%) | 3    | 46    | Aug 2 | Sep 25 | Oct 29 | 90   | 68 (76%) | 5    | 126   |

| Observed | Nov | Dec | Jan | Feb | Mar  | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     | 0.3 | 1.0 |     | 0.8 | 0.3  | 0.5    |     | 0.7 |     | 0.5 | 0.6 | 0.7 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4    |
| 2006     | 0.1 | 0.2 |     | 0.2 | 0.08 | 0.1    | 0.3 | 0.5 | 0.6 | 2.1 | 1.3 | 1.4 | 1.1 | 1.4 | 0.9 | 0.1 | 1.0    |
| 2007     | 0.6 | 0.1 |     | 0.2 | 0.4  | 0.4    | 0.6 | 0.7 | 0.1 | 0.3 | 0.1 | 1.0 | 1.0 | 1.1 | 0.9 | 0.3 | 0.6    |
| 2008     | 1.0 | 0.8 | 0.6 | 0.7 |      | 0.8    | 0.6 | 0.7 | 0.6 | 1.6 | 1.4 | 1.7 | 1.6 | 0.6 | 0.4 | 0.4 | 1.0    |
| 2009     | 1.1 | 1.0 | 0.5 | 0.6 | 0.7  | 0.8    | 0.6 | 1.0 | 0.6 | 0.4 | 0.6 | 0.4 | 0.9 | 0.4 | 0.4 | 0.6 | 0.6    |
| 2010     | 0.7 | 0.3 | 0.6 | 0.8 | 0.7  | 0.6    | 0.1 | 0.1 | 0.4 | 0.3 | 0.3 | 0.1 | 0.1 | 0.6 | 0.7 | 0.3 | 0.3    |
| 2011     | 0.2 | 2.0 | 0.8 | 1.0 | 0.6  | 0.7    | 0.1 | 0.3 | 0.3 | 1.1 | 0.6 | 1.3 | 0.7 | 0.9 | 0.1 | 0.3 | 0.6    |
| 2012     | 0.7 | 0.3 | 0.7 | 0.3 |      | 0.4    | 0.4 |     | 0.6 | 1.0 | 1.0 | 0.7 | 0.9 | 0.9 | 0.3 | 0.4 | 0.6    |
| 2013     | 0.4 | 0.9 | 1.1 | 1.4 | 1.9  | 1.2    | 0.4 | 0.6 | 1.1 | 1.6 | 1.6 | 1.0 | 0.7 | 0.3 | 0.6 | 0.1 | 0.8    |
| 2014     | 0.8 |     | 0.6 | 0.6 | 0.2  | 0.5    | 0.3 | 0.1 | 0.6 | 2.1 | 1.0 | 1.4 | 1.1 | 0.4 | 0.4 | 0.3 | 0.8    |
| Mean     | 0.6 | 0.4 | 0.6 | 0.6 | 0.7  | 0.6    | 0.4 | 0.5 | 0.5 | 1.1 | 0.8 | 1.0 | 0.8 | 0.7 | 0.5 | 0.3 | 0.7    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     | 0.1 | 0.4 | 0.2    | 0.6 | 0.4 | 0.6 | 0.7 | 0.9 | 1.4 | 1.1 | 1.3 | 1.2 | 1.2 | 0.8 | 1.6 | 2.0 | 1.1  |
| 2006     | 0.1 | 0.4 | 0.3    | 0.4 | 0.9 | 0.4 | 0.7 | 1.0 | 0.9 | 1.1 | 0.7 | 0.9 | 1.6 | 0.6 | 1.6 | 1.0 | 0.9  |
| 2007     |     | 0.2 | 0.08   | 1.1 | 0.7 | 1.1 | 0.3 | 0.9 | 1.3 | 1.4 | 2.1 | 2.6 | 2.3 | 2.6 | 1.4 | 2.9 | 1.6  |
| 2008     | 0.4 |     | 0.2    | 0.9 | 1.3 | 1.1 | 1.7 | 1.6 | 1.1 | 1.0 | 2.9 | 1.7 | 1.9 | 3.3 | 2.3 | 2.6 | 1.8  |
| 2009     |     |     |        | 0.3 | 1.7 | 0.9 | 1.4 | 0.6 | 0.9 | 1.0 | 2.0 | 1.9 | 1.0 | 1.4 | 1.7 | 1.3 | 1.2  |
| 2010     |     | 0.2 | 0.1    | 0.4 | 0.3 | 0.6 | 0.7 | 0.4 | 0.4 | 1.0 | 1.1 | 0.9 | 1.0 | 1.9 | 1.3 | 2.1 | 0.9  |
| 2011     | 0.3 | 0.8 | 0.6    | 0.6 | 0.9 | 1.3 | 0.6 | 1.3 | 0.9 | 3.1 | 1.9 | 1.9 | 2.0 | 0.6 | 1.3 | 1.3 | 1.3  |
| 2012     |     |     |        | 1.1 | 1.4 | 1.3 | 1.6 | 1.1 | 1.7 | 2.9 | 2.6 | 3.1 | 2.7 | 2.1 | 2.3 | 3.3 | 2.1  |
| 2013     | 0.3 | 0.5 | 0.4    | 1.1 | 0.9 | 1.3 | 1.7 | 1.4 | 0.7 | 1.6 | 1.9 | 1.4 | 1.7 | 1.0 | 1.6 | 0.6 | 1.3  |
| 2014     | 0.3 | 0.8 | 0.6    | 1.4 | 1.4 | 1.1 | 2.1 | 1.7 | 1.3 | 1.3 | 1.7 | 1.4 | 1.6 | 2.1 | 1.6 | 2.6 | 1.6  |
| Mean     | 0.1 | 0.3 | 0.2    | 0.8 | 1.0 | 1.0 | 1.2 | 1.1 | 1.1 | 1.6 | 1.8 | 1.7 | 1.7 | 1.7 | 1.7 | 2.0 | 1.4  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     | 1   |     | 1      |    |    |    | 1   |     |     |     | 1   |     |     | 2      |
| 2006   |     |     |     |     | 1   | 1      |    |    |    | 1   |     |     |     |     |     |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |     |     | 1   | 1   |     | 1   |     | 3      |
| 2008   |     |     |     |     |     |        |    |    |    |     |     |     |     | 1   |     |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |     |     |     |     | 1   |     |     | 1      |
| 2010   |     | 1   |     |     |     | 1      |    |    |    |     |     |     |     |     |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    | 1   |     | 2   |     | 1   |     |     | 4      |
| 2012   |     |     |     | 1   |     | 1      |    |    |    |     |     |     |     | 1   |     |     | 1      |
| 2013   |     |     |     |     | 2   | 2      |    |    |    |     |     |     |     |     |     |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |     | 1   |     |     |     |     |     | 1      |
| Mean   |     | 0.1 |     | 0.3 | 0.4 | 0.7    |    |    |    | 0.3 | 0.1 | 0.3 | 0.1 | 0.5 | 0.1 |     | 1.4    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4 | F5  | F6  | F7  | F8 | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     | 2   |    | 1   |     |     |    |     |     |     |     |     | 3    |
| 2006   |     |     |        |     |     |     |    |     |     |     |    |     |     | 1   |     |     | 1    |
| 2007   |     |     |        | 1   |     |     |    |     |     | 1   |    | 1   | 1   | 1   | 1   | 2   | 8    |
| 2008   |     |     |        |     | 1   |     |    | 1   |     |     |    |     |     |     |     |     | 2    |
| 2009   |     |     |        |     | 2   |     |    |     |     |     |    |     |     |     |     |     | 2    |
| 2010   |     |     |        | 1   |     |     |    |     |     |     |    | 1   |     |     |     |     | 2    |
| 2011   |     |     |        | 2   | 2   |     |    | 1   |     |     |    |     |     |     |     |     | 5    |
| 2012   |     |     |        |     | 1   |     |    |     | 1   | 1   |    |     | 1   |     |     | 1   | 6    |
| 2013   |     |     |        |     |     |     |    |     |     |     |    |     |     | 1   | 1   |     | 2    |
| 2014   |     |     |        | 2   | 2   |     |    |     |     |     |    |     |     | 1   |     |     | 5    |
| Mean   |     |     |        | 0.6 | 0.8 | 0.2 |    | 0.3 | 0.1 | 0.2 |    | 0.2 | 0.2 | 0.5 | 0.2 | 0.3 | 3.6  |

Like Downy Woodpecker, Hairy Woodpecker is a resident species and has been observed in almost all study periods. However, it is roughly half as numerous, and only one-quarter as many have been banded. Mean daily counts are fairly consistent throughout most of the year, except for a small increase from mid-April to early May matching Downy Woodpecker, and higher numbers in the second half of fall, usually peaking in late October. Also similar to Downy Woodpecker, numbers were down in 2010, but otherwise have been relatively consistent over the past decade.

**YSFL: Yellow-shafted Flicker / Pic flamboyant (*Colaptes auratus auratus*)**


| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 6  | Apr 17 | Jun 3 | 59   | 46 (78%) | 4    | 83    | Aug 3 | Sep 25 | Oct 20 | 79   | 64 (73%) | 7    | 165   |
| 2006     | Apr 8  | Apr 22 | Jun 5 | 59   | 54 (78%) | 7    | 107   | Aug 1 | Oct 1  | Oct 30 | 91   | 81 (89%) | 9    | 245   |
| 2007     | Apr 7  | May 1  | Jun 4 | 59   | 39 (56%) | 6    | 79    | Aug 1 | Aug 8  | Oct 27 | 88   | 74 (81%) | 5    | 174   |
| 2008     | Apr 10 | Apr 30 | Jun 2 | 54   | 45 (64%) | 6    | 118   | Aug 1 | Sep 8  | Oct 24 | 85   | 67 (74%) | 5    | 159   |
| 2009     | Apr 1  | Apr 25 | Jun 2 | 63   | 41 (59%) | 5    | 83    | Aug 1 | Sep 19 | Oct 30 | 91   | 79 (87%) | 10   | 248   |
| 2010     | Apr 2  | Apr 22 | Jun 2 | 62   | 45 (64%) | 6    | 85    | Aug 2 | Sep 15 | Oct 30 | 90   | 79 (87%) | 16   | 247   |
| 2011     | Apr 10 | Apr 29 | Jun 5 | 57   | 39 (56%) | 7    | 88    | Aug 1 | Sep 22 | Oct 28 | 89   | 75 (82%) | 16   | 300   |
| 2012     | Apr 9  | Apr 22 | Jun 5 | 58   | 42 (60%) | 5    | 96    | Aug 1 | Sep 23 | Oct 30 | 91   | 77 (85%) | 9    | 246   |
| 2013     | Apr 16 | Apr 19 | Jun 2 | 48   | 36 (51%) | 6    | 104   | Aug 1 | Sep 14 | Oct 25 | 86   | 69 (76%) | 12   | 224   |
| 2014     | Apr 14 | May 3  | Jun 4 | 52   | 41 (60%) | 7    | 98    | Aug 1 | Sep 18 | Oct 30 | 91   | 81 (89%) | 10   | 244   |
| Mean     | Apr 8  | Apr 25 | Jun 3 | 57   | 43 (62%) | 6    | 94    | Aug 1 | Sep 15 | Oct 27 | 88   | 75 (82%) | 10   | 225   |

| Observed | Nov  | Dec | Jan | Feb | Mar  | Winter | S1   | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|------|-----|-----|-----|------|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |      |     |     |     |      |        |      | 0.3 | 1.0 | 2.2 | 2.9 | 2.1 | 1.1 | 0.9 | 0.9 | 1.2 | 1.4    |
| 2006     |      |     |     |     |      |        |      | 0.7 | 2.4 | 2.3 | 2.9 | 2.1 | 1.9 | 1.0 | 1.0 | 1.1 | 1.6    |
| 2007     | 0.1  |     |     |     |      | 0.04   |      | 0.1 |     | 1.9 | 2.9 | 2.1 | 1.1 | 0.7 | 1.4 | 1.0 | 1.1    |
| 2008     |      |     |     |     |      |        |      | 0.1 | 0.3 | 3.7 | 3.9 | 3.4 | 2.0 | 1.9 | 0.9 | 0.7 | 1.7    |
| 2009     | 0.1  |     |     |     |      | 0.03   | 0.4  |     | 0.3 | 2.7 | 3.4 | 2.0 | 0.9 | 0.9 | 0.9 | 0.4 | 1.2    |
| 2010     |      |     |     |     |      |        | 0.1  | 0.9 | 1.7 | 4.0 | 1.7 | 1.7 | 0.4 | 0.6 | 0.4 | 0.6 | 1.2    |
| 2011     |      |     |     |     |      |        |      | 0.1 | 0.6 | 2.9 | 3.3 | 1.7 | 1.6 | 0.6 | 0.4 | 1.4 | 1.3    |
| 2012     |      |     |     |     | 0.2  | 0.04   |      | 0.6 | 0.9 | 2.0 | 3.4 | 2.1 | 1.9 | 1.3 | 0.7 | 0.9 | 1.4    |
| 2013     |      |     |     |     |      |        |      |     | 0.1 | 3.6 | 3.3 | 4.3 | 1.4 | 1.4 | 0.3 | 0.4 | 1.5    |
| 2014     |      |     |     |     |      |        |      |     | 0.7 | 3.7 | 2.6 | 2.6 | 1.7 | 1.0 | 1.0 | 0.8 | 1.4    |
| Mean     | 0.03 |     |     |     | 0.01 | 0.01   | 0.06 | 0.3 | 0.8 | 2.9 | 3.0 | 2.4 | 1.4 | 1.0 | 0.8 | 0.9 | 1.4    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     | 0.8 | 0.8 | 0.8    | 1.1 | 1.1 | 0.6 | 0.6 | 2.1 | 3.3 | 2.7 | 4.4 | 3.0 | 2.8 | 2.7 | 0.3 |     | 1.9  |
| 2006     | 1.1 | 2.4 | 1.8    | 2.7 | 4.4 | 2.6 | 2.1 | 1.3 | 2.4 | 4.0 | 4.7 | 5.0 | 3.1 | 1.1 | 1.0 | 0.4 | 2.7  |
| 2007     | 0.6 | 1.3 | 0.9    | 2.3 | 3.0 | 2.6 | 1.9 | 3.0 | 2.0 | 3.1 | 2.7 | 1.4 | 1.1 | 0.9 | 0.7 | 0.1 | 1.9  |
| 2008     | 1.2 | 4.0 | 2.6    | 2.3 | 2.7 | 2.6 | 1.9 | 2.4 | 2.4 | 2.4 | 2.6 | 1.7 | 1.0 | 0.3 | 0.3 | 0.1 | 1.7  |
| 2009     | 0.7 | 0.8 | 0.7    | 2.9 | 3.0 | 2.1 | 3.4 | 2.0 | 3.4 | 4.0 | 5.0 | 3.6 | 2.9 | 2.4 | 0.4 | 0.3 | 2.7  |
| 2010     |     | 0.5 | 0.3    | 1.6 | 1.9 | 1.6 | 1.9 | 2.7 | 4.0 | 8.9 | 5.0 | 3.1 | 2.3 | 0.4 | 0.9 | 1.1 | 2.7  |
| 2011     | 0.3 | 0.8 | 0.6    | 2.0 | 2.0 | 2.0 | 1.1 | 3.7 | 4.4 | 4.1 | 9.6 | 7.9 | 3.9 | 0.7 | 1.1 | 0.3 | 3.3  |
| 2012     | 0.3 | 1.0 | 0.6    | 1.7 | 2.0 | 2.6 | 2.7 | 1.4 | 3.4 | 3.3 | 5.9 | 6.1 | 3.7 | 1.4 | 0.4 | 0.4 | 2.7  |
| 2013     | 0.3 | 2.0 | 1.3    | 2.6 | 0.4 | 1.4 | 2.3 | 1.9 | 3.4 | 6.9 | 5.9 | 3.9 | 1.4 | 0.6 | 1.1 | 0.3 | 2.5  |
| 2014     | 1.3 | 1.5 | 1.4    | 2.7 | 2.6 | 3.3 | 1.3 | 3.6 | 4.4 | 5.1 | 3.1 | 2.7 | 1.7 | 1.4 | 1.0 | 1.9 | 2.7  |
| Mean     | 0.7 | 1.5 | 1.1    | 2.2 | 2.3 | 2.1 | 1.9 | 2.4 | 3.3 | 4.5 | 4.9 | 3.9 | 2.4 | 1.2 | 0.7 | 0.5 | 2.5  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6  | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|-----|----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     |     | 1   |    |    |    |     | 1      |
| 2006   |     |     |     |     |     |        |    |    |    |     |     |     |    |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |     |     |     |    |    |    | 1   | 1      |
| 2008   |     |     |     |     |     |        |    |    |    | 1   |     |     |    |    |    |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    | 1   |     | 1   |    |    |    |     | 2      |
| 2010   |     |     |     |     |     |        |    |    |    | 1   |     |     |    |    |    |     | 1      |
| 2011   |     |     |     |     |     |        |    |    |    | 2   | 1   |     |    |    |    |     | 3      |
| 2012   |     |     |     |     |     |        |    |    |    |     |     | 1   |    |    |    |     | 1      |
| 2013   |     |     |     |     |     |        |    |    |    |     |     | 1   |    |    |    |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |     |     |     |    |    |    |     |        |
| Mean   |     |     |     |     |     |        |    |    |    | 0.5 | 0.1 | 0.4 |    |    |    | 0.1 | 1.1    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     |     |     |     |     |     | 1   |     |     |     |     |     | 1    |
| 2006   |     |     |        |     | 1   |     |     |     |     |     |     |     |     |     |     |     | 1    |
| 2007   |     |     |        |     | 1   |     |     |     |     |     |     |     |     |     |     |     | 1    |
| 2008   |     |     |        |     | 1   |     | 1   |     |     |     |     | 1   |     |     |     |     | 3    |
| 2009   |     | 1   | 1      | 3   |     |     | 5   |     |     |     |     |     | 1   |     |     |     | 9    |
| 2010   |     | 2   | 2      |     |     |     |     |     | 2   |     | 1   |     |     |     |     |     | 3    |
| 2011   |     |     |        |     | 1   |     |     | 2   |     | 1   |     |     |     |     |     |     | 4    |
| 2012   |     | 1   | 1      |     | 1   | 1   |     |     |     |     |     |     |     |     | 1   |     | 3    |
| 2013   |     |     |        |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
| 2014   |     |     |        | 1   |     |     |     |     | 2   |     |     |     |     |     |     |     | 3    |
| Mean   |     | 0.4 | 0.4    | 0.4 | 0.5 | 0.1 | 0.6 | 0.2 | 0.4 | 0.1 | 0.2 | 0.1 | 0.1 |     | 0.1 |     | 2.8  |

Yellow-shafted Flicker is common at MBO from early spring to late fall. While one or two pairs breed at MBO annually, as reflected by summer numbers, there are also distinct pulses of migration in both spring and fall. The spring peak has been in week 5 in seven years out of ten, although numbers are often almost as high in week 4; the fall peak is almost always between weeks 7 and 9. On three occasions, late fall or early spring migrants have been observed during the winter season. Despite overall counts in spring and fall similar to Downy Woodpecker, far fewer Yellow-shafted Flickers have been banded, likely a function of size and behaviour (some migrant flickers staying high). Numbers have increased slightly over the years.

**PIWO: Pileated Woodpecker / Grand Pic (*Dryocopus pileatus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 10 | Jun 1  | 58   | 25 (42%) | 2    | 27    | Aug 6  | Sep 18 | Oct 29 | 85   | 36 (41%) | 4    | 49    |
| 2006     | Mar 29 | May 4  | Jun 5  | 69   | 39 (57%) | 4    | 65    | Aug 1  | Sep 20 | Oct 30 | 91   | 70 (77%) | 5    | 109   |
| 2007     | Mar 28 | May 9  | Jun 3  | 68   | 39 (56%) | 3    | 54    | Aug 1  | Sep 20 | Oct 30 | 91   | 75 (82%) | 4    | 121   |
| 2008     | Mar 28 | May 11 | Jun 4  | 68   | 40 (57%) | 4    | 59    | Aug 2  | Sep 13 | Oct 27 | 87   | 57 (63%) | 4    | 92    |
| 2009     | Mar 28 | Apr 10 | Jun 4  | 69   | 38 (55%) | 3    | 57    | Aug 18 | Sep 1  | Oct 30 | 74   | 33 (36%) | 3    | 51    |
| 2010     | Mar 29 | May 7  | Jun 5  | 69   | 46 (66%) | 3    | 58    | Aug 1  | Sep 20 | Oct 30 | 91   | 64 (70%) | 4    | 102   |
| 2011     | Mar 30 | Apr 24 | Jun 5  | 68   | 36 (51%) | 4    | 50    | Aug 1  | Sep 12 | Oct 30 | 91   | 61 (67%) | 3    | 106   |
| 2012     | Apr 1  | Apr 19 | Jun 5  | 66   | 39 (56%) | 3    | 57    | Aug 2  | Sep 23 | Oct 29 | 89   | 81 (89%) | 6    | 184   |
| 2013     | Mar 30 | Apr 22 | Jun 5  | 68   | 40 (57%) | 5    | 79    | Aug 3  | Oct 27 | Oct 29 | 88   | 73 (80%) | 5    | 142   |
| 2014     | Mar 31 | Apr 21 | May 31 | 62   | 44 (65%) | 3    | 61    | Aug 1  | Aug 24 | Oct 30 | 91   | 79 (87%) | 3    | 118   |
| Mean     | Mar 30 | Apr 25 | Jun 3  | 66   | 39 (56%) | 3    | 57    | Aug 3  | Sep 17 | Oct 29 | 88   | 63 (69%) | 4    | 107   |

| Observed | Nov  | Dec  | Jan  | Feb | Mar | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|------|------|------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     | 0.8  | 0.5  |      | 0.5 | 0.3 | 0.5    |     | 0.7 | 0.4 | 0.3 | 0.7 | 0.3 | 0.6 | 0.4 | 0.1 | 0.6 | 0.5    |
| 2006     | 0.07 | 0.07 | 0.08 | 0.2 | 0.3 | 0.1    | 0.7 | 0.8 | 0.6 | 0.4 | 0.7 | 2.4 | 1.0 | 1.4 | 1.1 | 0.1 | 0.9    |
| 2007     | 0.2  | 0.3  | 0.3  | 0.2 | 0.3 | 0.2    | 0.6 | 0.4 | 0.1 | 1.1 | 0.6 | 1.1 | 1.7 | 0.9 | 0.9 | 0.3 | 0.8    |
| 2008     | 1.1  | 0.3  |      | 0.1 |     | 0.5    | 0.4 | 0.4 | 1.1 | 1.0 | 0.7 | 1.3 | 1.3 | 1.4 | 0.4 | 0.3 | 0.8    |
| 2009     | 0.1  | 0.5  | 0.5  |     | 0.4 | 0.3    | 0.3 | 1.2 |     | 1.6 | 0.9 | 0.9 | 0.7 | 1.3 | 0.9 | 0.7 | 0.8    |
| 2010     | 0.4  | 0.8  | 0.4  | 0.3 | 0.5 | 0.4    | 0.4 | 0.9 | 0.1 | 0.7 | 0.9 | 1.1 | 0.9 | 1.6 | 0.7 | 1.0 | 0.8    |
| 2011     | 0.3  | 1.0  | 0.4  | 0.8 | 0.3 | 0.4    | 0.3 | 0.3 | 0.6 | 1.1 | 1.0 | 1.4 | 0.7 | 0.6 | 0.3 | 0.9 | 0.7    |
| 2012     | 0.5  | 1.8  | 0.7  | 0.3 | 0.8 | 0.8    | 0.3 | 1.0 | 0.9 | 0.9 | 0.6 | 1.0 | 1.3 | 1.1 | 0.6 | 0.6 | 0.8    |
| 2013     | 0.3  | 0.1  | 0.2  | 0.2 | 0.6 | 0.3    | 0.7 | 0.6 | 0.7 | 2.3 | 1.1 | 3.0 | 0.9 | 0.9 | 0.7 | 0.4 | 1.1    |
| 2014     | 0.4  | 0.5  | 0.1  |     |     | 0.2    | 0.7 | 0.7 | 0.1 | 1.4 | 1.0 | 1.7 | 0.9 | 1.1 | 0.9 | 0.3 | 0.9    |
| Mean     | 0.4  | 0.4  | 0.3  | 0.2 | 0.4 | 0.3    | 0.5 | 0.7 | 0.5 | 1.1 | 0.8 | 1.4 | 1.0 | 1.1 | 0.7 | 0.5 | 0.8    |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     | 0.3 | 0.06 | 0.2    | 0.1 | 0.1 | 0.1 | 0.1 | 1.1 | 1.3 | 1.3 | 0.9 | 0.8 | 1.0 | 0.2 |     | 0.1 | 0.6  |
| 2006     | 0.1 |      | 0.05   | 1.1 | 0.9 | 0.6 | 0.9 | 0.7 | 2.6 | 1.6 | 2.0 | 1.3 | 1.4 | 1.4 | 1.0 | 0.1 | 1.2  |
| 2007     | 0.1 | 0.2  | 0.2    | 1.0 | 1.6 | 1.7 | 0.9 | 1.7 | 1.3 | 1.1 | 1.0 | 1.1 | 1.4 | 1.6 | 1.6 | 1.3 | 1.3  |
| 2008     | 0.2 | 0.2  | 0.2    | 0.6 | 0.9 | 0.6 | 0.6 | 1.4 | 1.7 | 1.4 | 1.7 | 1.0 | 0.3 | 1.3 | 1.1 | 0.6 | 1.0  |
| 2009     | 0.7 | 0.3  | 0.4    |     |     | 0.6 | 0.6 | 0.7 | 0.4 |     | 0.4 | 1.6 | 1.6 | 0.9 |     | 0.6 | 0.6  |
| 2010     | 0.7 | 0.2  | 0.3    | 0.9 | 0.4 | 0.1 | 0.6 | 0.7 | 1.6 | 1.4 | 1.7 | 1.0 | 1.9 | 1.3 | 1.6 | 1.4 | 1.1  |
| 2011     | 0.7 | 0.8  | 0.7    | 0.6 | 0.7 | 0.6 | 1.0 | 0.4 | 0.6 | 2.1 | 2.1 | 2.0 | 1.9 | 0.7 | 0.9 | 1.6 | 1.2  |
| 2012     | 0.5 | 0.8  | 0.6    | 0.9 | 1.6 | 1.9 | 2.7 | 1.3 | 2.1 | 2.4 | 2.7 | 2.1 | 2.7 | 2.4 | 1.3 | 2.1 | 2.0  |
| 2013     | 1.0 | 0.3  | 0.6    | 0.6 | 0.4 | 1.4 | 1.6 | 1.3 | 2.3 | 2.0 | 2.4 | 2.3 | 1.4 | 1.1 | 1.4 | 2.0 | 1.6  |
| 2014     | 1.0 | 0.8  | 0.9    | 1.3 | 1.1 | 0.9 | 1.3 | 1.1 | 0.9 | 1.3 | 1.0 | 1.7 | 1.3 | 1.4 | 1.6 | 2.0 | 1.3  |
| Mean     | 0.4 | 0.2  | 0.3    | 0.7 | 0.8 | 0.8 | 1.0 | 1.1 | 1.5 | 1.5 | 1.6 | 1.5 | 1.5 | 1.2 | 1.0 | 1.2 | 1.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3 | S4  | S5 | S6  | S7 | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |     |    |     |    |     |    |     |    |     |        |
| 2006   |     |     |     |     |     |        |    | 1   |    |     |    |     |    |     |    |     | 1      |
| 2007   |     |     |     |     |     |        |    |     |    | 1   |    |     |    |     |    |     | 1      |
| 2008   |     |     |     |     |     |        |    |     |    |     |    |     |    |     |    |     |        |
| 2009   |     |     |     |     |     |        |    |     |    |     |    |     |    |     |    |     |        |
| 2010   |     |     |     |     |     |        |    |     |    |     |    |     |    |     |    |     |        |
| 2011   |     |     |     |     |     |        |    |     |    |     |    | 1   |    |     |    |     | 1      |
| 2012   |     |     |     |     |     |        |    |     |    |     |    | 1   |    |     |    |     |        |
| 2013   |     |     |     |     |     |        |    |     |    |     |    |     |    | 1   |    |     | 2      |
| 2014   |     |     |     |     |     |        |    |     |    |     |    |     |    |     |    |     |        |
| Mean   |     |     |     |     |     |        |    | 0.5 |    | 0.1 |    | 0.2 |    | 0.1 |    |     | 0.5    |

| Banded | Jun | Jul | Summer | F1 | F2  | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|-----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     | 1   | 1    |
| 2012   |     |     |        |    | 1   |    |    |    |    |    |    |    |     |     |     | 1   | 2    |
| 2013   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        |    | 0.1 |    |    |    |    |    |    |    |     |     |     | 0.2 | 0.3  |

Similar to Downy and Hairy Woodpecker, Pileated Woodpecker is a permanent resident at MBO and has been observed in almost all study periods, in numbers relatively similar to Hairy Woodpecker. However, only 8 individuals have been banded over the past decade, a function of this species keeping more to the larger forests, as well as being able to escape the nets more easily due to its large size. As with the other resident woodpeckers, counts are somewhat higher in mid-spring, probably due to them being more detectable during peak courtship. Fall numbers also are somewhat higher for a few weeks in mid-season. Abundance has fluctuated slightly over the years, but without any consistent pattern.

**AMKE: American Kestrel / Crécerelle d'Amérique (*Falco sparverius*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days  | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|---------|------|-------|
| 2005     | Apr 10 | Apr 10 | Apr 18 | 9    | 4 (7%)   | 1    | 4     | Sep 3  | Sep 3  | Oct 13 | 41   | 5 (6%)  | 1    | 5     |
| 2006     | Apr 14 | Apr 14 | Apr 14 | 1    | 1 (1%)   | 1    | 1     | Sep 7  | Sep 7  | Sep 30 | 24   | 4 (4%)  | 1    | 4     |
| 2007     |        |        |        |      |          |      |       | Aug 7  | Aug 7  | Sep 14 | 39   | 4 (4%)  | 1    | 4     |
| 2008     |        |        |        |      |          |      |       | Sep 16 | Sep 16 | Oct 4  | 19   | 3 (3%)  | 1    | 3     |
| 2009     | May 12 | May 12 | May 12 | 1    | 1 (1%)   | 1    | 1     | Aug 20 | Aug 20 | Aug 20 | 1    | 1 (1%)  | 1    | 1     |
| 2010     | Apr 11 | Apr 11 | May 12 | 32   | 3 (4%)   | 1    | 3     | Aug 4  | Aug 4  | Oct 24 | 82   | 7 (8%)  | 1    | 7     |
| 2011     | May 8  | May 8  | May 8  | 1    | 1 (1%)   | 1    | 1     | Sep 16 | Sep 16 | Sep 25 | 10   | 4 (4%)  | 1    | 4     |
| 2012     | Apr 26 | Apr 26 | Apr 26 | 1    | 1 (1%)   | 1    | 1     | Aug 14 | Sep 20 | Oct 15 | 63   | 9 (10%) | 2    | 12    |
| 2013     | Apr 18 | Apr 29 | May 23 | 36   | 6 (9%)   | 2    | 7     | Sep 14 | Sep 14 | Oct 18 | 35   | 3 (3%)  | 3    | 6     |
| 2014     | Apr 12 | Apr 20 | May 28 | 47   | 13 (19%) | 2    | 14    | Aug 20 | Aug 20 | Sep 26 | 38   | 5 (5%)  | 1    | 5     |
| Mean     | Apr 21 | Apr 23 | May 6  | 16   | 4 (6%)   | 1    | 3.2   | Aug 27 | Aug 31 | Sep 30 | 35   | 4 (5%)  | 1    | 5.1   |

| Observed | Nov | Dec | Jan | Feb | Mar  | Winter | S1 | S2   | S3  | S4  | S5   | S6   | S7   | S8   | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|------|--------|----|------|-----|-----|------|------|------|------|------|-----|--------|
| 2005     |     |     |     |     |      |        |    | 0.2  | 0.3 | 0.2 |      |      |      |      |      |     | 0.07   |
| 2006     |     |     |     |     |      |        |    |      | 0.1 |     |      |      |      |      |      |     | 0.01   |
| 2007     |     |     |     |     |      |        |    |      |     |     |      |      |      |      |      |     |        |
| 2008     |     |     |     |     |      |        |    |      |     |     |      |      |      |      |      |     |        |
| 2009     |     |     |     |     |      |        |    |      |     |     |      |      | 0.1  |      |      |     | 0.01   |
| 2010     |     |     |     |     |      |        |    |      | 0.1 | 0.1 |      |      | 0.1  |      |      |     | 0.04   |
| 2011     |     |     |     |     |      |        |    |      |     |     |      | 0.1  |      |      |      |     | 0.01   |
| 2012     |     |     |     |     | 0.2  | 0.04   |    |      |     |     | 0.1  |      |      |      |      |     | 0.01   |
| 2013     |     |     |     |     |      |        |    |      | 0.4 | 0.3 |      |      |      | 0.1  | 0.1  |     | 0.1    |
| 2014     |     |     |     |     |      |        |    |      | 0.4 | 0.7 | 0.3  | 0.1  | 0.1  | 0.1  | 0.1  |     | 0.2    |
| Mean     |     |     |     |     | 0.01 | 0.00   |    | 0.01 | 0.1 | 0.1 | 0.07 | 0.03 | 0.04 | 0.03 | 0.03 |     | 0.05   |

| Observed | Jun | Jul | Summer | F1   | F2   | F3   | F4 | F5  | F6   | F7  | F8  | F9  | F10  | F11  | F12  | F13  | Fall |
|----------|-----|-----|--------|------|------|------|----|-----|------|-----|-----|-----|------|------|------|------|------|
| 2005     |     |     |        |      |      |      |    | 0.1 | 0.1  | 0.1 | 0.1 |     |      | 0.2  |      |      | 0.06 |
| 2006     |     |     |        |      |      |      |    |     | 0.1  | 0.1 |     | 0.3 |      |      |      |      | 0.04 |
| 2007     |     |     |        | 0.1  |      |      |    | 0.3 |      | 0.1 |     |     |      |      |      |      | 0.04 |
| 2008     |     |     |        |      |      |      |    |     |      | 0.3 |     |     | 0.1  |      |      |      | 0.03 |
| 2009     |     |     |        |      |      | 0.1  |    |     |      |     |     |     |      |      |      |      | 0.01 |
| 2010     |     |     |        | 0.1  |      |      |    | 0.3 |      |     | 0.1 |     | 0.1  | 0.1  |      | 0.1  | 0.08 |
| 2011     |     |     |        |      |      |      |    |     |      | 0.3 | 0.3 |     |      |      |      |      | 0.04 |
| 2012     |     |     |        |      | 0.1  |      |    | 0.1 |      |     | 0.4 | 0.7 | 0.1  | 0.1  |      |      | 0.1  |
| 2013     |     |     |        |      |      |      |    |     |      | 0.4 | 0.3 |     |      |      | 0.1  |      | 0.07 |
| 2014     |     |     |        |      |      | 0.1  |    | 0.1 |      | 0.3 |     | 0.1 |      |      |      |      | 0.05 |
| Mean     |     |     |        | 0.03 | 0.01 | 0.03 |    | 0.1 | 0.03 | 0.2 | 0.1 | 0.1 | 0.04 | 0.04 | 0.01 | 0.01 | 0.06 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6 | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|-----|----|----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |     |    |    |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |     |    |    |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |     |    |    |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |     |    |    |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |     |    |    |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |     |    |    |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |     |    |    |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |     |    |    |    |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |     |    |    |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    | 1   |    |    |    |    |     | 1      |
| Mean   |     |     |     |     |     |        |    |    |    |    | 0.1 |    |    |    |    |     | 0.1    |

American Kestrel has been observed in each spring except 2007 and 2008, although only a single individual was spotted in four other years. Total counts were higher in 2013 and 2014 than any previous year, but this was appeared to largely be a function of lone individuals stopping over for a while. The only kestrel banded at MBO was in April 2014. Fall sightings have been irregular throughout the season, although somewhat more frequent mid-season, especially weeks 7 and 8. Overall abundance has varied little across years.

**MERL: Merlin / Faucon émerillon (*Falco columbarius*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 8  | Apr 8  | May 4  | 27   | 2 (3%) | 1    | 2     | Aug 5  | Sep 23 | Oct 13 | 70   | 9 (10%)  | 2    | 10    |
| 2006     | May 9  | May 9  | May 21 | 13   | 2 (3%) | 1    | 2     | Aug 1  | Aug 1  | Oct 24 | 85   | 13 (14%) | 1    | 13    |
| 2007     | Apr 19 | Apr 19 | May 12 | 24   | 4 (6%) | 1    | 4     | Sep 11 | Sep 11 | Oct 20 | 40   | 6 (7%)   | 1    | 6     |
| 2008     | Apr 28 | Apr 28 | Apr 28 | 1    | 1 (1%) | 1    | 1     | Aug 2  | Aug 12 | Oct 14 | 74   | 17 (19%) | 2    | 20    |
| 2009     | May 28 | May 28 | May 28 | 1    | 1 (1%) | 1    | 1     | Aug 8  | Oct 8  | Oct 19 | 73   | 20 (22%) | 2    | 21    |
| 2010     | Apr 21 | Apr 21 | Apr 21 | 1    | 1 (1%) | 1    | 1     | Aug 8  | Sep 2  | Oct 13 | 67   | 17 (19%) | 3    | 22    |
| 2011     | Apr 12 | Apr 12 | May 11 | 30   | 2 (3%) | 1    | 2     | Aug 3  | Aug 3  | Oct 25 | 84   | 15 (16%) | 1    | 15    |
| 2012     | Apr 12 | Apr 12 | May 18 | 37   | 2 (3%) | 1    | 2     | Aug 10 | Aug 19 | Oct 30 | 82   | 23 (25%) | 2    | 28    |
| 2013     | Apr 6  | Apr 6  | May 15 | 40   | 4 (6%) | 1    | 4     | Aug 8  | Aug 10 | Oct 18 | 72   | 16 (18%) | 2    | 18    |
| 2014     | Apr 21 | Apr 21 | May 31 | 41   | 2 (3%) | 1    | 2     | Aug 1  | Oct 11 | Oct 30 | 91   | 35 (38%) | 5    | 47    |
| Mean     | Apr 22 | Apr 22 | May 12 | 22   | 2 (3%) | 1    | 2     | Aug 8  | Aug 31 | Oct 20 | 74   | 17 (19%) | 2    | 20    |

| Observed | Nov  | Dec  | Jan  | Feb | Mar | Winter | S1 | S2   | S3   | S4   | S5   | S6   | S7   | S8   | S9   | S10  | Spring |
|----------|------|------|------|-----|-----|--------|----|------|------|------|------|------|------|------|------|------|--------|
| 2005     |      |      |      |     |     |        |    | 0.2  |      |      |      | 0.1  |      |      |      |      | 0.03   |
| 2006     |      |      |      |     |     |        |    |      |      |      |      |      | 0.1  | 0.1  |      |      | 0.03   |
| 2007     | 0.06 |      |      |     |     | 0.02   |    |      |      | 0.1  |      | 0.1  | 0.3  |      |      |      | 0.06   |
| 2008     | 0.1  |      |      |     |     | 0.04   |    |      |      |      | 0.1  |      |      |      |      |      | 0.01   |
| 2009     |      |      |      |     |     |        |    |      |      |      |      |      |      |      | 0.1  |      | 0.01   |
| 2010     |      | 0.1  |      |     |     | 0.02   |    |      |      | 0.1  |      |      |      |      |      |      | 0.01   |
| 2011     |      |      |      |     |     |        |    |      | 0.1  |      |      |      | 0.1  |      |      |      | 0.03   |
| 2012     |      |      |      |     |     |        |    |      | 0.1  |      |      |      |      | 0.1  |      |      | 0.03   |
| 2013     |      |      | 0.07 |     |     | 0.02   |    | 0.1  | 0.1  | 0.1  |      |      | 0.1  |      |      |      | 0.06   |
| 2014     |      |      |      |     |     |        |    |      |      | 0.1  |      |      |      |      |      | 0.2  | 0.03   |
| Mean     | 0.02 | 0.02 | 0.01 |     |     | 0.01   |    | 0.03 | 0.04 | 0.06 | 0.01 | 0.03 | 0.07 | 0.03 | 0.01 | 0.01 | 0.03   |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13  | Fall |
|----------|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 2005     |     |      |        | 0.1 | 0.3 |     |     |     | 0.1 |     | 0.4 | 0.2 | 0.2 | 0.2 |     |      | 0.1  |
| 2006     |     | 0.08 | 0.05   | 0.4 | 0.3 | 0.1 |     |     | 0.3 |     |     | 0.3 |     | 0.3 |     | 0.1  | 0.1  |
| 2007     |     |      |        |     |     |     |     |     | 0.1 | 0.1 | 0.3 | 0.1 |     |     | 0.1 |      | 0.07 |
| 2008     |     | 0.2  | 0.1    | 0.1 | 0.4 | 0.6 | 0.1 | 0.4 | 0.1 | 0.3 | 0.1 |     | 0.3 | 0.3 | 0.3 |      | 0.2  |
| 2009     |     |      |        |     | 0.3 | 0.1 | 0.3 | 0.1 | 0.1 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 |      | 0.2  |
| 2010     |     |      |        |     | 0.1 |     | 0.1 | 0.9 | 0.6 | 0.1 |     | 0.6 | 0.6 | 0.1 |     |      | 0.2  |
| 2011     |     |      |        | 0.1 |     | 0.1 | 0.4 | 0.1 | 0.3 |     | 0.1 | 0.3 | 0.3 | 0.1 |     | 0.1  | 0.2  |
| 2012     |     |      |        |     | 0.1 | 0.6 | 0.7 | 0.4 | 0.1 |     | 0.1 | 1.0 | 0.3 | 0.1 | 0.1 | 0.3  | 0.3  |
| 2013     |     |      |        |     | 0.7 | 0.1 | 0.1 | 0.6 | 0.1 | 0.1 | 0.3 | 0.3 |     |     | 0.1 |      | 0.2  |
| 2014     |     |      |        | 0.7 | 0.1 | 0.3 | 0.4 | 0.3 | 0.6 | 0.9 | 0.9 | 0.9 | 0.4 | 0.9 | 0.3 | 0.1  | 0.5  |
| Mean     |     | 0.03 | 0.02   | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 0.4 | 0.2 | 0.2 | 0.1 | 0.07 | 0.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|----|----|----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    | 1   |    |    |    |    |    |     | 1      |
| 2008   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| Mean   |     |     |     |     |     |        |    |    |    | 0.1 |    |    |    |    |    |     | 0.1    |

Merlin is the most common of the three falcon species observed at MBO, with observations in every spring and fall, plus sightings in two summers and four winters. Despite that, spring numbers are low, with no more than one ever seen on a single day, and a season high of just four individuals. Only one Merlin has been banded at MBO, in April 2007. Fall numbers are somewhat higher and also a bit more variable, showing a slight increase over the years, but no discernible pattern of occurrence within the season.



**PEFA: Peregrine Falcon / Faucon pèlerin (*Falco peregrinus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | May 4  | May 4  | May 4  | 1    | 1 (2%) | 1    | 1     | Oct 17 | Oct 17 | Oct 17 | 1    | 1 (1%) | 1    | 1     |
| 2006     | Apr 5  | Apr 5  | May 19 | 45   | 4 (6%) | 1    | 4     | Sep 28 | Sep 28 | Sep 28 | 1    | 1 (1%) | 1    | 1     |
| 2007     |        |        |        |      |        |      |       | Aug 17 | Aug 17 | Aug 31 | 15   | 3 (3%) | 1    | 3     |
| 2008     |        |        |        |      |        |      |       | Aug 24 | Aug 24 | Oct 23 | 61   | 3 (3%) | 1    | 3     |
| 2009     | Mar 28 | Mar 28 | Mar 28 | 1    | 1 (1%) | 1    | 1     | Sep 4  | Sep 4  | Sep 5  | 2    | 2 (2%) | 1    | 2     |
| 2010     |        |        |        |      |        |      |       | Sep 12 | Sep 12 | Oct 14 | 33   | 3 (3%) | 1    | 3     |
| 2011     | May 20 | May 20 | May 20 | 1    | 1 (1%) | 1    | 1     | Oct 2  | Oct 2  | Oct 4  | 3    | 2 (2%) | 2    | 3     |
| 2012     | May 12 | May 12 | May 20 | 9    | 2 (3%) | 2    | 3     | Sep 20 | Sep 20 | Oct 28 | 39   | 5 (5%) | 1    | 5     |
| 2013     | Apr 18 | Apr 18 | May 6  | 19   | 2 (3%) | 1    | 2     | Sep 25 | Oct 18 | Oct 18 | 24   | 3 (3%) | 2    | 4     |
| 2014     |        |        |        |      |        |      |       | Oct 3  | Oct 3  | Oct 11 | 9    | 2 (2%) | 1    | 2     |
| Mean     | Apr 24 | Apr 24 | May 6  | 13   | 2 (3%) | 1    | 1.2   | Sep 18 | Sep 20 | Oct 5  | 19   | 2 (3%) | 1    | 2.7   |

| Observed | Nov  | Dec | Jan | Feb | Mar  | Winter | S1   | S2   | S3 | S4   | S5 | S6   | S7   | S8   | S9 | S10 | Spring |
|----------|------|-----|-----|-----|------|--------|------|------|----|------|----|------|------|------|----|-----|--------|
| 2005     |      |     |     |     |      |        |      |      |    |      |    | 0.1  |      |      |    |     | 0.02   |
| 2006     |      |     |     |     |      |        |      | 0.3  |    |      |    | 0.1  |      | 0.1  |    |     | 0.06   |
| 2007     |      |     |     |     |      |        |      |      |    |      |    |      |      |      |    |     |        |
| 2008     |      |     |     |     |      |        |      |      |    |      |    |      |      |      |    |     |        |
| 2009     |      |     |     |     | 0.07 | 0.03   | 0.1  |      |    |      |    |      |      |      |    |     | 0.01   |
| 2010     | 0.05 |     |     |     |      | 0.02   |      |      |    |      |    |      |      |      |    |     |        |
| 2011     |      |     |     |     |      |        |      |      |    |      |    |      |      | 0.1  |    |     | 0.01   |
| 2012     | 0.1  |     |     |     |      | 0.04   |      |      |    |      |    |      | 0.3  | 0.1  |    |     | 0.04   |
| 2013     |      |     |     |     |      |        |      |      |    | 0.1  |    | 0.1  |      |      |    |     | 0.03   |
| 2014     |      |     |     |     |      |        |      |      |    |      |    |      |      |      |    |     |        |
| Mean     | 0.02 |     |     |     | 0.01 | <0.01  | 0.02 | 0.03 |    | 0.01 |    | 0.04 | 0.03 | 0.04 |    |     | 0.02   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3   | F4   | F5   | F6   | F7   | F8   | F9   | F10  | F11  | F12  | F13  | Fall |
|----------|-----|-----|--------|----|----|------|------|------|------|------|------|------|------|------|------|------|------|
| 2005     |     |     |        |    |    |      |      |      |      |      |      |      |      |      | 0.1  |      | 0.01 |
| 2006     |     |     |        |    |    |      |      |      |      |      |      | 0.1  |      |      |      |      | 0.01 |
| 2007     |     |     |        |    |    | 0.3  |      | 0.1  |      |      |      |      |      |      |      |      | 0.03 |
| 2008     |     |     |        |    |    |      | 0.1  | 0.1  |      |      |      |      |      |      | 0.1  |      | 0.03 |
| 2009     |     |     |        |    |    |      |      | 0.1  | 0.1  |      |      |      |      |      |      |      | 0.02 |
| 2010     |     |     |        |    |    |      |      |      |      | 0.3  |      |      |      | 0.1  |      |      | 0.03 |
| 2011     |     |     |        |    |    |      |      |      |      |      |      | 0.3  | 0.1  |      |      |      | 0.03 |
| 2012     |     |     |        |    |    |      |      |      |      |      | 0.1  | 0.3  | 0.1  | 0.1  |      | 0.1  | 0.05 |
| 2013     |     |     |        |    |    |      |      |      |      |      | 0.1  |      |      | 0.1  | 0.3  |      | 0.04 |
| 2014     |     |     |        |    |    |      |      |      |      |      |      | 0.1  | 0.1  | 0.1  |      |      | 0.02 |
| Mean     |     |     |        |    |    | 0.03 | 0.01 | 0.04 | 0.01 | 0.03 | 0.03 | 0.04 | 0.06 | 0.06 | 0.06 | 0.01 | 0.03 |

Peregrine Falcon is a rare migrant at MBO, with observations spanning from late March to mid-May and mid-August to November. Spring sightings have occurred in six of ten years, with observations slightly more frequent in May. Fall observations have been widely scattered, but most frequent between late September and mid-October. While a pair of Peregrine Falcons has occasionally nested on the Ile-aux-Tourtes bridge, just 3.5 km west of MBO, most observations appear to be of migrants, based on the height, direction, and speed of flight. The peak periods of observation also match the expected timing for arctic migrants.

OSFL: Olive-sided Flycatcher / Moucherolle à côtés olive (*Contopus cooperi*)

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       | Aug 13 | Aug 13 | Aug 13 | 1    | 1 (1%) | 1    | 1     |
| 2006     |        |        |        |      |        |      |       | Aug 29 | Aug 29 | Aug 29 | 1    | 1 (1%) | 1    | 1     |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       | Aug 16 | Aug 16 | Aug 31 | 16   | 2 (2%) | 1    | 2     |
| 2009     |        |        |        |      |        |      |       | Aug 13 | Aug 13 | Sep 2  | 21   | 4 (4%) | 1    | 4     |
| 2010     |        |        |        |      |        |      |       | Sep 6  | Sep 6  | Sep 6  | 1    | 1 (1%) | 1    | 1     |
| 2011     |        |        |        |      |        |      |       | Aug 20 | Aug 20 | Aug 20 | 1    | 1 (1%) | 1    | 1     |
| 2012     |        |        |        |      |        |      |       | Aug 15 | Aug 15 | Aug 15 | 1    | 1 (1%) | 1    | 1     |
| 2013     |        |        |        |      |        |      |       | Aug 18 | Aug 18 | Aug 18 | 1    | 1 (1%) | 1    | 1     |
| 2014     | May 28 | May 28 | May 28 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| Mean     | May 28 | May 28 | May 28 | 1    | 1 (1%) | 1    | 0.1   | Aug 20 | Aug 20 | Aug 24 | 5    | 2 (2%) | 1    | 1.2   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 0.1  |     | 0.01   |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 0.01 |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2   | F3   | F4 | F5   | F6   | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|----|------|------|----|------|------|----|----|----|-----|-----|-----|-----|------|
| 2005     |     |     |        |    | 0.1  |      |    |      |      |    |    |    |     |     |     |     | 0.01 |
| 2006     |     |     |        |    |      |      |    | 0.1  |      |    |    |    |     |     |     |     | 0.01 |
| 2007     |     |     |        |    |      |      |    |      |      |    |    |    |     |     |     |     |      |
| 2008     |     |     |        |    |      | 0.1  |    | 0.1  |      |    |    |    |     |     |     |     | 0.02 |
| 2009     |     |     |        |    | 0.1  |      |    | 0.4  |      |    |    |    |     |     |     |     | 0.04 |
| 2010     |     |     |        |    |      |      |    |      | 0.1  |    |    |    |     |     |     |     | 0.01 |
| 2011     |     |     |        |    |      | 0.1  |    |      |      |    |    |    |     |     |     |     | 0.01 |
| 2012     |     |     |        |    |      | 0.1  |    |      |      |    |    |    |     |     |     |     | 0.01 |
| 2013     |     |     |        |    |      | 0.1  |    |      |      |    |    |    |     |     |     |     | 0.01 |
| 2014     |     |     |        |    |      |      |    |      |      |    |    |    |     |     |     |     |      |
| Mean     |     |     |        |    | 0.03 | 0.06 |    | 0.07 | 0.01 |    |    |    |     |     |     |     | 0.01 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 1   |     | 1      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 0.1 |     | 0.1    |

Olive-sided Flycatcher is the rarest of the flycatchers at MBO, with just one spring observation (in 2014), and a dozen fall observations spread across eight years. All fall sightings have come between August 13 and September 6, although strangely none have occurred in week 4, in the middle of that period. Fall numbers have remained similarly low over the years. The lone spring bird is the only one banded to date.

**EAWP: Eastern Wood-Pewee / Pioui de l'Est (*Contopus virens*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     |        |        |        |      |          |      |       | Aug 1  | Aug 15 | Sep 19 | 50   | 26 (30%) | 4    | 38    |
| 2006     | May 28 | May 28 | Jun 2  | 6    | 3 (4%)   | 2    | 4     | Aug 6  | Aug 6  | Sep 4  | 30   | 2 (2%)   | 1    | 2     |
| 2007     | May 18 | May 18 | Jun 1  | 15   | 6 (9%)   | 2    | 8     | Aug 4  | Aug 17 | Oct 5  | 63   | 7 (8%)   | 3    | 9     |
| 2008     | May 26 | May 26 | Jun 2  | 8    | 4 (6%)   | 1    | 4     | Aug 29 | Aug 29 | Aug 29 | 1    | 1 (1%)   | 1    | 1     |
| 2009     | May 22 | May 22 | Jun 5  | 15   | 4 (6%)   | 1    | 4     | Aug 6  | Aug 6  | Oct 13 | 69   | 11 (12%) | 1    | 11    |
| 2010     | May 26 | May 26 | May 26 | 1    | 1 (1%)   | 1    | 1     | Aug 5  | Aug 5  | Aug 5  | 1    | 1 (1%)   | 1    | 1     |
| 2011     | May 19 | May 19 | Jun 2  | 15   | 9 (13%)  | 2    | 12    | Aug 3  | Aug 24 | Sep 4  | 33   | 10 (11%) | 4    | 16    |
| 2012     | May 27 | May 27 | May 27 | 1    | 1 (1%)   | 2    | 2     | Aug 12 | Aug 12 | Aug 26 | 15   | 4 (4%)   | 1    | 4     |
| 2013     | May 27 | May 27 | Jun 3  | 8    | 4 (6%)   | 1    | 4     | Aug 14 | Aug 14 | Sep 9  | 27   | 4 (4%)   | 1    | 4     |
| 2014     | May 24 | May 24 | Jun 4  | 12   | 10 (15%) | 2    | 12    | Aug 1  | Aug 10 | Sep 16 | 47   | 21 (23%) | 4    | 36    |
| Mean     | May 24 | May 24 | Jun 1  | 9    | 5 (7%)   | 2    | 5.1   | Aug 8  | Aug 13 | Sep 9  | 34   | 9 (10%)  | 2    | 12    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 0.4 | 0.1 | 0.06   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.6 |     | 0.6 | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 0.3 | 0.3 | 0.06   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1 |     | 0.4 | 0.06   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 0.1 |     | 0.01   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.6 | 0.4 | 0.7 | 0.2    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 0.3 |     | 0.03   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 0.1 | 0.4 | 0.06   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1.1 | 0.7 | 0.2    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1 | 0.3 | 0.3 | 0.07   |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6   | F7   | F8   | F9   | F10  | F11  | F12 | F13 | Fall |
|----------|-----|------|--------|-----|-----|-----|-----|-----|------|------|------|------|------|------|-----|-----|------|
| 2005     | 0.8 | 0.6  | 0.7    | 1.1 | 0.9 | 0.9 | 0.6 | 1.0 | 0.6  | 0.3  | 0.1  |      |      |      |     |     | 0.4  |
| 2006     | 0.1 | 0.08 | 0.09   | 0.1 |     |     |     | 0.1 |      |      |      |      |      |      |     |     | 0.02 |
| 2007     |     |      |        | 0.3 |     | 0.4 | 0.1 |     |      |      | 0.1  | 0.1  | 0.1  |      |     |     | 0.10 |
| 2008     |     |      |        |     |     |     |     | 0.1 |      |      |      |      |      |      |     |     | 0.01 |
| 2009     |     |      |        | 0.1 | 0.4 | 0.3 | 0.1 | 0.3 |      |      | 0.1  |      |      | 0.1  |     |     | 0.1  |
| 2010     |     |      |        | 0.1 |     |     |     |     |      |      |      |      |      |      |     |     | 0.01 |
| 2011     |     |      |        | 0.1 | 0.3 | 0.1 | 0.7 | 1.0 |      |      |      |      |      |      |     |     | 0.2  |
| 2012     | 0.3 |      | 0.1    |     | 0.3 |     | 0.3 |     |      |      |      |      |      |      |     |     | 0.04 |
| 2013     |     |      |        |     | 0.1 | 0.1 |     | 0.1 | 0.1  |      |      |      |      |      |     |     | 0.04 |
| 2014     | 0.3 |      | 0.1    | 1.4 | 1.9 | 1.0 | 0.3 | 0.1 | 0.1  | 0.3  |      |      |      |      |     |     | 0.4  |
| Mean     | 0.3 | 0.2  | 0.2    | 0.3 | 0.4 | 0.3 | 0.2 | 0.3 | 0.09 | 0.06 | 0.04 | 0.01 | 0.01 | 0.01 |     |     | 0.1  |

| Banded | Jun | Jul | Summer | F1 | F2  | F3  | F4 | F5  | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|-----|-----|----|-----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    | 1   | 2   |    | 1   |    |    |    |    |     |     |     |     | 4    |
| 2006   |     |     |        |    |     |     |    | 1   |    |    |    |    |     |     |     |     | 1    |
| 2007   |     |     |        |    |     |     |    |     |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |     |     |    |     |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |     | 1   |    | 1   |    |    |    |    |     |     |     |     | 2    |
| 2010   |     |     |        |    |     |     |    |     |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |     |     |    |     |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |     |     |    |     |    |    |    |    |     |     |     |     |      |
| 2013   |     |     |        |    |     |     |    | 1   |    |    |    |    |     |     |     |     | 1    |
| 2014   |     |     |        |    | 1   | 1   |    |     |    |    |    |    |     |     |     |     | 2    |
| Mean   |     |     |        |    | 0.2 | 0.4 |    | 0.4 |    |    |    |    |     |     |     |     | 1.0  |

Eastern Wood-Pewee is a regular but rare species at MBO from late spring to mid-fall. Spring migrants usually arrive in week 9, with the earliest records coming in week 8 in only three of ten years. Fall migration is somewhat more protracted, with sightings past week 8 in 2007 and 2009, but more commonly peaking in early August and tapering off by early September. Counts in both seasons have generally been low, with unusually high numbers only in spring 2011 and 2014, and fall 2005 and 2014. Just 10 individuals have been banded, all in fall, and none beyond week 5.

**YBFL: Yellow-bellied Flycatcher / Moucherolle à ventre jaune (*Empidonax flaviventris*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 30 | May 30 | May 30 | 1    | 1 (2%) | 1    | 1     | Aug 10 | Sep 1  | Sep 18 | 40   | 10 (11%) | 2    | 12    |
| 2006     | May 20 | May 20 | Jun 1  | 13   | 5 (7%) | 1    | 5     | Aug 6  | Aug 16 | Sep 5  | 31   | 13 (14%) | 6    | 24    |
| 2007     |        |        |        |      |        |      |       | Sep 4  | Sep 4  | Sep 11 | 8    | 3 (3%)   | 1    | 3     |
| 2008     | May 28 | May 28 | May 30 | 3    | 2 (3%) | 1    | 2     | Aug 9  | Aug 31 | Oct 4  | 57   | 14 (15%) | 4    | 23    |
| 2009     |        |        |        |      |        |      |       | Aug 18 | Aug 23 | Sep 4  | 18   | 12 (13%) | 4    | 22    |
| 2010     | May 23 | May 23 | May 23 | 1    | 1 (1%) | 1    | 1     | Aug 6  | Sep 9  | Sep 18 | 44   | 12 (13%) | 3    | 17    |
| 2011     | May 25 | May 28 | May 28 | 4    | 3 (4%) | 3    | 5     | Aug 14 | Aug 30 | Sep 20 | 38   | 20 (22%) | 4    | 32    |
| 2012     |        |        |        |      |        |      |       | Aug 11 | Aug 14 | Sep 22 | 43   | 16 (18%) | 2    | 20    |
| 2013     | May 25 | May 25 | May 30 | 6    | 2 (3%) | 2    | 3     | Aug 7  | Sep 4  | Sep 23 | 48   | 22 (24%) | 3    | 27    |
| 2014     | May 21 | May 21 | May 26 | 6    | 2 (3%) | 1    | 2     | Aug 4  | Aug 22 | Sep 14 | 42   | 17 (19%) | 9    | 33    |
| Mean     | May 24 | May 25 | May 28 | 5    | 2 (3%) | 1    | 1.9   | Aug 12 | Aug 27 | Sep 16 | 37   | 14 (15%) | 4    | 21    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8   | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|------|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |     | 0.2  | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1  | 0.4 | 0.1  | 0.07   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |     |      |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.1 | 0.1  | 0.03   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |     |      |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.1 |      | 0.01   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.7 |      | 0.07   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |     |      |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.3 | 0.1  | 0.04   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1  | 0.1 |      | 0.03   |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.03 | 0.2 | 0.06 | 0.03   |

| Observed | Jun | Jul | Summer | F1   | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10  | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|------|
| 2005     |     |     |        |      | 0.3 | 0.3 |     | 0.6 | 0.1 | 0.4 |     |     |      |     |     |     | 0.1  |
| 2006     |     |     |        | 0.1  | 0.6 | 1.4 | 0.4 | 0.7 | 0.1 |     |     |     |      |     |     |     | 0.3  |
| 2007     |     |     |        |      |     |     |     | 0.1 | 0.3 |     |     |     |      |     |     |     | 0.03 |
| 2008     |     |     |        |      | 0.9 | 0.4 |     | 1.1 | 0.7 |     |     | 0.1 |      |     |     |     | 0.3  |
| 2009     |     |     |        |      |     | 0.6 | 1.3 | 1.3 |     |     |     |     |      |     |     |     | 0.2  |
| 2010     |     |     |        | 0.1  | 0.1 | 0.3 | 0.4 | 0.1 | 0.7 | 0.6 |     |     |      |     |     |     | 0.2  |
| 2011     |     |     |        |      | 0.1 | 0.9 | 0.6 | 1.3 | 1.1 | 0.3 | 0.3 |     |      |     |     |     | 0.4  |
| 2012     |     |     |        |      | 0.4 | 1.0 | 0.4 | 0.3 | 0.1 | 0.1 | 0.4 |     |      |     |     |     | 0.2  |
| 2013     |     |     |        | 0.1  | 0.3 | 0.3 | 0.9 | 1.0 | 0.6 | 0.4 | 0.3 |     |      |     |     |     | 0.3  |
| 2014     |     |     |        | 0.1  | 0.1 | 0.6 | 2.4 | 1.0 | 0.1 | 0.3 |     |     |      |     |     |     | 0.4  |
| Mean     |     |     |        | 0.06 | 0.3 | 0.6 | 0.6 | 0.8 | 0.4 | 0.2 | 0.1 |     | 0.01 |     |     |     | 0.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     | 1   | 1      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 2   |     | 2      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     | 1   | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 1   |     | 1      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 5   |     | 5      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 1   | 1   | 2      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 1   |     | 1      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 1.0 | 0.3 | 1.3    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     | 2   | 1   |     | 3   | 1   | 3   |     |    |     |     |     |     | 10   |
| 2006   |     |     |        |     | 3   | 3   | 1   | 3   | 1   |     |     |    |     |     |     |     | 11   |
| 2007   |     |     |        |     |     |     |     | 1   |     |     |     |    |     |     |     |     | 1    |
| 2008   |     |     |        |     | 6   | 2   |     | 7   | 4   |     |     |    | 1   |     |     |     | 20   |
| 2009   |     |     |        |     |     | 2   | 7   | 6   |     |     |     |    |     |     |     |     | 15   |
| 2010   |     |     |        | 1   | 1   | 1   | 3   | 1   | 5   | 4   |     |    |     |     |     |     | 16   |
| 2011   |     |     |        |     | 1   | 5   | 3   | 8   | 6   |     | 1   |    |     |     |     |     | 24   |
| 2012   |     |     |        |     | 3   | 1   | 3   | 2   |     | 1   | 1   |    |     |     |     |     | 11   |
| 2013   |     |     |        | 1   | 2   | 1   | 4   | 4   | 4   | 1   | 2   |    |     |     |     |     | 19   |
| 2014   |     |     |        | 1   | 1   | 3   | 15  | 7   | 1   | 2   |     |    |     |     |     |     | 30   |
| Mean   |     |     |        | 0.3 | 1.9 | 1.9 | 3.6 | 4.2 | 2.2 | 1.1 | 0.4 |    | 0.1 |     |     |     | 15.7 |

Yellow-bellied Flycatcher is a rare spring but fairly common fall migrant at MBO. It is one of the latest spring arrivals, typically not detected until week 9, and with May 20 as the earliest date of arrival. More than two-thirds of the spring migrants and nearly three-quarters of individuals recorded in fall have been banded, reflecting how easily this species is overlooked when not in the nets. Fall migration spreads over a longer period, including one exceptional record in early October, but typically peaks quite distinctly in weeks 4 and 5. Although fluctuating somewhat, fall numbers have been showing somewhat of an increase over the past decade.

**TRFL: Traill's Flycatcher / Moucherolle des saules ou M. des aulnes (*Empidonax traillii* or *alnorum*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 16 | May 30 | Jun 2 | 18   | 6 (10%)  | 3    | 10    | Aug 2 | Aug 15 | Sep 18 | 48   | 14 (16%) | 5    | 21    |
| 2006     | May 9  | May 30 | Jun 4 | 27   | 9 (13%)  | 3    | 13    | Aug 2 | Aug 21 | Sep 15 | 45   | 21 (23%) | 4    | 29    |
| 2007     | May 20 | Jun 1  | Jun 5 | 17   | 11 (16%) | 4    | 20    | Aug 3 | Aug 8  | Sep 11 | 40   | 19 (21%) | 4    | 32    |
| 2008     | May 28 | Jun 1  | Jun 5 | 9    | 7 (10%)  | 6    | 17    | Aug 1 | Aug 8  | Sep 19 | 50   | 24 (26%) | 4    | 46    |
| 2009     | May 18 | May 23 | Jun 3 | 17   | 11 (16%) | 3    | 23    | Aug 8 | Aug 12 | Sep 12 | 36   | 21 (23%) | 4    | 35    |
| 2010     | May 22 | May 24 | Jun 2 | 12   | 6 (9%)   | 2    | 8     | Aug 2 | Aug 10 | Sep 10 | 40   | 11 (12%) | 2    | 13    |
| 2011     | May 16 | May 25 | Jun 5 | 21   | 11 (16%) | 7    | 39    | Aug 6 | Aug 15 | Sep 7  | 33   | 13 (14%) | 6    | 23    |
| 2012     | May 14 | May 28 | Jun 5 | 23   | 16 (23%) | 9    | 50    | Aug 7 | Aug 10 | Sep 8  | 33   | 19 (21%) | 6    | 37    |
| 2013     | May 15 | May 25 | Jun 4 | 21   | 11 (16%) | 5    | 27    | Aug 7 | Aug 16 | Sep 4  | 29   | 15 (16%) | 4    | 23    |
| 2014     | May 11 | May 27 | Jun 3 | 24   | 15 (22%) | 13   | 54    | Aug 3 | Aug 22 | Aug 30 | 28   | 13 (14%) | 5    | 26    |
| Mean     | May 16 | May 27 | Jun 3 | 19   | 10 (15%) | 6    | 26    | Aug 4 | Aug 13 | Sep 10 | 38   | 17 (19%) | 4    | 29    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7   | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|------|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.3 | 0.1 | 1.4 | 0.2    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  |     | 0.9 | 0.9 | 0.2    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.4 | 0.9 | 1.6 | 0.3    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |      |     | 0.4 | 2.0 | 0.2    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.6 | 1.4 | 1.3 | 0.3    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.1 | 0.7 | 0.3 | 0.1    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.1 | 3.9 | 1.6 | 0.6    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  | 0.9 | 4.3 | 1.9 | 0.7    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  | 0.6 | 2.0 | 1.1 | 0.4    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  | 0.6 | 4.9 | 2.5 | 0.8    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.06 | 0.4 | 1.9 | 1.4 | 0.4    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7   | F8   | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|------|------|----|-----|-----|-----|-----|------|
| 2005     | 0.3 | 0.1 | 0.2    | 0.3 |     | 1.0 | 0.7 | 0.7 | 0.1 | 0.1  |      |    |     |     |     |     | 0.2  |
| 2006     |     |     |        | 0.7 | 1.1 | 0.9 | 0.6 | 0.4 | 0.3 | 0.1  |      |    |     |     |     |     | 0.3  |
| 2007     | 3.4 | 0.3 | 2.0    | 0.7 | 1.4 | 0.7 | 1.4 | 0.1 | 0.1 |      |      |    |     |     |     |     | 0.4  |
| 2008     |     |     |        | 1.6 | 2.9 | 0.7 | 0.4 | 0.6 | 0.1 | 0.1  | 0.1  |    |     |     |     |     | 0.5  |
| 2009     | 1.0 |     | 0.4    |     | 1.4 | 1.1 | 1.0 | 1.1 | 0.1 | 0.1  |      |    |     |     |     |     | 0.4  |
| 2010     | 0.7 | 0.2 | 0.3    | 0.3 | 0.7 | 0.3 | 0.3 | 0.1 | 0.1 |      |      |    |     |     |     |     | 0.1  |
| 2011     | 0.7 |     | 0.3    | 0.3 | 0.7 | 1.0 | 0.4 | 0.7 | 0.1 |      |      |    |     |     |     |     | 0.3  |
| 2012     | 0.3 | 0.3 | 0.2    | 0.1 | 2.4 | 0.9 | 1.4 |     | 0.4 |      |      |    |     |     |     |     | 0.4  |
| 2013     | 0.3 | 0.5 | 0.4    | 0.1 | 1.0 | 1.4 | 0.3 | 0.4 |     |      |      |    |     |     |     |     | 0.3  |
| 2014     | 1.7 | 0.5 | 1.0    | 0.4 | 0.9 | 0.3 | 2.0 | 0.1 |     |      |      |    |     |     |     |     | 0.3  |
| Mean     | 0.7 | 0.2 | 0.4    | 0.5 | 1.3 | 0.8 | 0.9 | 0.4 | 0.2 | 0.06 | 0.01 |    |     |     |     |     | 0.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     | 2   |     | 3   | 5      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     | 3   | 2   | 6      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     | 3   | 2   | 2   | 7      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 3   | 6   | 9      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     | 3   | 8   | 4   | 15     |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 5   |     | 5      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 17  | 2   | 19     |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 1   | 11  | 4   | 17     |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     | 2   | 10  | 4   | 16     |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |     | 2   | 25  | 7   | 34     |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.2 | 1.3 | 8.4 | 3.4 | 13.3   |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     | 5   | 4   | 2   | 1   |     |    |    |     |     |     |     | 12   |
| 2006   |     |     |        | 5   | 4   | 4   | 2   | 1   | 1   | 1   |    |    |     |     |     |     | 18   |
| 2007   |     |     |        | 5   | 10  | 1   | 4   | 1   | 1   |     |    |    |     |     |     |     | 22   |
| 2008   |     |     |        | 10  | 13  | 2   | 2   | 2   |     | 1   |    |    |     |     |     |     | 30   |
| 2009   | 1   |     | 1      |     | 8   | 8   | 4   | 3   | 1   |     |    |    |     |     |     |     | 24   |
| 2010   |     | 1   | 1      | 2   | 5   | 1   | 2   | 1   | 1   |     |    |    |     |     |     |     | 12   |
| 2011   |     |     |        | 2   | 5   | 7   | 2   | 1   | 1   |     |    |    |     |     |     |     | 18   |
| 2012   |     | 1   | 1      | 1   | 15  | 2   | 3   |     | 3   |     |    |    |     |     |     |     | 24   |
| 2013   | 1   | 2   | 3      | 1   | 7   | 6   | 1   | 1   |     |     |    |    |     |     |     |     | 16   |
| 2014   | 4   | 1   | 5      | 1   | 5   | 1   | 7   | 1   |     |     |    |    |     |     |     |     | 15   |
| Mean   | 1.0 | 0.6 | 1.2    | 2.7 | 7.2 | 3.7 | 3.1 | 1.3 | 0.9 | 0.2 |    |    |     |     |     |     | 19.1 |

Traill's Flycatcher is the collective name for Willow and Alder Flycatcher, which are difficult to distinguish with certainty unless heard vocalizing. The subset of individuals which were identified to species are summarized on the following page. Traill's Flycatchers are late spring and early fall migrants, typically peaking in week 9 of spring, and in week 2 of fall; there are only two spring records before May 15, and two fall records after September 15. Spring numbers have been much higher over the past four years than previously, but there is no clear long-term pattern in fall counts. There have been summer records in all years except 2006 and 2008, in most cases locally breeding Alder Flycatchers.

**ALFL: Alder Flycatcher / Moucherolle des aulnes (*Empidonax alnorum*)**

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7   | S8   | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|------|------|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |      |      | 0.1 | 0.8 | 0.08   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |      |      | 0.1 | 0.6 | 0.07   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |      |      | 0.1 | 1.3 | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |      |      |     | 1.1 | 0.1    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |      |      | 0.3 | 0.6 | 0.09   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |      |      |     | 0.3 | 0.03   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |      |      |     | 1.4 | 0.3    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.6  |     | 2.6 | 0.4    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  | 0.3  | 0.4 | 0.6 | 0.1    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  |      | 1.0 | 1.3 | 0.2    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.03 | 0.09 | 0.6 | 0.9 | 0.2    |

| Observed | Jun | Jul  | Summer | F1   | F2 | F3   | F4 | F5   | F6 | F7   | F8   | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|------|--------|------|----|------|----|------|----|------|------|----|-----|-----|-----|-----|-------|
| 2005     | 0.2 | 0.06 | 0.1    | 0.1  |    |      |    | 0.3  |    | 0.1  |      |    |     |     |     |     | 0.05  |
| 2006     |     |      |        |      |    |      |    |      |    |      |      |    |     |     |     |     |       |
| 2007     | 2.0 | 0.3  | 1.2    |      |    |      |    |      |    |      |      |    |     |     |     |     |       |
| 2008     |     |      |        |      |    |      |    |      |    |      | 0.1  |    |     |     |     |     | 0.01  |
| 2009     | 0.7 |      | 0.3    |      |    |      |    |      |    | 0.1  |      |    |     |     |     |     | 0.01  |
| 2010     | 0.7 |      | 0.2    |      |    |      |    |      |    |      |      |    |     |     |     |     |       |
| 2011     | 0.7 |      | 0.3    |      |    |      |    |      |    |      |      |    |     |     |     |     |       |
| 2012     | 0.3 |      | 0.1    |      |    |      |    |      |    |      |      |    |     |     |     |     |       |
| 2013     |     |      |        |      |    | 0.1  |    |      |    |      |      |    |     |     |     |     | 0.01  |
| 2014     | 0.3 | 0.3  | 0.3    | 0.1  |    |      |    |      |    |      |      |    |     |     |     |     | 0.01  |
| Mean     | 0.4 | 0.06 | 0.2    | 0.03 |    | 0.01 |    | 0.03 |    | 0.03 | 0.01 |    |     |     |     |     | <0.01 |

The charts above and below summarize the records of Traill's Flycatcher that were identifiable to species through either vocalizations or measurements. The results suggest that in spring, Willow Flycatchers may tend to migrate slightly earlier than Alder Flycatchers. There is only one Willow Flycatcher record from summer, despite this being a period when vocalizations are more common, leading to the conclusion that unidentified summer records are generally also Alder Flycatchers.

**WIFL: Willow Flycatcher / Moucherolle des saules (*Empidonax traillii*)**

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8   | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|------|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |     |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.1 |     | 0.01   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.4 |     | 0.04   |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |     |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1  |     |     | 0.01   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1  |     |     | 0.01   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |     |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.1 |     | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |     |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1  | 0.3 |     | 0.04   |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.04 | 0.1 |     | 0.01   |

| Observed | Jun  | Jul | Summer | F1 | F2   | F3 | F4 | F5 | F6   | F7   | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|------|-----|--------|----|------|----|----|----|------|------|----|----|-----|-----|-----|-----|-------|
| 2005     | 0.06 |     | 0.03   |    |      |    |    |    |      |      |    |    |     |     |     |     |       |
| 2006     |      |     |        |    |      |    |    |    |      |      |    |    |     |     |     |     |       |
| 2007     |      |     |        |    |      |    |    |    |      |      |    |    |     |     |     |     |       |
| 2008     |      |     |        |    |      |    |    |    | 0.1  | 0.1  |    |    |     |     |     |     | 0.02  |
| 2009     |      |     |        |    | 0.1  |    |    |    |      |      |    |    |     |     |     |     | 0.01  |
| 2010     |      |     |        |    |      |    |    |    |      |      |    |    |     |     |     |     |       |
| 2011     |      |     |        |    |      |    |    |    |      |      |    |    |     |     |     |     |       |
| 2012     |      |     |        |    | 0.1  |    |    |    | 0.1  |      |    |    |     |     |     |     | 0.02  |
| 2013     |      |     |        |    |      |    |    |    |      |      |    |    |     |     |     |     |       |
| 2014     |      |     |        |    |      |    |    |    |      |      |    |    |     |     |     |     |       |
| Mean     | 0.02 |     | <0.01  |    | 0.03 |    |    |    | 0.03 | 0.01 |    |    |     |     |     |     | <0.01 |

| Banded | Jun | Jul | Summer | F1 | F2  | F3 | F4 | F5 | F6  | F7  | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|-----|----|----|----|-----|-----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |     |    |    |    |     |     |    |    |     |     |     |     |      |
| 2006   |     |     |        |    |     |    |    |    |     |     |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |     |    |    |    |     |     |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |     |    |    |    |     | 1   |    |    |     |     |     |     | 1    |
| 2009   |     |     |        |    | 1   |    |    |    |     |     |    |    |     |     |     |     | 1    |
| 2010   |     |     |        |    |     |    |    |    |     |     |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |     |    |    |    |     |     |    |    |     |     |     |     |      |
| 2012   |     |     |        |    | 1   |    |    |    | 1   |     |    |    |     |     |     |     | 2    |
| 2013   |     |     |        |    |     |    |    |    |     |     |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |     |    |    |    |     |     |    |    |     |     |     |     |      |
| Mean   |     |     |        |    | 0.2 |    |    |    | 0.1 | 0.1 |    |    |     |     |     |     | 0.4  |

**LEFL: Least Flycatcher / Moucherolle tchébec (*Empidonax minimus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 11 | May 28 | Jun 1  | 22   | 16 (27%) | 5    | 26    | Aug 1  | Aug 22 | Sep 4  | 35   | 12 (14%) | 4    | 21    |
| 2006     | May 12 | May 21 | May 28 | 17   | 12 (17%) | 4    | 21    | Aug 3  | Aug 22 | Sep 15 | 44   | 15 (16%) | 4    | 23    |
| 2007     | May 10 | May 18 | May 29 | 20   | 12 (17%) | 4    | 20    | Aug 11 | Aug 25 | Sep 12 | 33   | 14 (15%) | 4    | 21    |
| 2008     | May 7  | May 7  | Jun 1  | 26   | 15 (21%) | 1    | 15    | Aug 1  | Sep 1  | Sep 12 | 43   | 22 (24%) | 2    | 25    |
| 2009     | May 9  | May 18 | Jun 1  | 24   | 12 (17%) | 4    | 19    | Aug 2  | Aug 13 | Sep 4  | 34   | 12 (13%) | 2    | 14    |
| 2010     | May 10 | May 17 | May 24 | 15   | 11 (16%) | 4    | 20    | Aug 4  | Aug 18 | Sep 9  | 37   | 11 (12%) | 5    | 19    |
| 2011     | May 12 | May 13 | Jun 1  | 21   | 14 (20%) | 9    | 39    | Aug 8  | Aug 22 | Sep 21 | 45   | 12 (13%) | 3    | 16    |
| 2012     | May 10 | May 13 | Jun 5  | 27   | 10 (14%) | 10   | 26    | Aug 15 | Aug 25 | Sep 9  | 26   | 13 (14%) | 2    | 16    |
| 2013     | Apr 29 | Apr 29 | Jun 2  | 35   | 17 (24%) | 4    | 42    | Aug 4  | Aug 17 | Sep 2  | 30   | 12 (13%) | 2    | 15    |
| 2014     | May 9  | May 13 | May 31 | 23   | 19 (28%) | 11   | 44    | Aug 1  | Aug 23 | Sep 11 | 42   | 19 (21%) | 14   | 37    |
| Mean     | May 8  | May 14 | May 30 | 23   | 14 (20%) | 6    | 27    | Aug 5  | Aug 21 | Sep 9  | 37   | 14 (16%) | 4    | 21    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6   | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|------|------|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |      |      | 0.7 | 1.1 | 1.4 | 0.6 | 0.4    |
| 2006     |     |     |     |     |     |        |    |    |    |    |      |      | 0.7 | 1.9 | 0.4 |     | 0.3    |
| 2007     |     |     |     |     |     |        |    |    |    |    |      |      | 1.0 | 1.3 | 0.6 |     | 0.3    |
| 2008     |     |     |     |     |     |        |    |    |    |    |      | 0.3  | 0.7 | 0.4 | 0.4 | 0.3 | 0.2    |
| 2009     |     |     |     |     |     |        |    |    |    |    |      |      | 0.3 | 1.7 | 0.4 | 0.3 | 0.3    |
| 2010     |     |     |     |     |     |        |    |    |    |    |      |      | 0.3 | 2.1 | 0.4 |     | 0.3    |
| 2011     |     |     |     |     |     |        |    |    |    |    |      |      | 1.7 | 2.3 | 1.3 | 0.3 | 0.6    |
| 2012     |     |     |     |     |     |        |    |    |    |    |      |      | 2.7 | 0.4 | 0.1 | 0.4 | 0.4    |
| 2013     |     |     |     |     |     |        |    |    |    |    | 0.6  | 0.1  | 1.7 | 2.6 | 0.9 | 0.1 | 0.6    |
| 2014     |     |     |     |     |     |        |    |    |    |    |      |      | 3.9 | 0.9 | 1.3 | 0.3 | 0.6    |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.06 | 0.04 | 1.4 | 1.5 | 0.7 | 0.2 | 0.4    |

| Observed | Jun  | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7   | F8   | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|------|-----|--------|-----|-----|-----|-----|-----|-----|------|------|----|-----|-----|-----|-----|------|
| 2005     |      |     |        | 0.1 | 0.3 | 0.7 | 1.7 | 0.1 |     |      |      |    |     |     |     |     | 0.2  |
| 2006     |      | 0.2 | 0.09   | 0.1 | 0.7 | 0.7 | 0.9 | 0.3 | 0.3 | 0.3  |      |    |     |     |     |     | 0.3  |
| 2007     | 0.1  |     | 0.08   |     | 0.3 | 0.3 | 1.3 | 0.4 | 0.6 | 0.1  |      |    |     |     |     |     | 0.2  |
| 2008     |      |     |        | 0.4 | 0.4 | 0.4 | 1.0 | 0.7 | 0.1 |      |      |    |     |     |     |     | 0.3  |
| 2009     |      | 0.3 | 0.1    | 0.1 | 0.6 | 0.4 | 0.4 | 0.4 |     |      |      |    |     |     |     |     | 0.2  |
| 2010     |      | 0.2 | 0.1    | 0.3 | 0.3 | 0.9 | 0.4 | 0.4 | 0.4 |      |      |    |     |     |     |     | 0.2  |
| 2011     |      |     |        |     | 0.3 | 0.1 | 1.0 | 0.4 | 0.1 |      | 0.3  |    |     |     |     |     | 0.2  |
| 2012     |      | 0.8 | 0.4    |     |     | 0.7 | 1.0 | 0.4 | 0.1 |      |      |    |     |     |     |     | 0.2  |
| 2013     | 0.7  | 1.0 | 0.9    | 0.6 | 0.1 | 0.4 | 0.6 | 0.4 |     |      |      |    |     |     |     |     | 0.2  |
| 2014     |      | 0.3 | 0.1    | 0.6 | 0.1 | 0.7 | 3.1 | 0.4 | 0.3 |      |      |    |     |     |     |     | 0.4  |
| Mean     | 0.05 | 0.2 | 0.1    | 0.2 | 0.3 | 0.5 | 1.1 | 0.4 | 0.3 | 0.06 | 0.03 |    |     |     |     |     | 0.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |     | 2   | 5   | 1   | 1   | 9      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |     |     | 3   | 1   |     | 4      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |     | 3   | 3   | 1   |     | 7      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    | 1   |     |     | 1   |     | 2      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |     | 1   | 7   | 1   | 1   | 10     |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |     | 1   | 3   |     |     | 4      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |     | 4   | 2   | 3   |     | 9      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |     | 5   | 2   |     | 2   | 9      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |     | 2   | 8   | 2   |     | 12     |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |     | 14  | 2   | 5   |     | 21     |
| Mean   |     |     |     |     |     |        |    |    |    |    |    | 0.1 | 3.2 | 3.5 | 1.5 | 0.4 | 8.7    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     | 3   | 5   |     |     |     |    |    |     |     |     |     | 8    |
| 2006   |     | 1   | 1      |     | 2   | 3   | 3   |     | 2   | 1   |    |    |     |     |     |     | 11   |
| 2007   |     |     |        |     | 2   |     | 6   | 3   | 3   |     |    |    |     |     |     |     | 14   |
| 2008   |     |     |        | 2   | 1   | 2   | 2   | 4   | 2   |     |    |    |     |     |     |     | 13   |
| 2009   |     | 1   | 1      | 1   | 1   | 1   | 2   | 1   |     |     |    |    |     |     |     |     | 6    |
| 2010   |     | 1   | 1      | 1   | 2   | 4   | 2   | 3   | 1   |     |    |    |     |     |     |     | 13   |
| 2011   |     |     |        |     | 1   |     | 2   |     |     |     |    |    |     |     |     |     | 3    |
| 2012   |     | 2   | 2      |     |     | 2   | 4   | 2   |     |     |    |    |     |     |     |     | 8    |
| 2013   |     | 2   | 2      | 1   |     | 1   | 1   | 2   |     |     |    |    |     |     |     |     | 5    |
| 2014   |     | 1   | 1      | 1   |     | 1   | 10  | 1   | 1   |     |    |    |     |     |     |     | 14   |
| Mean   |     | 0.9 | 0.9    | 0.6 | 0.9 | 1.7 | 3.7 | 1.6 | 0.9 | 0.1 |    |    |     |     |     |     | 9.5  |

Least Flycatcher is the earliest of the *Empidonax* flycatchers in spring, always returning by week 7, and in two years even earlier. There is consistently a distinct peak spanning weeks 7 and 8, with only a small number lingering into week 10 in some years. Similarly, there is a short and fairly distinct peak to fall migration, on average centered around week 4, with only rare sightings as late as week 7 or 8. Mean daily counts and numbers banded have remained remarkably consistent over the years during both spring and fall, with only 2014 unusually high for both. Small numbers are usually present in summer, and have been banded in July in six years.



**EAPH: Eastern Phoebe / Moucherolle phébi (*Sayornis phoebe*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 5  | Jun 3  | 60   | 51 (86%) | 4    | 81    | Aug 1  | Oct 2  | Oct 9  | 70   | 40 (45%) | 4    | 55    |
| 2006     | Mar 31 | Apr 15 | Jun 5  | 67   | 65 (94%) | 3    | 100   | Aug 2  | Aug 7  | Oct 5  | 65   | 17 (19%) | 2    | 18    |
| 2007     | Mar 28 | Mar 31 | Jun 5  | 70   | 53 (76%) | 3    | 73    | Aug 16 | Aug 21 | Oct 20 | 66   | 18 (20%) | 4    | 23    |
| 2008     | Apr 10 | Apr 10 | May 30 | 51   | 6 (9%)   | 1    | 6     | Aug 1  | Aug 1  | Oct 17 | 78   | 21 (23%) | 3    | 26    |
| 2009     | Apr 14 | Apr 17 | Jun 5  | 53   | 45 (65%) | 3    | 67    | Aug 4  | Aug 13 | Oct 10 | 68   | 29 (32%) | 4    | 42    |
| 2010     | Apr 5  | May 12 | Jun 5  | 62   | 13 (19%) | 2    | 16    | Aug 2  | Aug 13 | Oct 21 | 81   | 14 (15%) | 2    | 15    |
| 2011     | Mar 30 | May 19 | Jun 3  | 66   | 25 (36%) | 3    | 32    | Aug 2  | Sep 14 | Oct 18 | 78   | 32 (35%) | 3    | 54    |
| 2012     | Apr 6  | Apr 6  | May 30 | 55   | 20 (29%) | 2    | 26    | Aug 8  | Sep 20 | Oct 28 | 82   | 25 (27%) | 2    | 32    |
| 2013     | Apr 15 | Apr 22 | Jun 5  | 52   | 46 (66%) | 6    | 112   | Aug 1  | Sep 23 | Oct 13 | 74   | 42 (46%) | 4    | 58    |
| 2014     | Apr 10 | Apr 19 | Jun 1  | 53   | 36 (53%) | 4    | 52    | Aug 1  | Aug 23 | Oct 16 | 77   | 55 (60%) | 3    | 76    |
| Mean     | Apr 6  | Apr 18 | Jun 3  | 59   | 36 (53%) | 3    | 57    | Aug 3  | Aug 29 | Oct 15 | 74   | 29 (32%) | 3    | 40    |

| Observed | Nov | Dec | Jan | Feb | Mar  | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |      |        |     | 2.7 | 1.3 | 1.7 | 0.9 | 1.3 | 1.3 | 1.6 | 1.0 | 0.8 | 1.4    |
| 2006     |     |     |     |     |      |        | 0.7 | 1.3 | 2.1 | 1.3 | 1.6 | 1.6 | 2.0 | 1.3 | 1.3 | 1.3 | 1.4    |
| 2007     |     |     |     |     |      |        | 1.3 | 0.7 | 1.3 | 2.0 | 1.1 | 1.1 | 1.3 | 0.9 | 0.4 | 0.3 | 1.0    |
| 2008     |     |     |     |     |      |        |     | 0.1 |     | 0.1 |     |     |     | 0.3 | 0.1 | 0.1 | 0.09   |
| 2009     |     |     |     |     |      |        |     |     | 0.9 | 2.0 | 0.7 | 1.6 | 1.6 | 0.9 | 1.0 | 1.0 | 1.0    |
| 2010     |     |     |     |     |      |        |     | 0.4 | 0.1 | 0.1 |     |     | 0.3 | 0.1 | 0.4 | 0.7 | 0.2    |
| 2011     |     |     |     |     |      |        | 0.3 | 0.3 | 0.6 | 0.7 | 0.4 |     | 0.3 | 1.0 | 0.4 | 0.6 | 0.5    |
| 2012     |     |     |     |     | 0.2  | 0.04   |     | 1.0 | 0.4 | 0.4 | 0.4 | 0.4 |     | 0.3 | 0.4 | 0.3 | 0.4    |
| 2013     |     |     |     |     |      |        |     |     | 0.9 | 3.0 | 2.3 | 3.1 | 2.1 | 2.0 | 1.4 | 1.1 | 1.6    |
| 2014     |     |     |     |     |      |        |     | 0.1 | 0.1 | 1.9 | 1.7 | 1.3 | 1.0 | 0.4 | 0.3 | 0.7 | 0.8    |
| Mean     |     |     |     |     | 0.01 | <0.01  | 0.3 | 0.6 | 0.8 | 1.3 | 0.9 | 1.0 | 1.0 | 0.9 | 0.7 | 0.7 | 0.8    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13  | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 2005     | 0.9 | 1.2 | 1.1    | 0.3 | 0.6 | 0.1 | 0.6 | 0.6 | 1.3 | 1.3 | 1.0 | 1.5 | 1.0 |     |     |      | 0.6  |
| 2006     | 0.8 | 0.4 | 0.6    | 0.7 | 0.1 |     | 0.1 | 0.4 |     |     | 0.4 | 0.3 | 0.4 |     |     |      | 0.2  |
| 2007     | 0.9 |     | 0.5    |     |     | 0.9 | 0.6 |     | 0.3 |     | 0.1 | 0.3 | 0.7 | 0.3 | 0.1 |      | 0.3  |
| 2008     | 0.2 | 0.2 | 0.2    | 0.6 |     |     | 0.4 | 0.4 | 0.1 | 0.6 | 0.4 | 0.4 | 0.1 | 0.1 |     |      | 0.3  |
| 2009     | 0.3 |     | 0.1    | 0.7 | 1.6 | 0.9 | 0.3 |     | 0.3 | 0.7 | 0.6 | 0.4 | 0.3 |     |     |      | 0.5  |
| 2010     |     |     |        | 0.3 | 0.4 | 0.1 |     |     |     | 0.1 | 0.1 | 0.1 | 0.4 | 0.1 | 0.3 |      | 0.2  |
| 2011     |     |     |        | 0.3 | 0.3 |     | 0.4 | 1.0 | 1.0 | 1.6 | 2.1 | 0.4 | 0.4 |     | 0.1 |      | 0.6  |
| 2012     |     | 0.3 | 0.1    |     | 0.1 | 0.1 |     | 0.3 |     | 0.1 | 1.0 | 0.4 | 1.4 | 0.4 | 0.3 | 0.3  | 0.4  |
| 2013     | 1.0 | 0.8 | 0.9    | 1.3 |     | 1.1 | 0.4 | 0.3 | 1.1 | 0.7 | 1.6 | 1.0 | 0.3 | 0.4 |     |      | 0.6  |
| 2014     |     |     |        | 1.6 | 1.1 | 0.7 | 1.6 | 1.0 | 1.3 | 0.3 | 0.7 | 1.3 | 0.6 | 0.7 |     |      | 0.8  |
| Mean     | 0.6 | 0.5 | 0.5    | 0.6 | 0.4 | 0.4 | 0.4 | 0.4 | 0.6 | 0.5 | 0.8 | 0.6 | 0.6 | 0.2 | 0.1 | 0.03 | 0.4  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|-----|-----|-----|-----|-----|-----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    | 1   |     |     | 1   |     |     |     |    |     | 2      |
| 2006   |     |     |     |     |     |        |    |     | 3   |     |     | 1   | 1   |     |    |     | 5      |
| 2007   |     |     |     |     |     |        |    |     |     | 3   |     |     |     |     |    |     | 3      |
| 2008   |     |     |     |     |     |        |    |     |     |     |     |     |     |     |    |     |        |
| 2009   |     |     |     |     |     |        |    |     |     | 1   |     |     |     | 2   |    |     | 3      |
| 2010   |     |     |     |     |     |        |    |     |     |     |     |     |     |     |    |     |        |
| 2011   |     |     |     |     |     |        |    |     |     | 1   |     |     |     |     |    |     | 1      |
| 2012   |     |     |     |     |     |        |    |     |     |     |     |     |     |     |    |     |        |
| 2013   |     |     |     |     |     |        |    |     |     | 5   | 2   |     | 1   |     |    |     | 8      |
| 2014   |     |     |     |     |     |        |    |     |     | 3   |     |     |     | 1   |    |     | 4      |
| Mean   |     |     |     |     |     |        |    | 0.5 | 1.5 | 1.3 | 0.3 | 0.1 | 0.2 | 0.3 |    |     | 2.6    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     |     |     |     |     | 4   |     | 1   | 1   |     |     |     | 6    |
| 2006   |     |     |        | 1   | 1   |     |     |     |     |     |     |     |     |     |     |     | 2    |
| 2007   |     |     |        |     |     | 1   | 1   |     | 1   |     |     |     | 1   | 1   |     |     | 6    |
| 2008   |     |     |        |     |     |     | 3   |     | 2   |     | 1   | 1   | 1   |     |     |     | 8    |
| 2009   |     |     |        | 1   | 1   |     |     |     |     |     | 1   |     |     | 2   |     |     | 5    |
| 2010   |     |     |        | 2   |     |     |     |     |     |     |     |     |     |     |     |     | 2    |
| 2011   |     |     |        |     |     |     |     |     | 1   | 2   |     |     |     |     |     |     | 3    |
| 2012   |     |     |        |     |     |     |     | 1   |     |     |     | 1   | 2   | 1   |     |     | 5    |
| 2013   |     | 1   | 1      | 2   |     | 1   | 1   | 1   | 1   |     |     | 2   |     |     |     |     | 8    |
| 2014   |     |     |        | 1   | 1   |     | 2   | 2   |     |     |     | 1   |     |     |     |     | 7    |
| Mean   |     | 0.1 | 0.1    | 0.7 | 0.3 | 0.2 | 0.7 | 0.4 | 0.5 | 0.6 | 0.2 | 0.6 | 0.5 | 0.4 | 0.1 |     | 5.2  |

Eastern Phoebe is present at MBO over a much longer season than any other flycatcher, typically present from late March or early April until mid-October. On average, spring numbers are highest in week 4, though the peak in individual years has ranged throughout the season. Similarly, fall numbers are on average highest in week 8, though in five of ten years the peak week has come in the first two weeks of August, while in others it has been as late as week 10. Numbers have fluctuated somewhat over the years, with distinct lows in 2008 and 2010, but there does not (yet?) appear to be any overall trend. Despite being present in most summers, only one individual to date has been banded during that season.

**GCFL: Great Crested Flycatcher / Tyran huppé (*Myiarchus crinitus*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 11 | May 30 | Jun 3 | 24   | 13 (22%) | 9    | 31    | Aug 1 | Aug 15 | Sep 21 | 52   | 29 (33%) | 6    | 45    |
| 2006     | May 12 | May 23 | Jun 5 | 25   | 16 (23%) | 6    | 32    | Aug 2 | Aug 18 | Sep 2  | 32   | 20 (22%) | 4    | 34    |
| 2007     | May 10 | May 22 | Jun 5 | 27   | 16 (23%) | 3    | 29    | Aug 2 | Aug 2  | Sep 7  | 37   | 23 (25%) | 4    | 42    |
| 2008     | May 13 | May 28 | Jun 4 | 23   | 16 (23%) | 5    | 30    | Aug 1 | Aug 4  | Sep 12 | 43   | 35 (38%) | 7    | 88    |
| 2009     | May 3  | Jun 3  | Jun 4 | 33   | 29 (42%) | 6    | 81    | Aug 2 | Aug 11 | Sep 4  | 34   | 12 (13%) | 3    | 16    |
| 2010     | May 3  | May 25 | Jun 5 | 34   | 27 (39%) | 5    | 57    | Aug 5 | Aug 15 | Sep 6  | 33   | 7 (8%)   | 2    | 8     |
| 2011     | May 2  | May 24 | Jun 5 | 35   | 27 (39%) | 10   | 116   | Aug 1 | Aug 18 | Sep 2  | 33   | 19 (21%) | 7    | 41    |
| 2012     | May 7  | May 12 | Jun 5 | 30   | 28 (40%) | 8    | 111   | Aug 4 | Aug 6  | Sep 8  | 36   | 28 (31%) | 6    | 67    |
| 2013     | May 9  | May 16 | Jun 5 | 28   | 21 (30%) | 5    | 51    | Aug 1 | Aug 18 | Sep 3  | 34   | 21 (23%) | 7    | 47    |
| 2014     | May 10 | May 31 | Jun 4 | 26   | 24 (35%) | 8    | 80    | Aug 1 | Aug 2  | Sep 28 | 59   | 33 (36%) | 5    | 63    |
| Mean     | May 8  | May 24 | Jun 4 | 28   | 22 (32%) | 6    | 62    | Aug 2 | Aug 10 | Sep 9  | 39   | 23 (25%) | 5    | 45    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |     | 0.1 | 0.4 | 0.9 | 4.2 | 0.5    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |     | 0.3 | 1.0 | 1.9 | 1.4 | 0.5    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |     | 0.6 | 0.7 | 1.7 | 1.1 | 0.4    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |     | 0.1 | 0.6 | 2.4 | 1.1 | 0.4    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.6 | 2.1 | 3.9 | 2.6 | 2.4 | 1.2    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    | 1.0 | 0.3 | 1.9 | 2.7 | 2.3 | 0.8    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    | 0.3 | 2.0 | 3.6 | 6.3 | 4.4 | 1.7    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    | 0.6 | 5.1 | 4.6 | 3.4 | 2.1 | 1.6    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |     | 1.0 | 2.7 | 1.3 | 2.3 | 0.7    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |     | 1.0 | 3.9 | 3.3 | 3.8 | 1.2    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.2 | 1.3 | 2.3 | 2.6 | 2.5 | 0.9    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7   | F8   | F9   | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|------|
| 2005     | 0.5 | 0.8 | 0.7    | 0.7 | 1.1 | 1.7 | 0.6 | 1.3 |     | 0.4  | 0.6  |      |     |     |     |     | 0.5  |
| 2006     | 1.9 | 0.8 | 1.3    | 0.3 | 1.3 | 1.6 | 0.6 | 1.1 |     |      |      |      |     |     |     |     | 0.4  |
| 2007     | 0.4 | 0.3 | 0.4    | 1.3 | 2.0 | 1.6 | 0.9 | 0.1 | 0.1 |      |      |      |     |     |     |     | 0.5  |
| 2008     | 0.6 | 0.4 | 0.5    | 4.0 | 3.0 | 2.4 | 1.3 | 0.9 | 0.9 | 0.1  |      |      |     |     |     |     | 1.0  |
| 2009     | 2.0 | 1.5 | 1.7    | 0.7 | 1.1 | 0.1 |     | 0.3 |     |      |      |      |     |     |     |     | 0.2  |
| 2010     | 0.7 | 0.3 | 0.4    | 0.1 | 0.3 | 0.4 |     | 0.1 | 0.1 |      |      |      |     |     |     |     | 0.09 |
| 2011     | 1.3 | 1.5 | 1.4    | 0.7 | 2.0 | 2.3 | 0.6 | 0.3 |     |      |      |      |     |     |     |     | 0.5  |
| 2012     | 0.3 | 0.8 | 0.5    | 1.6 | 2.9 | 3.3 | 1.3 | 0.4 | 0.1 |      |      |      |     |     |     |     | 0.7  |
| 2013     | 1.0 | 4.0 | 2.7    | 2.4 | 1.4 | 2.0 | 0.4 | 0.4 |     |      |      |      |     |     |     |     | 0.5  |
| 2014     | 2.7 | 1.0 | 1.7    | 2.7 | 2.3 | 1.6 | 0.9 | 0.7 | 0.7 |      |      | 0.1  |     |     |     |     | 0.7  |
| Mean     | 1.0 | 1.0 | 1.0    | 1.5 | 1.7 | 1.7 | 0.6 | 0.6 | 0.2 | 0.06 | 0.06 | 0.01 |     |     |     |     | 0.5  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |     | 1   | 2      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     | 1   | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     | 2   |     | 1   | 3      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   | 1   | 2      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     | 1   | 1      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     | 2   |     |     | 2      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 | 0.4 | 0.3 | 0.5 | 1.3    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5 | F6 | F7  | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|----|----|-----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        | 1   | 3   | 1   |     |    |    | 1   |    |    |     |     |     |     | 6    |
| 2006   |     |     |        |     |     | 1   |     |    |    |     |    |    |     |     |     |     | 1    |
| 2007   |     |     |        |     |     | 1   |     |    |    |     |    |    |     |     |     |     | 1    |
| 2008   |     |     |        |     | 1   | 4   |     |    |    |     |    |    |     |     |     |     | 5    |
| 2009   |     | 2   | 2      |     |     |     |     |    |    |     |    |    |     |     |     |     |      |
| 2010   |     |     |        |     |     | 1   |     |    |    |     |    |    |     |     |     |     | 1    |
| 2011   |     | 2   | 2      |     |     | 1   |     |    |    |     |    |    |     |     |     |     | 1    |
| 2012   |     | 1   | 1      |     | 1   |     |     |    |    |     |    |    |     |     |     |     | 1    |
| 2013   |     | 5   | 5      |     | 2   |     | 1   |    |    |     |    |    |     |     |     |     | 3    |
| 2014   | 1   | 1   | 2      |     |     |     |     |    |    |     |    |    |     |     |     |     |      |
| Mean   | 0.2 | 1.2 | 1.3    | 0.1 | 0.7 | 0.9 | 0.1 |    |    | 0.1 |    |    |     |     |     |     | 1.9  |

Great Crested Flycatchers return to MBO in week 6 or 7 of spring, and are typically the most abundant flycatcher over the final three weeks of the season. Although the mean daily count is almost twice as high in spring as fall, the number banded in fall is nearly 50% greater, explained at least in part by migration being spread out over a longer period. However, as in spring the peak spans three weeks, in this case the first three of fall. Numbers taper off sharply by early-mid September, and there is some doubt as to whether the lone observation in week 9 might have been an Ash-throated Flycatcher (it was not observed in sufficient detail to be certain). Numbers have increased over time, especially in summer.

**EAKI: Eastern Kingbird / Tyrannus tritri (*Tyrannus tyrannus*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 11 | May 17 | Jun 2 | 23   | 15 (25%) | 3    | 23    | Aug 1 | Aug 22 | Sep 4  | 35   | 23 (26%) | 10   | 90    |
| 2006     | May 4  | May 13 | Jun 1 | 29   | 25 (36%) | 2    | 35    | Aug 1 | Aug 10 | Aug 30 | 30   | 23 (25%) | 8    | 95    |
| 2007     | May 10 | May 15 | Jun 5 | 27   | 26 (37%) | 4    | 59    | Aug 1 | Aug 1  | Aug 23 | 23   | 22 (24%) | 5    | 67    |
| 2008     | May 5  | May 6  | Jun 3 | 30   | 29 (41%) | 4    | 83    | Aug 1 | Aug 1  | Aug 29 | 29   | 23 (25%) | 4    | 50    |
| 2009     | Apr 28 | May 11 | Jun 5 | 39   | 37 (54%) | 4    | 67    | Aug 1 | Aug 1  | Sep 24 | 55   | 26 (29%) | 6    | 50    |
| 2010     | May 3  | May 18 | Jun 5 | 34   | 33 (47%) | 8    | 66    | Aug 1 | Aug 4  | Sep 3  | 34   | 15 (16%) | 3    | 24    |
| 2011     | May 1  | May 9  | Jun 5 | 36   | 33 (47%) | 6    | 83    | Aug 1 | Aug 7  | Aug 30 | 30   | 24 (26%) | 8    | 71    |
| 2012     | May 4  | May 13 | Jun 3 | 31   | 30 (43%) | 8    | 85    | Aug 1 | Aug 3  | Aug 20 | 20   | 17 (19%) | 5    | 40    |
| 2013     | May 6  | May 11 | Jun 4 | 30   | 25 (36%) | 5    | 84    | Aug 1 | Aug 18 | Sep 8  | 39   | 23 (25%) | 5    | 43    |
| 2014     | May 5  | May 24 | Jun 4 | 31   | 27 (40%) | 5    | 62    | Aug 1 | Aug 1  | Aug 30 | 30   | 17 (19%) | 4    | 33    |
| Mean     | May 4  | May 13 | Jun 3 | 31   | 28 (41%) | 5    | 65    | Aug 1 | Aug 6  | Sep 1  | 32   | 21 (23%) | 6    | 56    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|------|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |      |     | 0.4 | 1.4 | 0.9 | 0.8 | 0.4    |
| 2006     |     |     |     |     |     |        |    |    |    |    |      | 0.6 | 0.9 | 1.3 | 1.9 | 0.4 | 0.5    |
| 2007     |     |     |     |     |     |        |    |    |    |    |      |     | 2.1 | 1.7 | 2.7 | 1.9 | 0.8    |
| 2008     |     |     |     |     |     |        |    |    |    |    |      | 1.7 | 2.7 | 3.1 | 2.7 | 1.6 | 1.2    |
| 2009     |     |     |     |     |     |        |    |    |    |    | 0.7  | 1.3 | 1.9 | 2.0 | 2.1 | 1.6 | 1.0    |
| 2010     |     |     |     |     |     |        |    |    |    |    |      | 1.3 | 2.0 | 2.7 | 2.0 | 1.4 | 0.9    |
| 2011     |     |     |     |     |     |        |    |    |    |    | 0.1  | 0.6 | 3.6 | 3.0 | 2.4 | 2.1 | 1.2    |
| 2012     |     |     |     |     |     |        |    |    |    |    |      | 2.3 | 4.0 | 2.1 | 2.7 | 1.0 | 1.2    |
| 2013     |     |     |     |     |     |        |    |    |    |    |      | 0.1 | 2.6 | 4.1 | 2.9 | 2.3 | 1.2    |
| 2014     |     |     |     |     |     |        |    |    |    |    |      | 0.3 | 2.0 | 2.7 | 2.4 | 1.7 | 0.9    |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.09 | 0.8 | 2.2 | 2.4 | 2.3 | 1.5 | 0.9    |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6   | F7  | F8   | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|-----|-----|-----|-----|-----|------|-----|------|----|-----|-----|-----|-----|------|
| 2005     | 0.1 | 0.06 | 0.09   | 0.7 | 3.3 | 3.9 | 4.9 | 0.1 |      |     |      |    |     |     |     |     | 1.0  |
| 2006     | 0.7 | 1.0  | 0.9    | 3.3 | 5.0 | 3.6 | 1.4 | 0.3 |      |     |      |    |     |     |     |     | 1.0  |
| 2007     | 3.0 | 3.0  | 3.0    | 4.3 | 3.4 | 1.7 | 0.1 |     |      |     |      |    |     |     |     |     | 0.7  |
| 2008     | 1.0 | 2.0  | 1.5    | 2.9 | 1.7 | 2.1 | 0.3 | 0.1 |      |     |      |    |     |     |     |     | 0.5  |
| 2009     | 1.0 | 0.8  | 0.9    | 3.3 | 1.9 | 1.0 | 0.7 | 0.1 |      | 0.1 |      |    |     |     |     |     | 0.5  |
| 2010     | 0.7 | 0.8  | 0.8    | 1.6 | 1.0 | 0.6 | 0.1 | 0.1 |      |     |      |    |     |     |     |     | 0.3  |
| 2011     | 1.3 | 1.3  | 1.3    | 3.7 | 3.4 | 1.7 | 1.1 | 0.1 |      |     |      |    |     |     |     |     | 0.8  |
| 2012     | 1.0 | 0.3  | 0.6    | 2.6 | 1.4 | 1.7 |     |     |      |     |      |    |     |     |     |     | 0.4  |
| 2013     |     |      |        | 1.7 | 1.4 | 2.3 | 0.3 | 0.3 | 0.1  |     |      |    |     |     |     |     | 0.5  |
| 2014     | 0.3 | 2.0  | 1.3    | 2.6 | 1.1 | 0.6 | 0.1 | 0.3 |      |     |      |    |     |     |     |     | 0.4  |
| Mean     | 0.9 | 1.0  | 0.9    | 2.7 | 2.4 | 1.9 | 0.9 | 0.2 | 0.01 |     | 0.01 |    |     |     |     |     | 0.6  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 1   |     | 2      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     | 1   | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 1   |     | 2      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 1   |     |     | 2      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 1   |     | 2      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 2   | 1   | 3      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |     |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 2   |     |     | 3      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.3 | 0.6 | 0.6 | 0.1 | 1.6    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     | 1   |    |    |    |    |    |    |     |     |     |     | 1    |
| 2006   |     |     |        | 1   |     |     |    |    |    |    |    |    |     |     |     |     | 1    |
| 2007   | 4   |     | 4      |     |     |     |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |     | 1   |     |    |    |    |    |    |    |     |     |     |     | 1    |
| 2009   |     |     |        | 1   |     |     |    |    |    |    |    |    |     |     |     |     | 1    |
| 2010   |     |     |        |     |     |     |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |     |     |     |    |    |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |     |     |     |    |    |    |    |    |    |     |     |     |     |      |
| 2013   |     |     |        |     |     |     |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     | 1   | 1      |     |     |     |    |    |    |    |    |    |     |     |     |     |      |
| Mean   | 0.7 | 0.1 | 0.6    | 0.2 | 0.1 | 0.1 |    |    |    |    |    |    |     |     |     |     | 0.4  |

Eastern Kingbird is typically present at MBO from early May to late August, being one of the earliest species to leave in fall. The first Eastern Kingbird of spring has arrived between May 3 and 6 in six of ten years; the peak of spring migration was in week 8 or 9 from 2005 to 2009, and shifted somewhat earlier to week 7 or 8 from 2010 to 2014. Fall numbers have peaked in week 1 in seven years out of ten, and generally decline steadily over the first five weeks of the season. Eastern Kingbirds have been observed at MBO in each summer except 2009. Spring numbers have shown a slight increase over time, whereas fall counts have been declining. Note that while there was no formal banding in June 2007, one brood was banded at the nest.

**NSHR: Northern Shrike / Pie-grièche grise (*Lanius excubitor*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days  | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|---------|------|-------|
| 2005     | Apr 7  | Apr 7  | Apr 10 | 4    | 2 (3%)   | 1    | 2     | Oct 24 | Oct 30 | Oct 30 | 7    | 5 (6%)  | 2    | 6     |
| 2006     | Mar 31 | Apr 6  | Apr 18 | 19   | 13 (19%) | 2    | 15    | Oct 7  | Oct 7  | Oct 29 | 23   | 5 (5%)  | 1    | 5     |
| 2007     | Mar 29 | Mar 29 | Mar 29 | 1    | 1 (1%)   | 1    | 1     | Oct 18 | Oct 25 | Oct 30 | 13   | 9 (10%) | 2    | 10    |
| 2008     | Apr 16 | Apr 16 | Apr 26 | 11   | 7 (10%)  | 1    | 7     | Oct 13 | Oct 13 | Oct 28 | 16   | 3 (3%)  | 1    | 3     |
| 2009     | Apr 3  | Apr 3  | Apr 14 | 12   | 6 (9%)   | 1    | 6     | Oct 28 | Oct 30 | Oct 30 | 3    | 2 (2%)  | 2    | 3     |
| 2010     | Mar 28 | Mar 28 | Mar 29 | 2    | 2 (3%)   | 1    | 2     |        |        |        |      |         |      |       |
| 2011     |        |        |        |      |          |      |       | Oct 24 | Oct 30 | Oct 30 | 7    | 6 (7%)  | 2    | 7     |
| 2012     | Mar 29 | Apr 1  | Apr 3  | 6    | 4 (6%)   | 2    | 5     | Oct 24 | Oct 24 | Oct 24 | 1    | 1 (1%)  | 1    | 1     |
| 2013     |        |        |        |      |          |      |       | Oct 27 | Oct 27 | Oct 30 | 4    | 2 (2%)  | 1    | 2     |
| 2014     |        |        |        |      |          |      |       | Oct 19 | Oct 19 | Oct 28 | 10   | 2 (2%)  | 1    | 2     |
| Mean     | Apr 2  | Apr 4  | Apr 9  | 8    | 5 (7%)   | 1    | 3.8   | Oct 20 | Oct 22 | Oct 28 | 9    | 4 (4%)  | 1    | 3.9   |

| Observed | Nov | Dec  | Jan  | Feb  | Mar  | Winter | S1  | S2  | S3  | S4   | S5   | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|-----|------|------|------|------|--------|-----|-----|-----|------|------|----|----|----|----|-----|--------|
| 2005     | 0.3 |      |      | 0.8  |      | 0.3    |     | 0.3 |     |      |      |    |    |    |    |     | 0.03   |
| 2006     | 0.3 | 0.1  | 0.2  |      |      | 0.1    | 0.1 | 1.2 | 0.9 | 0.1  |      |    |    |    |    |     | 0.2    |
| 2007     | 0.3 |      | 0.2  |      |      | 0.1    | 0.1 |     |     |      |      |    |    |    |    |     | 0.01   |
| 2008     | 0.3 |      |      |      |      | 0.08   |     |     | 0.1 | 0.7  | 0.1  |    |    |    |    |     | 0.1    |
| 2009     |     |      | 0.3  | 0.2  | 0.4  | 0.2    | 0.1 | 0.5 | 0.3 |      |      |    |    |    |    |     | 0.09   |
| 2010     | 0.4 | 0.1  | 0.09 | 0.08 | 0.3  | 0.2    | 0.3 |     |     |      |      |    |    |    |    |     | 0.03   |
| 2011     | 0.4 |      | 0.08 |      | 0.1  | 0.2    |     |     |     |      |      |    |    |    |    |     |        |
| 2012     | 0.2 |      |      | 0.3  | 0.2  | 0.2    | 0.7 |     |     |      |      |    |    |    |    |     | 0.07   |
| 2013     | 0.1 |      |      |      | 0.07 | 0.04   |     |     |     |      |      |    |    |    |    |     |        |
| 2014     | 0.4 | 0.5  |      | 0.1  | 0.2  | 0.2    |     |     |     |      |      |    |    |    |    |     |        |
| Mean     | 0.3 | 0.09 | 0.09 | 0.1  | 0.2  | 0.2    | 0.2 | 0.2 | 0.1 | 0.09 | 0.01 |    |    |    |    |     | 0.06   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10  | F11  | F12  | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|------|------|------|-----|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |      |      |      | 0.9 | 0.07 |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    | 0.1  |      | 0.1  | 0.4 | 0.05 |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |      |      | 0.6  | 0.9 | 0.1  |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |      | 0.3  |      | 0.1 | 0.03 |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |      |      |      | 0.4 | 0.03 |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |      |      |      |     |      |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |      |      |      | 1.0 | 0.08 |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |      |      |      | 0.1 | 0.01 |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |      |      |      | 0.3 | 0.02 |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |      |      | 0.1  | 0.1 | 0.02 |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    | 0.01 | 0.03 | 0.09 | 0.4 | 0.04 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|----|----|----|----|----|-----|--------|
| 2005   |     |     |     | 1   |     | 1      |    |    |    |     |    |    |    |    |    |     |        |
| 2006   |     |     | 1   | 1   |     | 1      |    |    |    |     |    |    |    |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    | 1   |    |    |    |    |    |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2010   | 1   |     |     |     |     | 1      |    |    |    |     |    |    |    |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |     |    |    |    |    |    |     |        |
| 2014   | 2   |     |     |     |     | 2      |    |    |    |     |    |    |    |    |    |     |        |
| Mean   | 0.4 |     | 0.3 | 0.2 |     | 0.6    |    |    |    | 0.1 |    |    |    |    |    |     | 0.1    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 1   | 1    |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 2   | 1   | 3    |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |    |     | 1   |     |     | 1    |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 1   | 1    |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 1   | 1    |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 1   | 1    |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 1   | 1    |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 1   |     | 1    |
| Mean   |     |     |        |    |    |    |    |    |    |    |    |    |     | 0.1 | 0.3 | 0.6 | 1.0  |

Northern Shrike is a regular but rare visitor to MBO from late October to late March or early April. Except for early arrivals in 2006 and 2008, and a late first sighting (not until winter) in 2010, Northern Shrikes generally reach MBO in the second half of October, almost always peaking in the last week of the season. Sightings have occurred in each month of winter, though most commonly in November and March. Spring observations have been recorded in seven years, only twice extending past week 3. Numbers have been similarly low across most years, although missed in three of the past four spring seasons.

**BHVI: Blue-headed Vireo / Viréo à tête bleue (*Vireo solitarius*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 14 | May 14 | Jun 1  | 19   | 4 (7%)   | 1    | 4     | Aug 22 | Sep 30 | Oct 24 | 64   | 25 (28%) | 3    | 34    |
| 2006     | Apr 30 | May 18 | May 25 | 26   | 10 (14%) | 3    | 14    | Sep 5  | Sep 23 | Oct 24 | 50   | 22 (24%) | 4    | 34    |
| 2007     | May 8  | May 13 | May 31 | 24   | 8 (11%)  | 2    | 9     | Aug 30 | Oct 2  | Oct 14 | 46   | 21 (23%) | 5    | 36    |
| 2008     | Apr 20 | Apr 20 | Jun 1  | 43   | 22 (31%) | 5    | 40    | Aug 2  | Oct 4  | Oct 25 | 85   | 32 (35%) | 10   | 82    |
| 2009     | Apr 27 | Apr 27 | May 22 | 26   | 11 (16%) | 3    | 19    | Aug 18 | Oct 1  | Oct 15 | 59   | 29 (32%) | 9    | 86    |
| 2010     | May 5  | May 15 | May 22 | 18   | 6 (9%)   | 2    | 8     | Aug 7  | Oct 1  | Oct 30 | 85   | 25 (27%) | 6    | 44    |
| 2011     | Apr 29 | May 6  | May 31 | 33   | 12 (17%) | 3    | 16    | Aug 6  | Sep 25 | Oct 4  | 60   | 16 (18%) | 5    | 27    |
| 2012     | May 2  | May 15 | May 17 | 16   | 7 (10%)  | 3    | 10    | Sep 15 | Oct 2  | Oct 26 | 42   | 22 (24%) | 5    | 42    |
| 2013     | May 8  | May 16 | May 25 | 18   | 8 (11%)  | 2    | 10    | Aug 1  | Oct 8  | Oct 23 | 84   | 21 (23%) | 5    | 38    |
| 2014     | Apr 22 | Apr 22 | May 28 | 37   | 6 (9%)   | 1    | 6     | Sep 13 | Oct 1  | Oct 21 | 39   | 25 (27%) | 8    | 60    |
| Mean     | May 1  | May 7  | May 26 | 26   | 9 (14%)  | 2    | 14    | Aug 21 | Sep 30 | Oct 20 | 61   | 24 (26%) | 6    | 48    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5  | S6  | S7  | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|-----|-----|-----|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |     |     | 0.1 |     | 0.3 | 0.2  | 0.07   |
| 2006     |     |     |     |     |     |        |    |    |    |      | 0.1 | 0.3 | 0.3 | 1.1 | 0.1 |      | 0.2    |
| 2007     |     |     |     |     |     |        |    |    |    |      |     | 0.1 | 0.4 | 0.4 | 0.1 | 0.1  | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |    | 0.7  | 0.3 | 1.4 | 1.1 | 0.7 | 1.3 | 0.1  | 0.6    |
| 2009     |     |     |     |     |     |        |    |    |    |      | 0.4 | 0.4 | 1.0 | 0.9 |     |      | 0.3    |
| 2010     |     |     |     |     |     |        |    |    |    |      |     | 0.3 | 0.3 | 0.6 |     |      | 0.1    |
| 2011     |     |     |     |     |     |        |    |    |    |      | 0.3 | 0.6 | 0.3 | 0.9 | 0.1 | 0.1  | 0.2    |
| 2012     |     |     |     |     |     |        |    |    |    |      |     | 0.6 | 0.6 | 0.3 |     |      | 0.1    |
| 2013     |     |     |     |     |     |        |    |    |    |      |     | 0.1 | 0.3 | 0.9 | 0.1 |      | 0.1    |
| 2014     |     |     |     |     |     |        |    |    |    | 0.1  |     |     | 0.1 | 0.3 | 0.3 |      | 0.09   |
| Mean     |     |     |     |     |     |        |    |    |    | 0.09 | 0.1 | 0.4 | 0.5 | 0.6 | 0.2 | 0.06 | 0.2    |

| Observed | Jun | Jul | Summer | F1   | F2 | F3  | F4   | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13  | Fall |
|----------|-----|-----|--------|------|----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 2005     |     |     |        |      |    |     | 0.3  | 0.3 | 0.3 | 0.3 | 0.6 | 1.2 | 1.7 | 0.5 | 0.1 | 0.1  | 0.4  |
| 2006     |     |     |        |      |    |     |      |     | 0.4 | 0.7 | 1.0 | 0.6 | 1.3 | 0.7 |     | 0.1  | 0.4  |
| 2007     |     |     |        |      |    |     |      | 0.3 | 0.3 | 0.7 | 0.3 | 2.1 | 1.3 | 0.1 |     |      | 0.4  |
| 2008     |     |     |        | 0.3  |    | 0.1 | 0.1  | 0.9 | 0.6 | 0.6 | 4.0 | 4.1 | 0.7 |     | 0.1 |      | 0.9  |
| 2009     |     |     |        |      |    | 0.9 |      |     |     | 1.0 | 1.3 | 4.4 | 3.9 | 0.9 |     |      | 0.9  |
| 2010     |     |     |        | 0.1  |    | 0.4 | 0.1  |     | 0.1 | 0.3 | 0.7 | 1.7 | 1.9 | 0.3 | 0.4 | 0.1  | 0.5  |
| 2011     |     |     |        | 0.1  |    | 0.1 |      | 0.1 |     | 0.9 | 1.0 | 0.9 | 0.7 |     |     |      | 0.3  |
| 2012     |     |     |        |      |    |     |      |     |     | 0.1 | 0.9 | 2.7 | 1.9 | 0.3 |     | 0.1  | 0.5  |
| 2013     |     |     |        | 0.1  |    |     | 0.1  | 0.1 | 0.1 | 1.4 | 1.1 | 1.1 | 0.9 |     | 0.3 |      | 0.4  |
| 2014     |     |     |        |      |    |     |      |     |     | 1.6 | 3.0 | 2.6 | 0.6 | 0.6 | 0.3 |      | 0.7  |
| Mean     |     |     |        | 0.07 |    | 0.2 | 0.07 | 0.1 | 0.2 | 0.8 | 1.0 | 2.1 | 1.8 | 0.4 | 0.1 | 0.07 | 0.5  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6  | S7  | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|-----|-----|-----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |     |     |     |     |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |     |     |     | 1   |    |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |    |     |     | 1   |     |    |     | 1      |
| 2008   |     |     |     |     |     |        |    |    |    |    |     | 1   | 3   |     |    |     | 4      |
| 2009   |     |     |     |     |     |        |    |    |    |    | 1   |     |     | 2   |    |     | 3      |
| 2010   |     |     |     |     |     |        |    |    |    |    |     |     | 1   |     |    |     | 1      |
| 2011   |     |     |     |     |     |        |    |    |    |    | 1   | 1   |     |     |    |     | 2      |
| 2012   |     |     |     |     |     |        |    |    |    |    |     | 1   | 1   |     |    |     | 2      |
| 2013   |     |     |     |     |     |        |    |    |    |    |     |     |     | 1   |    |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |    |     |     |     |     |    |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    | 0.2 | 0.3 | 0.6 | 0.4 |    |     | 1.5    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    | 2   | 1   |     | 2   | 3   | 5   | 5   | 1   |     | 1   | 20   |
| 2006   |     |     |        |    |    |    |     |     | 1   | 2   | 1   | 2   | 6   | 3   |     |     | 15   |
| 2007   |     |     |        |    |    |    |     | 1   | 1   | 2   | 1   | 8   | 5   |     |     |     | 18   |
| 2008   |     |     |        |    |    |    |     |     | 2   | 4   | 3   | 18  | 8   | 1   |     |     | 36   |
| 2009   |     |     |        |    |    |    |     |     |     | 2   |     | 21  | 15  | 3   |     |     | 41   |
| 2010   |     |     |        |    |    |    | 1   |     | 1   | 2   | 5   | 4   | 6   | 1   | 3   | 1   | 24   |
| 2011   |     |     |        |    |    |    |     |     |     | 4   | 2   | 4   | 2   |     |     |     | 12   |
| 2012   |     |     |        |    |    |    |     |     |     | 1   | 1   | 8   | 4   |     |     |     | 14   |
| 2013   |     |     |        |    |    |    |     | 1   |     | 6   | 1   | 2   |     |     | 1   |     | 11   |
| 2014   |     |     |        |    |    |    |     |     |     | 6   | 8   | 5   | 1   | 1   | 1   |     | 22   |
| Mean   |     |     |        |    |    |    | 0.3 | 0.3 | 0.5 | 3.1 | 2.5 | 7.7 | 5.2 | 1.0 | 0.5 | 0.2 | 21.3 |

Blue-headed Vireo is the earliest spring and latest fall migrant among the four vireos seen at MBO. In five of ten years, the first spring arrivals have been observed before the end of April, although the peak of spring migration is most commonly week 8 in mid-May. In fall, there are scattered sightings over the first six weeks of the season and in the second half of October, but migration is primarily focused on weeks 7 to 10, on average peaking in week 9. Numbers have remained relatively consistent over the years, except for being somewhat higher in both spring and summer in 2008 and 2009.

**WAVI: Warbling Vireo / Viréo mélodieux (*Vireo gilvus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 22 | May 22 | May 31 | 10   | 5 (8%)   | 1    | 5     | Aug 3 | Aug 3  | Sep 22 | 51   | 9 (10%)  | 2    | 12    |
| 2006     | May 7  | May 29 | Jun 4  | 29   | 21 (30%) | 8    | 37    | Aug 3 | Aug 3  | Sep 24 | 53   | 9 (10%)  | 1    | 9     |
| 2007     | May 9  | May 22 | Jun 5  | 28   | 25 (36%) | 5    | 53    | Aug 3 | Aug 4  | Sep 19 | 48   | 15 (16%) | 3    | 20    |
| 2008     | May 6  | May 26 | Jun 5  | 31   | 31 (44%) | 5    | 71    | Aug 1 | Sep 7  | Sep 23 | 54   | 19 (21%) | 3    | 28    |
| 2009     | May 4  | May 30 | Jun 5  | 33   | 23 (33%) | 6    | 46    | Aug 2 | Aug 28 | Sep 21 | 51   | 13 (14%) | 3    | 17    |
| 2010     | May 2  | May 7  | Jun 5  | 35   | 26 (37%) | 3    | 48    | Aug 2 | Sep 7  | Sep 9  | 39   | 10 (11%) | 2    | 12    |
| 2011     | May 13 | May 29 | Jun 5  | 24   | 23 (33%) | 10   | 53    | Aug 1 | Aug 2  | Sep 25 | 56   | 9 (10%)  | 4    | 17    |
| 2012     | May 5  | May 10 | Jun 5  | 32   | 32 (46%) | 14   | 182   | Aug 4 | Sep 7  | Sep 11 | 39   | 17 (19%) | 5    | 34    |
| 2013     | May 4  | Jun 3  | Jun 5  | 33   | 29 (41%) | 6    | 97    | Aug 1 | Aug 18 | Sep 25 | 56   | 41 (45%) | 5    | 87    |
| 2014     | May 8  | May 16 | Jun 4  | 28   | 28 (41%) | 6    | 91    | Aug 3 | Sep 9  | Sep 21 | 50   | 30 (33%) | 7    | 55    |
| Mean     | May 8  | May 22 | Jun 4  | 28   | 24 (35%) | 6    | 68    | Aug 2 | Aug 21 | Sep 20 | 50   | 17 (19%) | 4    | 29    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |     |     | 0.1 | 0.3 | 0.4 | 0.08   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    | 0.6 | 0.4 | 1.1 | 1.9 | 1.3 | 0.5    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |     | 1.4 | 2.3 | 3.0 | 0.9 | 0.8    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    | 0.6 | 2.6 | 3.0 | 2.7 | 1.3 | 1.0    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.3 | 0.7 | 1.3 | 1.7 | 2.6 | 0.7    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    | 1.0 | 0.6 | 1.9 | 1.6 | 1.9 | 0.7    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |     | 0.7 | 2.0 | 3.3 | 1.6 | 0.8    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    | 3.0 | 9.6 | 4.3 | 5.4 | 3.7 | 2.6    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    | 0.6 | 2.7 | 3.7 | 2.7 | 4.1 | 1.4    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    | 0.1 | 3.1 | 3.7 | 3.4 | 3.0 | 1.3    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.6 | 2.2 | 2.3 | 2.6 | 2.1 | 1.0    |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|
| 2005     | 0.2 | 0.06 | 0.1    | 0.4 | 0.3 | 0.1 | 0.1 |     |     | 0.3 | 0.4 |    |     |     |     |     | 0.1  |
| 2006     | 0.4 |      | 0.2    | 0.3 | 0.1 |     | 0.1 | 0.3 | 0.3 |     | 0.1 |    |     |     |     |     | 0.10 |
| 2007     | 0.6 | 1.0  | 0.8    | 1.0 | 0.4 | 0.3 | 0.4 | 0.3 | 0.1 | 0.1 | 0.1 |    |     |     |     |     | 0.2  |
| 2008     | 1.8 | 0.2  | 1.0    | 0.4 | 0.4 | 0.6 | 0.6 | 0.9 | 0.6 | 0.4 | 0.1 |    |     |     |     |     | 0.3  |
| 2009     | 0.3 |      | 0.1    | 0.4 | 0.1 | 0.1 | 0.7 | 0.1 | 0.7 |     | 0.1 |    |     |     |     |     | 0.2  |
| 2010     |     | 0.7  | 0.4    | 0.1 | 0.3 | 0.3 | 0.1 | 0.1 | 0.7 |     |     |    |     |     |     |     | 0.1  |
| 2011     |     | 0.5  | 0.3    | 1.7 | 0.1 |     | 0.3 | 0.1 |     |     | 0.1 |    |     |     |     |     | 0.2  |
| 2012     | 1.8 | 2.3  | 2.0    | 0.7 | 0.4 | 0.7 | 0.9 | 0.6 | 1.6 |     |     |    |     |     |     |     | 0.4  |
| 2013     | 1.3 | 3.3  | 2.4    | 1.6 | 1.6 | 2.7 | 1.9 | 1.6 | 1.6 | 0.7 | 0.9 |    |     |     |     |     | 1.0  |
| 2014     | 1.3 | 1.5  | 1.4    | 0.4 | 0.7 | 0.4 | 1.4 | 1.9 | 2.6 | 0.3 | 0.1 |    |     |     |     |     | 0.6  |
| Mean     | 0.6 | 0.6  | 0.6    | 0.7 | 0.5 | 0.5 | 0.7 | 0.6 | 0.8 | 0.2 | 0.2 |    |     |     |     |     | 0.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |     |     |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |     |     |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |     | 3   | 4   | 2   |     | 9      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |     | 2   |     | 1   |     | 3      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |     |     | 2   |     |     | 2      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    | 1   |     | 1   | 1   |     | 3      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |     | 1   | 1   | 1   |     | 3      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    | 2   | 6   |     | 1   |     | 9      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |     |     | 2   |     |     | 2      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |     | 3   |     |     |     | 3      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    | 0.3 | 1.5 | 1.0 | 0.6 |     | 3.4    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     | 1   |     |     |     | 1   | 1   |    |     |     |     |     | 3    |
| 2006   |     |     |        |     | 1   |     | 1   | 1   | 2   |     |     |    |     |     |     |     | 5    |
| 2007   |     |     |        | 2   | 2   |     | 1   |     |     |     |     |    |     |     |     |     | 5    |
| 2008   |     |     |        | 2   | 2   | 1   | 2   | 4   | 2   | 2   |     |    |     |     |     |     | 15   |
| 2009   |     |     |        | 2   |     |     | 1   |     |     |     |     |    |     |     |     |     | 3    |
| 2010   |     | 2   | 2      |     | 2   | 1   | 1   | 1   | 1   |     |     |    |     |     |     |     | 6    |
| 2011   |     |     |        | 4   |     |     |     |     |     |     |     |    |     |     |     |     | 4    |
| 2012   | 2   | 6   | 8      | 2   |     |     | 1   |     | 1   |     |     |    |     |     |     |     | 4    |
| 2013   |     | 7   | 7      |     | 3   |     |     |     | 2   |     |     |    |     |     |     |     | 5    |
| 2014   | 1   | 2   | 3      |     |     |     |     |     | 2   |     |     |    |     |     |     |     | 2    |
| Mean   | 0.5 | 1.9 | 2.2    | 1.2 | 1.0 | 0.3 | 0.7 | 0.6 | 1.0 | 0.3 | 0.1 |    |     |     |     |     | 5.2  |

Warbling Vireo is one of two vireos breeding at MBO, and is typically present from early May through late September. Spring arrival is remarkably consistent, between May 2 and 9 in eight of ten years; the peak of migration varies from week 7 to 10, and overall, numbers are comparable across those four weeks. Numbers observed in fall are generally much smaller, although 50% more individuals have been banded in fall. Counts are fairly consistent over the first six weeks of fall, then taper off quickly; curiously the last bird of the season has been observed in week 8 in eight years out of ten. Spring, summer, and fall numbers have all been well above average since 2012.

**PHVI: Philadelphia Vireo / Viréo de Philadelphie (*Vireo philadelphicus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 21 | May 21 | May 21 | 1    | 1 (2%) | 1    | 1     | Aug 4  | Sep 11 | Oct 1  | 59   | 15 (17%) | 4    | 26    |
| 2006     |        |        |        |      |        |      |       | Aug 14 | Sep 5  | Oct 2  | 50   | 11 (12%) | 2    | 14    |
| 2007     |        |        |        |      |        |      |       | Aug 9  | Aug 9  | Sep 28 | 51   | 6 (7%)   | 2    | 8     |
| 2008     | May 18 | May 18 | May 20 | 3    | 2 (3%) | 1    | 2     | Aug 14 | Sep 2  | Oct 2  | 50   | 12 (13%) | 3    | 17    |
| 2009     | May 2  | May 2  | Jun 1  | 31   | 5 (7%) | 1    | 5     | Aug 19 | Aug 19 | Sep 10 | 23   | 3 (3%)   | 2    | 5     |
| 2010     |        |        |        |      |        |      |       | Aug 21 | Sep 8  | Sep 24 | 35   | 12 (13%) | 4    | 17    |
| 2011     | May 25 | May 25 | Jun 3  | 10   | 3 (4%) | 1    | 3     | Aug 26 | Sep 8  | Oct 4  | 40   | 10 (11%) | 2    | 13    |
| 2012     | May 14 | May 14 | May 24 | 11   | 2 (3%) | 1    | 2     | Aug 24 | Sep 12 | Sep 27 | 35   | 7 (8%)   | 3    | 11    |
| 2013     | May 23 | May 28 | May 30 | 8    | 3 (4%) | 2    | 4     | Aug 7  | Sep 14 | Sep 18 | 43   | 10 (11%) | 3    | 16    |
| 2014     | May 15 | May 27 | May 27 | 13   | 2 (3%) | 2    | 3     | Aug 8  | Sep 15 | Sep 26 | 50   | 20 (22%) | 5    | 36    |
| Mean     | May 16 | May 19 | May 26 | 11   | 3 (4%) | 1    | 2.0   | Aug 14 | Sep 4  | Sep 26 | 44   | 11 (12%) | 3    | 16    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7   | S8   | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|------|------|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.1  |     |      | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |      |      |     |      |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |      |      |     |      |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.3  |     |      | 0.03   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.1  | 0.1  | 0.1 | 0.1  | 0.07   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      |      |      |     |      |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      |      |      | 0.3 | 0.1  | 0.04   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  |      | 0.1 |      | 0.03   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |      |      | 0.4 | 0.1  | 0.06   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  |      | 0.3 |      | 0.04   |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.01 | 0.04 | 0.06 | 0.1 | 0.04 | 0.03   |

| Observed | Jun | Jul | Summer | F1   | F2  | F3   | F4  | F5  | F6  | F7  | F8  | F9  | F10  | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|------|-----|------|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|------|
| 2005     |     |     |        | 0.1  | 0.1 | 0.1  | 0.1 | 0.3 | 0.9 | 0.7 | 0.7 | 0.7 |      |     |     |     | 0.3  |
| 2006     |     |     |        |      | 0.1 |      | 0.4 | 0.4 | 0.7 |     |     | 0.3 |      |     |     |     | 0.2  |
| 2007     |     |     |        |      | 0.6 |      |     | 0.3 |     |     |     | 0.3 |      |     |     |     | 0.09 |
| 2008     |     |     |        |      | 0.1 |      | 0.1 | 1.1 | 0.6 | 0.1 | 0.1 | 0.1 |      |     |     |     | 0.2  |
| 2009     |     |     |        |      |     | 0.3  |     |     | 0.4 |     |     |     |      |     |     |     | 0.05 |
| 2010     |     |     |        |      |     | 0.1  |     | 0.1 | 0.7 | 1.0 | 0.4 |     |      |     |     |     | 0.2  |
| 2011     |     |     |        |      |     |      | 0.1 | 0.1 | 0.4 | 0.6 | 0.4 |     | 0.1  |     |     |     | 0.1  |
| 2012     |     |     |        |      |     |      | 0.1 |     | 0.3 | 0.9 |     | 0.3 |      |     |     |     | 0.1  |
| 2013     |     |     |        | 0.1  |     |      | 0.3 | 0.3 | 0.1 | 1.4 |     |     |      |     |     |     | 0.2  |
| 2014     |     |     |        |      | 0.1 |      | 0.4 | 1.0 | 0.6 | 2.0 | 0.9 | 0.1 |      |     |     |     | 0.4  |
| Mean     |     |     |        | 0.03 | 0.1 | 0.06 | 0.2 | 0.4 | 0.5 | 0.7 | 0.3 | 0.2 | 0.01 |     |     |     | 0.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |     |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   |     | 1      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1 | 0.1 |     | 0.2    |

| Banded | Jun | Jul | Summer | F1 | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |     |     |     | 2   | 3   | 3   | 2   | 1   |     |     |     |     | 11   |
| 2006   |     |     |        |    | 1   |     |     | 1   | 1   |     |     | 2   |     |     |     |     | 5    |
| 2007   |     |     |        |    |     |     |     | 1   |     |     |     |     |     |     |     |     | 1    |
| 2008   |     |     |        |    |     |     | 1   | 5   | 2   |     | 1   |     |     |     |     |     | 9    |
| 2009   |     |     |        |    |     |     |     |     | 1   |     |     |     |     |     |     |     | 1    |
| 2010   |     |     |        |    |     | 1   |     | 1   | 4   | 4   | 1   |     |     |     |     |     | 11   |
| 2011   |     |     |        |    |     |     | 1   | 1   | 3   | 2   | 3   |     | 1   |     |     |     | 11   |
| 2012   |     |     |        |    |     |     | 1   |     |     | 4   |     | 1   |     |     |     |     | 6    |
| 2013   |     |     |        |    |     |     |     | 1   | 1   | 5   |     |     |     |     |     |     | 7    |
| 2014   |     |     |        |    | 1   |     | 2   | 4   | 2   | 6   | 3   |     |     |     |     |     | 18   |
| Mean   |     |     |        |    | 0.2 | 0.1 | 0.5 | 1.6 | 1.7 | 2.4 | 1.0 | 0.4 | 0.1 |     |     |     | 8.0  |

Philadelphia Vireo is the least common vireo at MBO, especially in spring, when it has been missed entirely in three years, and only two individuals have been banded, compared to 80 in fall. Except for 2009, when sightings spanned five weeks, spring observations are usually limited to one or two weeks, most commonly centered around week 9. Fall numbers are somewhat greater, and although spread out from week 1 to 10, there is a distinct mid-season peak that has been in week 7 for the past five years, although it was in week 5 or 6 in four of the previous five years. Numbers have generally been consistent across years except for lows in 2007 and 2009, and a record high in 2014.



**REVI: Red-eyed Vireo / Viréo aux yeux rouges (*Vireo olivaceus*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 19 | May 28 | Jun 3 | 16   | 15 (25%) | 9    | 35    | Aug 2 | Sep 21 | Oct 6  | 66   | 53 (60%) | 18   | 250   |
| 2006     | May 18 | May 21 | Jun 5 | 19   | 17 (25%) | 3    | 29    | Aug 1 | Sep 1  | Oct 17 | 78   | 60 (66%) | 9    | 186   |
| 2007     | May 21 | May 31 | Jun 5 | 16   | 13 (19%) | 6    | 33    | Aug 1 | Aug 26 | Oct 24 | 85   | 51 (56%) | 17   | 177   |
| 2008     | May 18 | Jun 2  | Jun 5 | 19   | 12 (17%) | 5    | 23    | Aug 1 | Aug 12 | Oct 12 | 73   | 52 (57%) | 10   | 187   |
| 2009     | May 19 | Jun 1  | Jun 5 | 18   | 14 (20%) | 4    | 22    | Aug 1 | Aug 24 | Oct 8  | 69   | 53 (58%) | 9    | 152   |
| 2010     | May 16 | Jun 5  | Jun 5 | 21   | 15 (21%) | 4    | 25    | Aug 1 | Sep 7  | Oct 19 | 80   | 61 (67%) | 12   | 203   |
| 2011     | May 18 | May 29 | Jun 5 | 19   | 16 (23%) | 12   | 68    | Aug 1 | Sep 6  | Oct 7  | 68   | 57 (63%) | 13   | 235   |
| 2012     | May 12 | May 28 | Jun 5 | 25   | 22 (31%) | 7    | 58    | Aug 1 | Aug 18 | Oct 5  | 66   | 62 (68%) | 13   | 266   |
| 2013     | May 17 | May 31 | Jun 5 | 20   | 17 (24%) | 7    | 58    | Aug 1 | Aug 27 | Oct 11 | 72   | 62 (68%) | 13   | 247   |
| 2014     | May 13 | May 27 | Jun 4 | 23   | 22 (32%) | 7    | 65    | Aug 1 | Aug 9  | Oct 1  | 62   | 60 (66%) | 18   | 455   |
| Mean     | May 17 | May 29 | Jun 4 | 20   | 16 (24%) | 6    | 42    | Aug 1 | Aug 27 | Oct 11 | 72   | 57 (63%) | 13   | 236   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7   | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|------|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |     |      | 0.7 | 2.4 | 2.6 | 0.6    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |     |      | 1.0 | 1.9 | 1.3 | 0.4    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |     |      | 0.1 | 2.3 | 2.3 | 0.5    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |     |      | 0.3 | 1.3 | 1.7 | 0.3    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |     |      | 0.7 | 0.6 | 1.9 | 0.3    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |     |      | 0.4 | 1.1 | 2.0 | 0.4    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |     |      | 0.4 | 4.3 | 5.0 | 1.0    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    | 0.4 |      | 2.4 | 3.9 | 1.6 | 0.8    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |     |      | 2.0 | 2.7 | 3.6 | 0.8    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |     | 0.4  | 1.9 | 3.3 | 4.3 | 1.0    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |     | 0.09 | 1.0 | 2.4 | 2.6 | 0.6    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11  | F12  | F13  | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| 2005     | 1.3 | 0.8 | 1.0    | 1.0 | 2.0 | 2.3 | 3.1 | 6.3 | 4.0 | 8.3 | 6.9 | 2.0 | 0.2 |      |      |      | 2.8  |
| 2006     | 1.8 | 2.8 | 2.3    | 3.1 | 3.3 | 2.1 | 3.9 | 4.4 | 2.4 | 3.6 | 1.7 | 1.7 | 0.1 |      | 0.1  |      | 2.0  |
| 2007     | 3.0 | 1.0 | 2.1    | 2.4 | 2.7 | 3.6 | 5.3 | 4.9 | 4.1 | 0.7 | 0.6 | 0.4 | 0.3 | 0.1  |      | 0.1  | 1.9  |
| 2008     | 1.6 | 1.8 | 1.7    | 4.1 | 5.0 | 2.9 | 1.9 | 4.7 | 4.3 | 1.1 | 0.1 | 1.9 | 0.6 | 0.1  |      |      | 2.1  |
| 2009     | 0.3 | 1.3 | 0.9    | 2.7 | 1.6 | 4.1 | 5.9 | 2.1 | 1.9 | 0.9 | 1.0 | 1.0 | 0.6 |      |      |      | 1.7  |
| 2010     | 1.0 | 2.5 | 2.0    | 4.4 | 5.0 | 2.7 | 3.3 | 2.7 | 5.0 | 2.7 | 1.3 | 1.1 | 0.1 | 0.3  | 0.3  |      | 2.2  |
| 2011     | 2.3 | 4.8 | 3.7    | 6.4 | 5.6 | 6.3 | 3.1 | 3.6 | 4.4 | 2.0 | 1.0 | 0.7 | 0.4 |      |      |      | 2.6  |
| 2012     | 2.3 | 1.5 | 1.9    | 4.6 | 4.1 | 5.6 | 5.9 | 5.1 | 5.4 | 3.3 | 2.6 | 1.1 | 0.3 |      |      |      | 2.9  |
| 2013     | 1.7 | 1.5 | 1.6    | 5.1 | 4.4 | 4.0 | 5.4 | 3.6 | 2.3 | 4.7 | 3.4 | 1.7 | 0.4 | 0.1  |      |      | 2.7  |
| 2014     | 2.7 | 4.3 | 3.6    | 8.3 | 7.7 | 7.1 | 9.4 | 9.6 | 9.0 | 7.0 | 5.3 | 1.6 |     |      |      |      | 5.0  |
| Mean     | 1.8 | 2.0 | 1.9    | 4.2 | 4.1 | 4.1 | 4.7 | 4.7 | 4.3 | 3.4 | 2.4 | 1.3 | 0.3 | 0.07 | 0.04 | 0.01 | 2.6  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 1   | 1   | 3      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   | 1   | 2      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 3   |     | 3      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   | 1   | 2      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |     | 2   | 3      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 1   |     | 2      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 4   | 1   | 5      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     | 2   | 1   |     | 3      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 2   | 1   | 3      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     | 4   | 2   | 7      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 | 0.5 | 1.8 | 0.9 | 3.3    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5   | F6   | F7   | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     | 7   | 2   | 4   | 27   | 5    | 35   | 33  | 3   | 1   |     |     |     | 117  |
| 2006   |     |     |        | 1   |     | 2   | 6   | 8    | 6    | 10   | 4   | 5   |     |     |     |     | 42   |
| 2007   |     |     |        | 3   | 8   | 5   | 11  | 13   | 16   | 1    | 2   | 1   |     |     |     | 1   | 62   |
| 2008   |     |     |        | 4   | 12  | 5   | 4   | 14   | 14   | 7    |     | 9   | 1   |     |     |     | 70   |
| 2009   |     | 4   | 4      | 10  | 4   | 9   | 14  | 2    | 5    | 4    | 2   | 4   | 2   |     |     |     | 56   |
| 2010   |     | 9   | 9      | 12  | 9   | 4   | 14  | 7    | 20   | 15   | 8   | 4   |     | 1   | 2   |     | 96   |
| 2011   | 2   | 10  | 12     | 6   | 4   | 1   | 5   | 4    | 11   | 3    | 2   | 2   | 3   |     |     |     | 41   |
| 2012   | 3   | 3   | 6      | 13  | 9   | 8   | 9   | 10   | 8    | 8    | 4   | 4   | 2   |     |     |     | 75   |
| 2013   |     | 4   | 4      | 9   | 7   | 5   | 7   | 13   | 6    | 13   | 12  | 6   |     |     |     |     | 78   |
| 2014   | 1   | 7   | 8      | 16  | 6   | 6   | 11  | 23   | 26   | 23   | 10  | 5   |     |     |     |     | 126  |
| Mean   | 1.0 | 4.1 | 4.8    | 7.4 | 6.6 | 4.7 | 8.5 | 12.1 | 11.7 | 11.9 | 7.7 | 4.3 | 1.0 | 0.1 | 0.2 | 0.1 | 76.3 |

Red-eyed Vireo is by far the most common vireo at MBO, present annually from mid-May to October. Spring arrival tends to be consistent, with the first sighting between May 16 and 19 in seven years out of ten; just as often the spring peak is not until week 10. Fall migration is longer, observed weekly until at least week 10 except in 2014, and extending to week 11 or beyond in half of the years. Mean daily counts are fairly stable over the first half of fall, but based on banding numbers, the peak of migration appears to be in the first half of September. Like Warbling Vireo, the breeding population has grown notably in recent years. Similar to Philadelphia Vireo, fall numbers were lowest in 2007 and 2009, and at record levels in 2014.

**BLJA: Blue Jay / Geai bleu (*Cyanocitta cristata*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days    | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|-----------|------|-------|
| 2005     | Apr 5  | Apr 8  | Jun 3 | 60   | 51 (86%) | 11   | 159   | Aug 1 | Sep 28 | Oct 30 | 91   | 88 (100%) | 45   | 1334  |
| 2006     | Mar 28 | May 16 | Jun 5 | 70   | 68 (99%) | 24   | 498   | Aug 1 | Sep 23 | Oct 30 | 91   | 91 (100%) | 50   | 1510  |
| 2007     | Mar 28 | Apr 3  | Jun 3 | 68   | 67 (96%) | 18   | 420   | Aug 1 | Sep 29 | Oct 30 | 91   | 91 (100%) | 72   | 1098  |
| 2008     | Mar 28 | May 26 | Jun 4 | 69   | 67 (96%) | 22   | 386   | Aug 1 | Sep 20 | Oct 30 | 91   | 91 (100%) | 36   | 1241  |
| 2009     | Mar 28 | Apr 20 | Jun 5 | 70   | 66 (96%) | 14   | 254   | Aug 1 | Sep 24 | Oct 30 | 91   | 90 (99%)  | 40   | 1086  |
| 2010     | Mar 28 | May 4  | Jun 5 | 70   | 64 (91%) | 34   | 266   | Aug 1 | Sep 22 | Oct 30 | 91   | 91 (100%) | 220  | 2457  |
| 2011     | Mar 28 | May 26 | Jun 5 | 70   | 68 (97%) | 18   | 353   | Aug 2 | Oct 5  | Oct 30 | 90   | 83 (91%)  | 65   | 1476  |
| 2012     | Mar 28 | Apr 11 | Jun 5 | 70   | 67 (96%) | 14   | 385   | Aug 1 | Sep 23 | Oct 30 | 91   | 91 (100%) | 125  | 2283  |
| 2013     | Mar 28 | May 8  | Jun 5 | 70   | 68 (97%) | 55   | 519   | Aug 1 | Oct 4  | Oct 30 | 91   | 91 (100%) | 90   | 1537  |
| 2014     | Mar 29 | May 14 | Jun 2 | 66   | 65 (96%) | 32   | 404   | Aug 1 | Sep 19 | Oct 30 | 91   | 90 (99%)  | 83   | 1720  |
| Mean     | Mar 28 | May 1  | Jun 4 | 68   | 65 (95%) | 24   | 364   | Aug 1 | Sep 25 | Oct 30 | 91   | 90 (99%)  | 83   | 1574  |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1   | S2   | S3  | S4   | S5  | S6   | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|------|------|-----|------|-----|------|-----|-----|-----|-----|--------|
| 2005     | 2.3 | 1.5 |     | 1.5 | 3.3 | 2.2    |      | 6.0  | 2.3 | 2.2  | 2.6 | 2.7  | 2.3 | 2.3 | 0.7 | 4.0 | 2.7    |
| 2006     | 4.9 | 3.6 | 3.6 | 1.8 | 2.7 | 3.4    | 4.3  | 10.5 | 5.7 | 8.1  | 9.1 | 11.6 | 7.4 | 8.0 | 5.0 | 2.9 | 7.2    |
| 2007     | 5.4 | 5.1 | 2.0 | 2.2 | 6.6 | 4.7    | 10.0 | 7.0  | 9.0 | 8.7  | 5.4 | 5.4  | 4.7 | 3.6 | 3.6 | 2.6 | 6.0    |
| 2008     | 4.4 | 1.8 | 2.0 | 0.3 |     | 2.2    | 3.1  | 4.6  | 3.4 | 6.6  | 6.6 | 5.9  | 7.9 | 5.6 | 8.1 | 3.4 | 5.5    |
| 2009     | 5.3 | 6.5 | 2.3 | 6.2 | 7.1 | 6.0    | 3.0  | 3.7  | 4.4 | 6.7  | 3.4 | 3.7  | 3.4 | 2.4 | 1.9 | 4.1 | 3.7    |
| 2010     | 6.5 | 5.0 | 3.9 | 5.8 | 4.6 | 5.3    | 4.6  | 1.4  | 2.3 | 3.3  | 2.9 | 11.0 | 2.3 | 5.6 | 2.0 | 2.7 | 3.8    |
| 2011     | 4.3 | 3.0 | 3.5 | 4.5 | 2.6 | 3.7    | 6.1  | 3.4  | 4.3 | 6.0  | 4.1 | 6.1  | 5.3 | 3.9 | 6.4 | 4.7 | 5.0    |
| 2012     | 6.4 | 3.5 | 8.3 | 3.0 | 2.4 | 5.0    | 8.0  | 5.0  | 8.3 | 6.7  | 6.0 | 5.0  | 4.6 | 4.7 | 4.9 | 1.9 | 5.5    |
| 2013     | 2.3 | 2.0 | 2.9 | 2.8 | 3.6 | 2.9    | 5.1  | 4.0  | 3.6 | 6.7  | 6.1 | 19.3 | 7.6 | 8.6 | 4.6 | 8.6 | 7.4    |
| 2014     | 5.8 | 4.3 | 4.7 | 2.0 | 2.6 | 3.7    | 6.8  | 4.0  | 6.4 | 11.3 | 6.9 | 6.7  | 8.1 | 4.0 | 3.1 | 1.5 | 5.9    |
| Mean     | 5.1 | 3.7 | 3.5 | 3.3 | 4.3 | 4.1    | 5.7  | 4.9  | 5.0 | 6.7  | 5.3 | 7.7  | 5.4 | 4.9 | 4.0 | 3.7 | 5.3    |

| Observed | Jun | Jul | Summer | F1   | F2   | F3   | F4   | F5   | F6   | F7   | F8   | F9   | F10  | F11  | F12  | F13  | Fall |
|----------|-----|-----|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2005     | 1.3 | 4.0 | 2.7    | 4.3  | 7.1  | 6.0  | 12.4 | 11.7 | 15.7 | 9.9  | 25.7 | 34.2 | 24.3 | 16.0 | 15.1 | 18.7 | 15.2 |
| 2006     | 1.3 | 2.4 | 1.9    | 7.6  | 10.6 | 9.6  | 13.1 | 15.9 | 21.6 | 23.4 | 23.6 | 19.1 | 22.9 | 20.6 | 13.9 | 14.0 | 16.6 |
| 2007     | 0.6 | 2.0 | 1.2    | 5.4  | 5.4  | 5.9  | 7.3  | 5.9  | 13.6 | 27.4 | 17.7 | 28.4 | 16.4 | 8.0  | 8.0  | 7.4  | 12.1 |
| 2008     | 1.2 | 0.6 | 0.9    | 6.7  | 12.1 | 8.1  | 15.3 | 12.6 | 12.9 | 14.1 | 23.4 | 18.0 | 18.1 | 16.3 | 11.9 | 7.7  | 13.6 |
| 2009     | 0.7 | 0.3 | 0.4    | 2.0  | 2.7  | 3.6  | 4.9  | 7.6  | 12.9 | 16.7 | 25.7 | 26.7 | 18.0 | 11.7 | 9.7  | 13.0 | 11.9 |
| 2010     |     | 0.5 | 0.3    | 4.0  | 5.7  | 7.4  | 8.3  | 12.6 | 17.9 | 31.7 | 77.4 | 94.0 | 39.4 | 22.4 | 15.1 | 15.0 | 27.0 |
| 2011     | 2.0 | 2.3 | 2.1    | 3.1  | 2.4  | 2.9  | 8.0  | 4.6  | 9.3  | 23.9 | 23.7 | 39.9 | 33.9 | 27.0 | 17.7 | 14.6 | 16.2 |
| 2012     | 0.5 | 1.3 | 0.9    | 5.0  | 5.9  | 10.1 | 15.1 | 17.1 | 15.7 | 54.4 | 75.4 | 65.3 | 23.1 | 11.4 | 13.0 | 14.4 | 25.1 |
| 2013     | 2.3 | 6.3 | 4.6    | 10.1 | 6.9  | 10.4 | 12.3 | 12.1 | 14.1 | 19.0 | 24.6 | 19.9 | 35.4 | 26.4 | 15.0 | 13.3 | 16.9 |
| 2014     | 1.0 | 3.5 | 2.4    | 11.7 | 10.9 | 11.3 | 12.4 | 20.1 | 14.1 | 29.0 | 40.0 | 28.4 | 21.1 | 17.0 | 16.1 | 13.4 | 18.9 |
| Mean     | 1.1 | 2.6 | 1.9    | 6.0  | 7.0  | 7.5  | 10.9 | 12.0 | 14.8 | 25.0 | 35.7 | 37.4 | 25.3 | 17.7 | 13.6 | 13.2 | 17.4 |

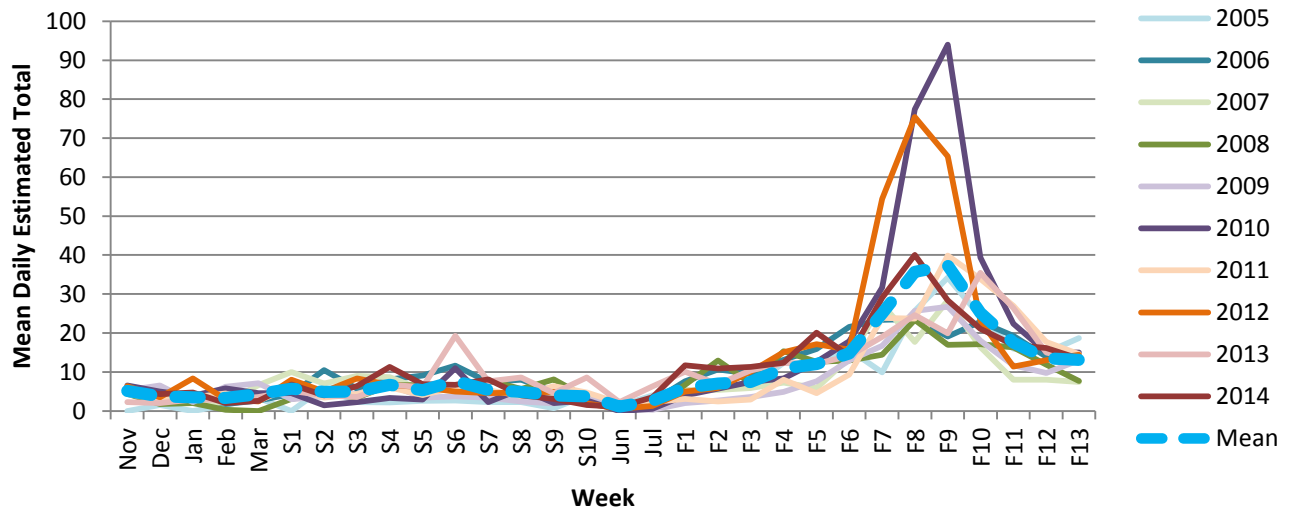
| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   | 3   |     |     | 2   | 1   | 6      |    |    |     |     |     |     |     |     |     |     |        |
| 2006   |     |     |     |     | 1   | 1      |    |    | 1   |     |     | 3   | 2   |     |     |     | 6      |
| 2007   | 1   |     |     |     |     | 1      |    |    |     |     |     |     | 1   | 1   | 2   |     | 4      |
| 2008   |     |     |     |     |     |        |    |    |     |     |     |     | 1   | 1   |     |     | 2      |
| 2009   |     |     |     |     |     |        |    |    |     |     | 1   |     |     |     |     |     | 1      |
| 2010   | 1   |     |     |     |     | 1      |    |    |     |     |     |     |     |     |     |     |        |
| 2011   | 1   |     |     |     |     | 1      |    |    |     |     |     |     |     |     |     |     |        |
| 2012   | 2   | 2   |     | 2   | 1   | 7      |    |    |     | 1   | 1   | 1   |     |     | 1   |     | 4      |
| 2013   |     |     |     |     |     |        |    |    |     |     |     |     |     |     |     |     |        |
| 2014   |     | 1   |     |     |     | 1      |    |    |     |     | 1   |     |     | 1   |     |     | 2      |
| Mean   | 1.0 | 0.4 |     | 0.7 | 0.4 | 2.0    |    |    | 0.5 | 0.1 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 |     | 1.9    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        | 1   |     |     | 2   | 3   | 3   |     | 7   | 5   | 1   |     | 2   | 2   | 26   |
| 2006   |     |     |        |     |     |     | 1   | 1   | 1   | 2   | 1   | 1   | 1   | 5   | 3   |     | 16   |
| 2007   |     |     |        |     |     |     |     |     |     |     | 2   | 4   | 2   | 1   |     |     | 9    |
| 2008   |     |     |        |     | 2   |     | 4   | 2   | 2   | 9   | 7   | 1   | 1   |     |     |     | 28   |
| 2009   |     |     |        |     |     |     | 1   | 2   | 3   | 4   | 1   | 2   | 3   |     | 1   | 1   | 18   |
| 2010   |     |     |        |     |     |     | 1   |     | 2   | 6   | 18  | 9   | 3   | 1   | 1   |     | 41   |
| 2011   |     |     |        |     |     |     | 1   |     | 1   | 1   | 4   | 7   |     | 2   | 2   |     | 18   |
| 2012   |     |     |        |     |     | 1   |     | 1   | 1   | 9   | 24  | 9   | 2   | 1   | 1   |     | 49   |
| 2013   |     | 1   | 1      |     |     |     | 1   |     |     | 5   | 5   | 4   | 12  | 3   | 2   | 3   | 35   |
| 2014   |     | 2   | 2      | 3   | 1   |     | 2   | 1   | 2   | 7   | 17  | 23  | 9   | 1   | 4   | 2   | 72   |
| Mean   |     | 0.3 | 0.3    | 0.4 | 0.3 | 0.1 | 1.3 | 1.0 | 1.5 | 4.3 | 8.6 | 6.5 | 3.4 | 1.4 | 1.6 | 0.8 | 31.2 |

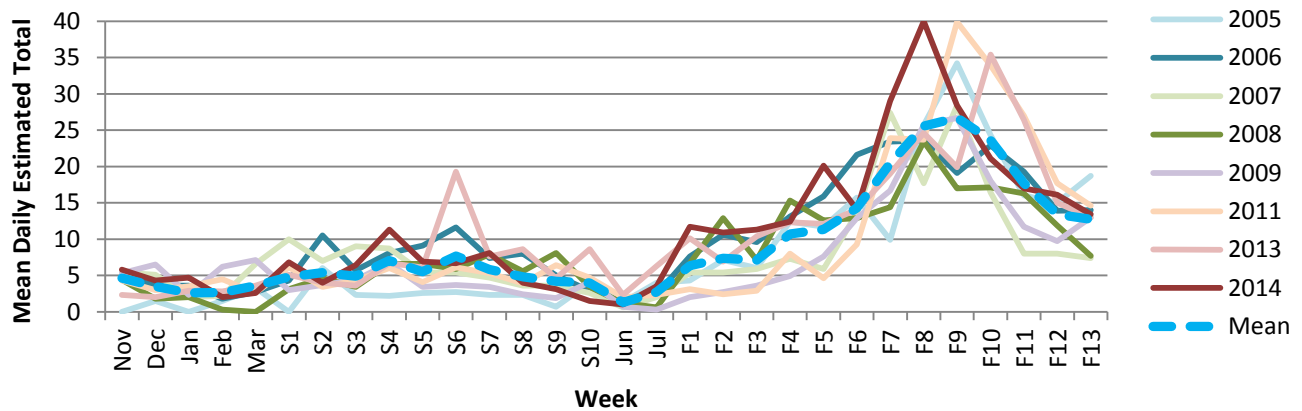
Blue Jays are common at MBO throughout most of the year, although somewhat less so in summer; June 2010 is the only study period in MBO's history that none were observed. Numbers tend to be fairly stable through most of winter and early spring, but peak between mid-April and early May before declining for the summer. Fall counts build steadily to a peak that is almost always in weeks 8 or 9. There is no clear pattern to spring numbers over the years, but fall counts tend to be higher in even-numbered years, most notably 2010 and 2012.

Mean daily estimated total of Blue Jays throughout the year

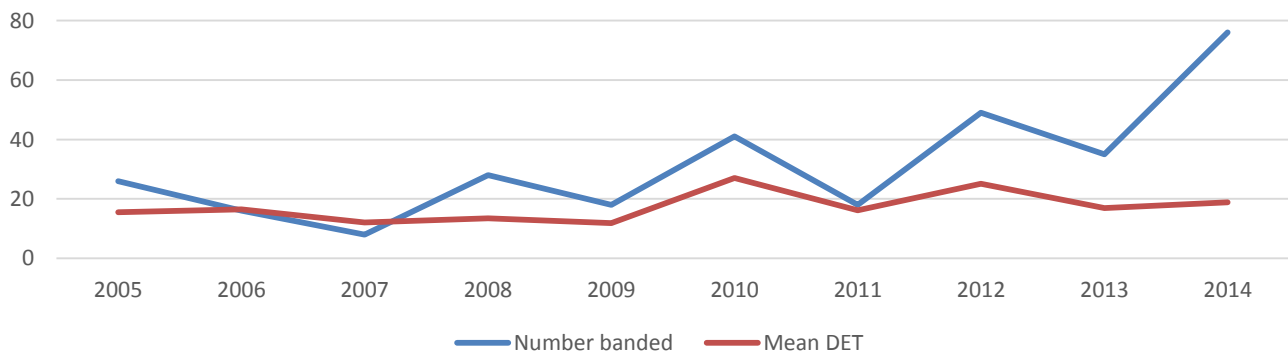


The figure above illustrates the degree to which numbers at the peak of migration in 2010 and 2012 were higher than usual, even though abundance throughout the rest of the year was fairly typical. The figure below shows the lesser degree of variability throughout the seasons in years other than 2010 and 2012. The bottom figure highlights the pattern from 2006-14 of higher totals in the even-numbered years, reflected more distinctly in the number of birds banded than the daily estimated total.

Mean daily estimated total of Blue Jays throughout the year  
(2010 and 2012 excepted)



Fall Blue Jay numbers, 2005-2014



# AMCR: American Crow / Corneille d'Amérique (*Corvus brachyrhynchos*)

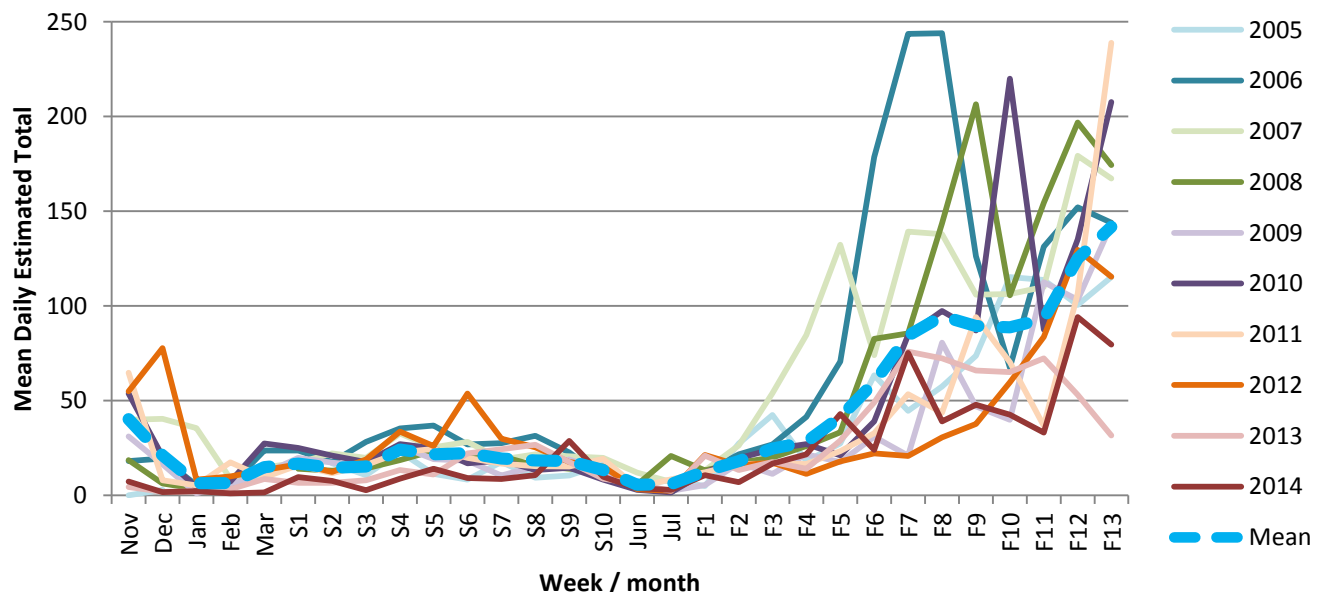
| Observed | First  | Peak   | Last  | Span | # days    | High | Total | First | Peak   | Last   | Span | # days    | High | Total |
|----------|--------|--------|-------|------|-----------|------|-------|-------|--------|--------|------|-----------|------|-------|
| 2005     | Apr 5  | May 11 | Jun 3 | 60   | 59 (100%) | 75   | 798   | Aug 1 | Oct 23 | Oct 30 | 91   | 87 (99%)  | 240  | 5326  |
| 2006     | Mar 28 | Apr 27 | Jun 5 | 70   | 69 (100%) | 113  | 1800  | Aug 1 | Sep 17 | Oct 30 | 91   | 91 (100%) | 500  | 10218 |
| 2007     | Mar 28 | May 1  | Jun 5 | 70   | 70 (100%) | 60   | 1586  | Aug 1 | Oct 21 | Oct 30 | 91   | 91 (100%) | 349  | 9314  |
| 2008     | Mar 28 | Apr 18 | Jun 5 | 70   | 70 (100%) | 50   | 1178  | Aug 1 | Oct 22 | Oct 30 | 91   | 91 (100%) | 500  | 8814  |
| 2009     | Mar 28 | Apr 18 | Jun 5 | 70   | 69 (100%) | 36   | 1203  | Aug 1 | Oct 15 | Oct 30 | 91   | 91 (100%) | 319  | 4561  |
| 2010     | Mar 28 | May 28 | Jun 5 | 70   | 70 (100%) | 44   | 1313  | Aug 1 | Oct 24 | Oct 30 | 91   | 91 (100%) | 482  | 7437  |
| 2011     | Mar 28 | May 1  | Jun 5 | 70   | 70 (100%) | 65   | 1244  | Aug 1 | Oct 27 | Oct 30 | 91   | 90 (99%)  | 446  | 5334  |
| 2012     | Mar 28 | May 6  | Jun 5 | 70   | 70 (100%) | 200  | 1745  | Aug 1 | Oct 17 | Oct 30 | 91   | 91 (100%) | 355  | 4084  |
| 2013     | Mar 28 | May 23 | Jun 5 | 70   | 69 (99%)  | 51   | 1019  | Aug 1 | Sep 18 | Oct 30 | 91   | 91 (100%) | 205  | 4062  |
| 2014     | Mar 29 | May 29 | Jun 4 | 68   | 64 (94%)  | 60   | 750   | Aug 1 | Oct 21 | Oct 30 | 91   | 91 (100%) | 185  | 3741  |
| Mean     | Mar 28 | May 7  | Jun 4 | 69   | 68 (99%)  | 75   | 1264  | Aug 1 | Oct 14 | Oct 30 | 91   | 90 (100%) | 358  | 6289  |

| Observed | Nov   | Dec  | Jan  | Feb  | Mar  | Winter | S1   | S2   | S3   | S4   | S5   | S6   | S7   | S8   | S9   | S10  | Spring |
|----------|-------|------|------|------|------|--------|------|------|------|------|------|------|------|------|------|------|--------|
| 2005     | 128.8 | 3.0  |      | 4.0  | 13.3 | 42.1   |      | 17.0 | 10.7 | 23.0 | 11.3 | 8.3  | 17.7 | 9.4  | 10.6 | 16.4 | 13.5   |
| 2006     | 18.2  | 19.4 | 5.5  | 5.2  | 23.7 | 14.7   | 23.7 | 17.7 | 28.3 | 35.3 | 36.9 | 26.9 | 27.6 | 31.4 | 22.7 | 9.3  | 26.1   |
| 2007     | 40.0  | 40.4 | 35.5 | 8.8  | 14.8 | 30.3   | 17.3 | 22.1 | 19.9 | 32.7 | 25.4 | 28.3 | 18.9 | 21.6 | 20.6 | 19.9 | 22.7   |
| 2008     | 18.6  | 6.3  | 3.4  | 3.7  |      | 9.0    | 14.1 | 13.0 | 14.3 | 18.7 | 23.6 | 20.6 | 20.7 | 15.7 | 14.0 | 13.6 | 16.8   |
| 2009     | 31.1  | 16.5 | 1.0  | 6.2  | 11.5 | 13.1   | 19.9 | 17.3 | 15.6 | 26.1 | 19.1 | 18.3 | 10.6 | 15.3 | 19.0 | 13.1 | 17.4   |
| 2010     | 53.7  | 20.6 | 4.3  | 7.3  | 27.5 | 26.6   | 25.1 | 21.0 | 17.7 | 27.1 | 24.9 | 16.9 | 18.4 | 13.4 | 14.6 | 8.4  | 18.8   |
| 2011     | 64.7  | 8.0  | 5.3  | 17.5 | 9.6  | 24.3   | 16.0 | 11.7 | 16.1 | 22.7 | 24.6 | 19.9 | 16.7 | 15.4 | 15.3 | 19.3 | 17.8   |
| 2012     | 54.9  | 77.8 | 8.3  | 10.0 | 13.4 | 39.3   | 16.4 | 12.4 | 18.9 | 33.6 | 26.1 | 53.7 | 29.9 | 25.4 | 17.6 | 15.3 | 24.9   |
| 2013     | 4.5   | 1.9  | 2.0  | 3.2  | 8.6  | 4.5    | 6.7  | 6.6  | 8.0  | 13.4 | 11.1 | 22.1 | 24.4 | 26.7 | 17.6 | 8.9  | 14.6   |
| 2014     | 7.4   | 1.8  | 2.3  | 1.0  | 1.6  | 2.6    | 9.7  | 7.6  | 2.7  | 8.9  | 14.0 | 9.1  | 8.7  | 10.7 | 28.7 | 9.8  | 11.0   |
| Mean     | 40.3  | 21.2 | 6.5  | 6.4  | 15.0 | 19.3   | 16.7 | 14.5 | 15.2 | 24.2 | 21.7 | 22.4 | 19.4 | 18.5 | 18.1 | 13.4 | 18.4   |

| Observed | Jun  | Jul  | Summer | F1   | F2   | F3   | F4   | F5    | F6    | F7    | F8    | F9    | F10   | F11   | F12   | F13   | Fall  |
|----------|------|------|--------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 2005     | 5.2  | 8.2  | 6.8    | 4.9  | 27.4 | 42.4 | 18.1 | 27.4  | 63.4  | 44.6  | 57.4  | 73.7  | 115.2 | 113.7 | 100.6 | 115.3 | 60.5  |
| 2006     | 4.8  | 1.8  | 3.2    | 12.3 | 21.6 | 26.9 | 41.4 | 70.6  | 178.6 | 243.6 | 243.9 | 126.3 | 67.4  | 131.3 | 152.0 | 144.0 | 112.3 |
| 2007     | 12.0 | 7.2  | 9.8    | 13.3 | 26.4 | 54.0 | 84.6 | 132.3 | 74.0  | 139.3 | 137.9 | 106.0 | 106.3 | 110.0 | 179.3 | 167.3 | 102.4 |
| 2008     | 5.6  | 20.8 | 13.2   | 13.3 | 17.3 | 20.0 | 26.0 | 33.3  | 82.6  | 85.6  | 143.6 | 206.4 | 105.6 | 154.4 | 196.9 | 174.3 | 96.9  |
| 2009     | 4.3  | 2.5  | 3.3    | 5.4  | 17.0 | 11.3 | 21.7 | 17.7  | 31.0  | 21.0  | 80.7  | 47.0  | 40.0  | 112.6 | 103.3 | 142.9 | 50.1  |
| 2010     | 3.0  | 1.5  | 2.0    | 12.1 | 19.6 | 24.3 | 27.0 | 21.1  | 39.1  | 84.7  | 97.3  | 87.0  | 219.9 | 87.6  | 135.1 | 207.6 | 81.7  |
| 2011     | 4.3  | 8.5  | 6.7    | 12.3 | 16.6 | 16.7 | 16.6 | 23.3  | 32.9  | 53.4  | 43.7  | 94.1  | 70.3  | 36.7  | 106.6 | 238.9 | 58.6  |
| 2012     | 3.3  | 2.5  | 2.9    | 21.3 | 15.9 | 17.3 | 11.4 | 18.0  | 22.1  | 20.9  | 30.7  | 37.7  | 59.6  | 83.6  | 129.6 | 115.4 | 44.9  |
| 2013     | 6.0  | 2.5  | 4.0    | 21.0 | 13.4 | 17.7 | 14.0 | 28.9  | 49.0  | 75.9  | 72.3  | 66.0  | 65.1  | 72.3  | 53.1  | 31.6  | 44.6  |
| 2014     | 3.7  | 3.0  | 3.3    | 10.7 | 6.9  | 16.7 | 21.7 | 42.9  | 24.0  | 75.3  | 39.0  | 47.9  | 42.6  | 33.1  | 94.1  | 79.6  | 41.1  |
| Mean     | 5.6  | 6.0  | 5.8    | 12.7 | 18.2 | 24.7 | 28.3 | 41.5  | 59.7  | 84.4  | 94.6  | 89.4  | 88.8  | 93.2  | 125.1 | 141.7 | 69.3  |

American Crow is among the most abundant species at MBO in all seasons, with observations throughout all study periods, including daily sightings on all but two days of spring and fall migration monitoring over ten years. Although most of the population is likely resident, there are nonetheless seasonal patterns in observation, with a tendency for a spring peak in late April, and a fall peak that builds from around mid-September to a maximum in late October. Fall numbers have steadily declined over the years.

## Mean daily estimated total of American Crows throughout the year



### FICR: Fish Crow / Corneille de rivage (*Corvus ossifragus*)

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2012     | Apr 20 | Apr 20 | Apr 20 | 1    | 1 (1%) | 1    | 1     |       |      |      |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| Mean     | Apr 20 | Apr 20 | Apr 20 | 1    | 1 (1%) | 1    | 0.1   |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|----|----|----|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    | 0.1  |    |    |    |    |    |     | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |      |    |    |    |    |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    | 0.01 |    |    |    |    |    |     | <0.01  |

A lone Fish Crow was observed at MBO on April 20, 2012, part of a growing northward expansion of the species, in particular an influx of sightings along the lower Great Lakes and St. Lawrence Valley that spring.

### CORA: Common Raven / Grand Corbeau (*Corvus corax*)

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 9  | Apr 9  | Apr 18 | 10   | 2 (3%)   | 1    | 2     | Aug 22 | Oct 22 | Oct 30 | 70   | 25 (28%) | 4    | 38    |
| 2006     | Mar 28 | May 24 | Jun 4  | 69   | 26 (38%) | 2    | 27    | Aug 2  | Aug 5  | Oct 26 | 86   | 31 (34%) | 2    | 34    |
| 2007     | Apr 20 | May 6  | Jun 1  | 43   | 15 (21%) | 3    | 17    | Aug 4  | Oct 21 | Oct 30 | 88   | 39 (43%) | 6    | 61    |
| 2008     | Apr 2  | Apr 30 | Jun 3  | 63   | 21 (30%) | 2    | 26    | Aug 11 | Sep 1  | Oct 26 | 77   | 25 (27%) | 2    | 32    |
| 2009     | Apr 18 | Apr 20 | Jun 1  | 45   | 10 (14%) | 2    | 13    | Aug 9  | Oct 23 | Oct 29 | 82   | 30 (33%) | 3    | 37    |
| 2010     | Apr 15 | Apr 15 | May 24 | 40   | 8 (11%)  | 1    | 8     | Aug 2  | Oct 13 | Oct 30 | 90   | 27 (30%) | 6    | 42    |
| 2011     | Mar 31 | May 6  | Jun 5  | 67   | 23 (33%) | 2    | 24    | Aug 1  | Sep 18 | Oct 29 | 90   | 38 (42%) | 6    | 57    |
| 2012     | Mar 31 | May 5  | Jun 1  | 63   | 27 (39%) | 3    | 32    | Aug 8  | Sep 27 | Oct 29 | 83   | 50 (55%) | 4    | 69    |
| 2013     | Mar 30 | May 3  | May 31 | 63   | 41 (59%) | 4    | 53    | Aug 3  | Sep 6  | Oct 29 | 88   | 48 (53%) | 4    | 81    |
| 2014     | Mar 30 | Apr 27 | Jun 1  | 64   | 41 (60%) | 5    | 66    | Aug 3  | Oct 22 | Oct 30 | 89   | 60 (66%) | 12   | 120   |
| Mean     | Apr 5  | Apr 29 | May 27 | 53   | 21 (31%) | 2    | 27    | Aug 6  | Sep 27 | Oct 28 | 84   | 37 (41%) | 5    | 57    |

| Observed | Nov  | Dec  | Jan | Feb | Mar | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|------|------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |      |      |     |     |     |        |     | 0.2 |     | 0.2 |     |     |     |     |     |     | 0.03   |
| 2006     | 0.1  | 0.07 | 0.2 |     | 0.2 | 0.1    | 0.1 |     |     |     | 0.3 | 0.6 | 0.9 | 0.9 | 1.0 | 0.1 | 0.4    |
| 2007     | 0.06 |      | 0.3 | 0.2 | 0.4 | 0.2    |     |     |     | 0.3 | 0.3 | 1.0 | 0.1 | 0.4 |     | 0.3 | 0.2    |
| 2008     |      |      | 0.2 | 0.6 |     | 0.2    | 0.3 | 0.1 | 0.1 | 0.3 | 0.9 | 0.6 | 0.1 | 0.6 | 0.4 | 0.3 | 0.4    |
| 2009     | 0.1  | 0.5  | 0.8 | 0.7 |     | 0.3    |     |     |     | 0.6 | 0.3 | 0.4 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2    |
| 2010     | 0.4  | 0.3  | 1.0 | 0.3 | 0.3 | 0.5    |     |     | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 |     | 0.1    |
| 2011     | 0.3  |      | 0.5 | 1.2 | 0.3 | 0.5    | 0.1 |     |     | 0.7 | 0.6 | 0.6 | 0.3 | 0.3 | 0.3 | 0.6 | 0.3    |
| 2012     | 0.5  |      | 0.3 |     | 1.2 | 0.5    | 0.3 | 0.1 | 0.3 | 0.4 | 0.4 | 0.7 | 0.3 | 0.4 | 0.9 | 0.7 | 0.5    |
| 2013     | 0.1  | 0.1  | 0.4 | 0.6 | 0.6 | 0.4    | 0.1 | 0.1 | 1.0 | 0.9 | 1.1 | 2.0 | 1.1 | 0.7 | 0.1 | 0.3 | 0.8    |
| 2014     | 0.6  | 0.3  |     | 0.1 | 0.2 | 0.2    | 0.5 | 0.4 | 0.1 | 1.9 | 2.0 | 1.0 | 1.4 | 0.9 | 0.6 | 0.8 | 1.0    |
| Mean     | 0.2  | 0.1  | 0.4 | 0.4 | 0.3 | 0.3    | 0.2 | 0.1 | 0.2 | 0.5 | 0.6 | 0.7 | 0.5 | 0.4 | 0.4 | 0.3 | 0.4    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     |     |     |        |     |     |     | 0.1 | 0.4 | 0.1 | 0.4 | 0.3 | 0.8 | 0.7 | 1.2 | 0.9 | 0.9 | 0.4  |
| 2006     |     | 0.2 | 0.09   | 0.7 | 0.3 | 0.4 | 0.3 | 0.3 | 0.6 |     | 0.1 | 0.3 | 0.7 | 0.6 | 0.1 | 0.4 | 0.4  |
| 2007     |     | 0.2 | 0.08   | 0.4 | 0.3 | 0.4 | 0.7 | 1.1 | 1.0 | 0.7 | 0.7 | 0.7 | 0.9 | 0.1 | 1.3 | 0.3 | 0.7  |
| 2008     |     |     |        |     | 0.3 |     |     | 0.4 | 0.3 | 0.7 | 0.6 | 0.7 | 0.1 | 0.1 | 1.1 | 0.1 | 0.4  |
| 2009     | 0.7 | 0.3 | 0.4    |     | 0.6 | 0.1 | 0.1 | 0.3 | 0.3 |     | 0.9 | 0.3 | 0.6 | 0.6 | 1.0 | 0.6 | 0.4  |
| 2010     |     |     |        | 0.1 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4 | 0.1 | 0.1 | 0.4 | 0.3 | 1.6 | 0.3 | 1.1 | 0.5  |
| 2011     | 1.3 | 2.0 | 1.7    | 0.6 | 0.4 | 0.1 | 0.3 | 0.3 | 0.7 | 1.1 | 0.7 | 0.9 | 0.7 | 0.4 | 1.3 | 0.6 | 0.6  |
| 2012     | 0.5 | 0.8 | 0.6    |     | 0.7 | 0.6 | 1.3 | 0.7 | 0.7 | 0.6 | 0.4 | 1.1 | 1.1 | 1.3 | 0.6 | 0.7 | 0.8  |
| 2013     | 0.3 | 1.0 | 0.7    | 0.4 | 0.3 | 0.4 | 0.4 | 0.7 | 1.7 | 1.1 | 2.0 | 1.0 | 1.1 | 0.4 | 1.0 | 0.9 | 0.9  |
| 2014     | 0.7 | 0.3 | 0.4    | 0.4 | 0.1 | 1.0 | 1.0 | 0.7 | 0.7 | 1.3 | 1.7 | 1.4 | 1.7 | 1.4 | 3.4 | 2.1 | 1.3  |
| Mean     | 0.2 | 0.3 | 0.3    | 0.3 | 0.3 | 0.3 | 0.5 | 0.5 | 0.7 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 | 1.1 | 0.8 | 0.6  |

Common Raven is an uncommon year-round resident at MBO, with numbers generally varying little throughout the year, although often a bit higher in mid-spring and late fall. In most seasons, there has been an increasing trend over the years.

**HOLA: Horned Lark / Alouette hausse-col (*Eremophila alpestris*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       | Oct 23 | Oct 23 | Oct 23 | 1    | 1 (1%) | 20   | 20    |
| 2009     | Apr 10 | Apr 10 | Apr 10 | 1    | 1 (1%) | 2    | 2     |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       | Oct 30 | Oct 30 | Oct 30 | 1    | 1 (1%) | 10   | 10    |
| 2011     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       | Sep 27 | Sep 27 | Oct 28 | 32   | 2 (2%) | 2    | 3     |
| Mean     | Apr 10 | Apr 10 | Apr 10 | 1    | 1 (1%) | 2    | 0.2   | Oct 16 | Oct 16 | Oct 27 | 11   | 1 (1%) | 11   | 3.3   |

| Observed | Nov | Dec | Jan | Feb | Mar  | Winter | S1 | S2   | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|------|--------|----|------|----|----|----|----|----|----|----|-----|--------|
| 2005     |     |     |     |     |      |        |    |      |    |    |    |    |    |    |    |     |        |
| 2006     |     |     |     |     | 0.08 | 0.02   |    |      |    |    |    |    |    |    |    |     |        |
| 2007     | 1.3 | 0.7 |     |     |      | 0.6    |    |      |    |    |    |    |    |    |    |     |        |
| 2008     |     |     |     |     |      |        |    |      |    |    |    |    |    |    |    |     |        |
| 2009     |     |     |     |     |      |        |    | 0.3  |    |    |    |    |    |    |    |     | 0.03   |
| 2010     |     |     |     |     |      |        |    |      |    |    |    |    |    |    |    |     |        |
| 2011     |     |     |     |     |      |        |    |      |    |    |    |    |    |    |    |     |        |
| 2012     |     | 0.3 |     |     |      | 0.04   |    |      |    |    |    |    |    |    |    |     |        |
| 2013     |     |     |     |     |      |        |    |      |    |    |    |    |    |    |    |     |        |
| 2014     | 0.6 |     |     |     |      | 0.1    |    |      |    |    |    |    |    |    |    |     |        |
| Mean     | 0.2 | 0.1 |     |     | 0.01 | 0.08   |    | 0.03 |    |    |    |    |    |    |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9   | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|------|-----|-----|-----|-----|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |      |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |      |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |      |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |      |     |     | 2.9 |     | 0.2  |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |      |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     | 1.4 | 0.1  |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |      |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |      |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |      |     |     |     |     |      |
| 2014     |     |     |        |    |    |    |    |    |    |    |    | 0.3  |     |     |     | 0.1 | 0.03 |
| Mean     |     |     |        |    |    |    |    |    |    |    |    | 0.03 |     |     | 0.3 | 0.2 | 0.04 |

Horned Lark is a rare species at MBO, with observations on only ten dates over ten years, half of them in winter representing late fall or early spring migrants. Most observations have involved small flocks flying past.

**PUMA: Purple Martin / Hirondelle noire (*Progne subis*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 17 | May 17 | May 25 | 9    | 3 (5%) | 4    | 6     | Aug 7  | Aug 11 | Aug 24 | 18   | 11 (12%) | 7    | 32    |
| 2006     | May 9  | May 9  | May 9  | 1    | 1 (1%) | 1    | 1     | Aug 1  | Aug 15 | Aug 31 | 31   | 21 (23%) | 8    | 73    |
| 2007     | May 19 | May 19 | May 31 | 13   | 2 (3%) | 1    | 2     | Aug 15 | Aug 15 | Aug 26 | 12   | 5 (5%)   | 25   | 38    |
| 2008     | May 21 | May 28 | May 28 | 8    | 2 (3%) | 2    | 3     | Aug 1  | Aug 1  | Aug 31 | 31   | 19 (21%) | 12   | 54    |
| 2009     | May 14 | May 14 | May 14 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |          |      |       |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |          |      |       |
| 2011     |        |        |        |      |        |      |       | Aug 12 | Aug 12 | Aug 12 | 1    | 1 (1%)   | 1    | 1     |
| 2012     |        |        |        |      |        |      |       | Aug 5  | Aug 14 | Aug 18 | 14   | 4 (4%)   | 8    | 18    |
| 2013     | May 21 | May 21 | May 21 | 1    | 1 (1%) | 1    | 1     | Aug 4  | Aug 22 | Aug 27 | 24   | 6 (7%)   | 5    | 14    |
| 2014     | May 19 | May 19 | May 19 | 1    | 1 (1%) | 1    | 1     | Aug 6  | Aug 21 | Aug 24 | 19   | 4 (4%)   | 6    | 10    |
| Mean     | May 17 | May 18 | May 21 | 5    | 2 (2%) | 2    | 1.5   | Aug 6  | Aug 13 | Aug 24 | 19   | 9 (10%)  | 9    | 24    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7   | S8  | S9   | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|------|-----|------|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.7 | 0.1  |      | 0.1    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  |     |      |      | 0.01   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.1 |      | 0.1  | 0.03   |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.1 | 0.3  |      | 0.04   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  |     |      |      | 0.01   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |      |     |      |      |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |      |     |      |      |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |      |     |      |      |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.1 |      |      | 0.01   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.1 |      |      | 0.01   |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.03 | 0.1 | 0.04 | 0.01 | 0.02   |

| Observed | Jun  | Jul  | Summer | F1  | F2  | F3  | F4  | F5   | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|------|------|--------|-----|-----|-----|-----|------|----|----|----|----|-----|-----|-----|-----|------|
| 2005     |      |      |        | 0.7 | 3.0 | 0.6 | 0.3 |      |    |    |    |    |     |     |     |     | 0.4  |
| 2006     | 0.2  |      | 0.09   | 3.1 | 3.6 | 3.1 | 0.4 | 0.1  |    |    |    |    |     |     |     |     | 0.8  |
| 2007     |      |      |        |     |     | 5.1 | 0.3 |      |    |    |    |    |     |     |     |     | 0.4  |
| 2008     |      | 0.2  | 0.1    | 4.9 | 1.3 | 1.4 |     | 0.1  |    |    |    |    |     |     |     |     | 0.6  |
| 2009     |      |      |        |     |     |     |     |      |    |    |    |    |     |     |     |     |      |
| 2010     |      |      |        |     |     |     |     |      |    |    |    |    |     |     |     |     |      |
| 2011     |      |      |        |     | 0.1 |     |     |      |    |    |    |    |     |     |     |     | 0.01 |
| 2012     |      |      |        | 0.1 | 2.0 | 0.4 |     |      |    |    |    |    |     |     |     |     | 0.2  |
| 2013     |      |      |        | 0.9 |     | 0.3 | 0.9 |      |    |    |    |    |     |     |     |     | 0.2  |
| 2014     |      |      |        | 0.3 |     | 1.0 | 0.1 |      |    |    |    |    |     |     |     |     | 0.1  |
| Mean     | 0.04 | 0.02 | 0.02   | 1.0 | 1.0 | 1.2 | 0.2 | 0.03 |    |    |    |    |     |     |     |     | 0.3  |

Purple Martin was a fairly common early fall migrant from 2005 to 2008, but was not observed at all in fall 2009 or 2010, and since 2011 has again been observed annually, but in smaller numbers. Observations are always concentrated in the first three weeks of August, and no sightings have extended past the end of the month. Spring numbers have been consistently low, except for a three-year gap from 2010 to 2012 when none were observed. Summer sightings were recorded in just two years.



**TRES: Tree Swallow / Hirondelle bicolor (Tachycineta bicolor)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 9  | May 8  | Jun 3 | 56   | 55 (93%) | 35   | 823   | Aug 5 | Aug 21 | Sep 30 | 57   | 20 (23%) | 12   | 79    |
| 2006     | Apr 9  | May 10 | Jun 5 | 58   | 58 (84%) | 45   | 824   | Aug 1 | Aug 22 | Oct 10 | 71   | 17 (19%) | 11   | 64    |
| 2007     | Apr 19 | May 20 | Jun 5 | 48   | 47 (67%) | 45   | 960   | Aug 2 | Aug 18 | Sep 19 | 49   | 16 (18%) | 58   | 102   |
| 2008     | Apr 11 | Apr 20 | Jun 5 | 56   | 53 (76%) | 22   | 681   | Aug 5 | Aug 12 | Aug 22 | 18   | 11 (12%) | 7    | 35    |
| 2009     | Apr 11 | May 13 | Jun 5 | 56   | 55 (80%) | 22   | 620   | Aug 1 | Aug 5  | Sep 11 | 42   | 8 (9%)   | 3    | 15    |
| 2010     | Apr 2  | May 4  | Jun 5 | 65   | 62 (89%) | 20   | 748   | Aug 4 | Aug 4  | Sep 17 | 45   | 9 (10%)  | 9    | 36    |
| 2011     | Apr 12 | Apr 24 | Jun 5 | 55   | 51 (73%) | 63   | 599   | Aug 1 | Aug 3  | Sep 27 | 58   | 21 (23%) | 22   | 97    |
| 2012     | Mar 31 | Apr 26 | Jun 5 | 67   | 57 (81%) | 23   | 484   | Aug 2 | Aug 8  | Aug 26 | 25   | 12 (13%) | 6    | 29    |
| 2013     | Apr 10 | May 17 | Jun 5 | 57   | 53 (76%) | 27   | 300   | Aug 2 | Aug 25 | Sep 9  | 39   | 10 (11%) | 20   | 39    |
| 2014     | Apr 12 | May 6  | Jun 4 | 54   | 50 (74%) | 23   | 398   | Aug 1 | Aug 15 | Sep 9  | 40   | 18 (20%) | 70   | 143   |
| Mean     | Apr 9  | May 5  | Jun 4 | 57   | 54 (79%) | 32   | 644   | Aug 2 | Aug 13 | Sep 14 | 44   | 14 (16%) | 22   | 64    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1   | S2  | S3  | S4   | S5   | S6   | S7   | S8   | S9   | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|------|-----|-----|------|------|------|------|------|------|------|--------|
| 2005     |     |     |     |     |     |        |      | 2.3 | 5.3 | 12.8 | 10.3 | 19.3 | 18.7 | 20.9 | 17.7 | 17.4 | 13.9   |
| 2006     |     |     |     |     |     |        |      | 1.3 | 7.6 | 16.0 | 16.6 | 15.1 | 24.6 | 12.6 | 14.1 | 10.0 | 11.9   |
| 2007     |     |     |     |     |     |        |      |     |     | 5.7  | 16.0 | 26.6 | 27.9 | 22.4 | 22.4 | 16.1 | 13.7   |
| 2008     |     |     |     |     |     |        |      |     | 2.6 | 13.0 | 12.4 | 14.7 | 15.1 | 13.4 | 14.4 | 11.6 | 9.7    |
| 2009     |     |     |     |     |     |        |      |     | 1.9 | 4.9  | 13.9 | 14.7 | 17.3 | 14.0 | 12.6 | 9.4  | 9.0    |
| 2010     |     |     |     |     |     |        | 0.3  | 2.7 | 5.3 | 13.4 | 12.1 | 15.1 | 14.9 | 18.4 | 14.4 | 10.1 | 10.7   |
| 2011     |     |     |     |     |     |        |      |     | 1.3 | 15.0 | 12.6 | 11.1 | 9.4  | 9.1  | 20.3 | 6.7  | 8.6    |
| 2012     |     |     |     |     |     |        | 0.3  | 0.3 | 3.0 | 5.3  | 8.6  | 13.7 | 11.0 | 9.7  | 9.3  | 8.0  | 6.9    |
| 2013     |     |     |     |     |     |        |      | 0.3 | 2.4 | 7.0  | 5.3  | 5.7  | 5.9  | 10.0 | 3.1  | 3.1  | 4.3    |
| 2014     |     |     |     |     |     |        |      |     | 0.9 | 7.0  | 7.0  | 11.4 | 9.6  | 8.4  | 7.9  | 5.5  | 5.9    |
| Mean     |     |     |     |     |     |        | 0.06 | 0.7 | 3.0 | 10.0 | 11.5 | 14.8 | 15.4 | 13.9 | 13.6 | 9.6  | 9.4    |

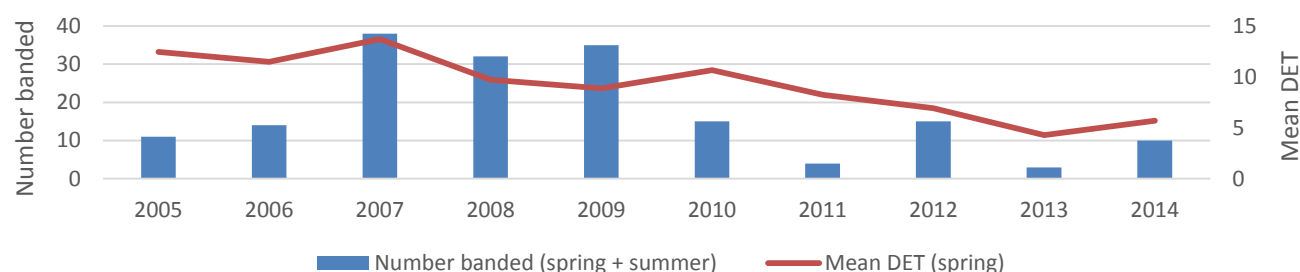
| Observed | Jun  | Jul | Summer | F1  | F2  | F3   | F4  | F5  | F6  | F7  | F8  | F9   | F10 | F11  | F12 | F13 | Fall |
|----------|------|-----|--------|-----|-----|------|-----|-----|-----|-----|-----|------|-----|------|-----|-----|------|
| 2005     | 8.7  | 2.1 | 5.3    | 0.1 | 2.9 | 2.4  | 1.0 | 0.6 | 1.4 | 0.4 | 2.1 | 0.3  |     |      |     |     | 0.9  |
| 2006     | 9.6  | 5.9 | 7.6    | 2.1 | 2.4 | 2.1  | 1.9 | 0.3 |     |     | 0.1 |      |     | 0.1  |     |     | 0.7  |
| 2007     | 16.1 | 5.7 | 11.3   | 0.7 | 1.1 | 10.7 | 1.3 |     |     | 0.6 | 0.1 |      |     |      |     |     | 1.1  |
| 2008     | 7.6  | 4.8 | 6.2    | 0.3 | 2.9 | 1.6  | 0.3 |     |     |     |     |      |     |      |     |     | 0.4  |
| 2009     | 9.3  |     | 4.0    | 0.9 |     | 0.3  | 0.3 | 0.4 |     |     |     |      |     |      |     |     | 0.2  |
| 2010     | 1.0  |     | 0.3    | 2.3 | 1.6 |      | 0.1 |     | 0.6 | 0.6 |     |      |     |      |     |     | 0.4  |
| 2011     | 5.0  | 3.8 | 4.3    | 3.7 | 3.0 | 0.7  | 2.9 | 1.0 |     | 2.0 | 0.4 | 0.1  |     |      |     |     | 1.1  |
| 2012     | 1.5  |     | 0.8    | 1.0 | 1.9 | 0.7  | 0.6 |     |     |     |     |      |     |      |     |     | 0.3  |
| 2013     | 1.0  | 1.5 | 1.3    | 0.4 |     | 1.3  | 3.4 | 0.3 | 0.1 |     |     |      |     |      |     |     | 0.4  |
| 2014     | 2.7  | 0.8 | 1.6    | 1.4 | 0.7 | 16.7 | 0.7 | 0.4 | 0.4 |     |     |      |     |      |     |     | 1.6  |
| Mean     | 7.9  | 2.8 | 5.2    | 1.3 | 1.6 | 3.7  | 1.2 | 0.3 | 0.3 | 0.4 | 0.3 | 0.04 |     | 0.01 |     |     | 0.7  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    | 1   |     | 3   | 1   | 1   | 3   | 1   | 10     |
| 2006   |     |     |     |     |     |        |    |    |    | 2   |     | 1   | 2   |     |     |     | 5      |
| 2007   |     |     |     |     |     |        |    |    |    |     |     |     | 2   | 1   | 1   |     | 4      |
| 2008   |     |     |     |     |     |        |    |    |    | 1   | 5   | 3   | 1   | 2   | 4   |     | 16     |
| 2009   |     |     |     |     |     |        |    |    |    |     |     | 4   | 3   | 3   | 1   |     | 11     |
| 2010   |     |     |     |     |     |        |    |    |    | 3   | 3   | 3   | 3   | 1   |     | 2   | 15     |
| 2011   |     |     |     |     |     |        |    |    |    | 2   |     |     | 1   | 1   |     |     | 4      |
| 2012   |     |     |     |     |     |        |    |    |    | 1   | 2   | 4   | 3   |     | 3   |     | 13     |
| 2013   |     |     |     |     |     |        |    |    |    |     |     | 1   |     | 2   |     |     | 3      |
| 2014   |     |     |     |     |     |        |    |    |    |     |     | 1   | 5   | 2   | 1   | 1   | 10     |
| Mean   |     |     |     |     |     |        |    |    |    | 1.0 | 1.0 | 2.0 | 2.1 | 1.3 | 1.3 | 0.4 | 9.1    |

| Banded | Jun  | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|------|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   | 1    |     | 1      |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   | 9    |     | 9      |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   | 30   | 4   | 34     |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   | 12   | 4   | 16     |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   | 24   |     | 24     |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |      |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |      |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012   | 11   |     | 11     |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2013   | 4    |     | 4      |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |      |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   | 15.2 | 0.9 | 11.0   |    |    |    |    |    |    |    |    |    |     |     |     |     |      |

Tree Swallow is the most common of the six swallow species at MBO, and present over the longest period, typically from early April to September. First spring arrived has been between April 9 and 12 in seven of ten years, while the peak of migration most commonly occurs in week 7. Both spring and summer numbers have steadily declined over the years, although there was a modest rebound in observations in 2014. Fall observations are mostly in August, with an overall peak in week 3 driven mostly by unusually high pulses of migration in 2007 and 2014. The majority of Tree Swallows banded at MBO have been in summer, all of them at nest boxes.

Tree Swallow numbers (2005-2014)



**NRWS: Northern Rough-winged Swallow / Hirondelle à ailes hérissées (*Stelgidopteryx serripennis*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | May 24 | May 24 | May 24 | 1    | 1 (2%)   | 1    | 1     | Sep 9  | Sep 9  | Sep 9  | 1    | 1 (1%) | 1    | 1     |
| 2006     | May 2  | May 10 | May 28 | 27   | 18 (26%) | 12   | 61    | Aug 18 | Aug 18 | Aug 18 | 1    | 1 (1%) | 3    | 3     |
| 2007     | May 6  | May 26 | Jun 1  | 27   | 12 (17%) | 7    | 24    | Aug 18 | Aug 18 | Aug 18 | 1    | 1 (1%) | 3    | 3     |
| 2008     | May 9  | May 15 | May 29 | 21   | 9 (13%)  | 4    | 20    | Aug 6  | Aug 15 | Aug 15 | 10   | 3 (3%) | 7    | 15    |
| 2009     | May 4  | May 4  | Jun 5  | 33   | 2 (3%)   | 1    | 2     |        |        |        |      |        |      |       |
| 2010     | May 6  | May 21 | May 23 | 18   | 4 (6%)   | 2    | 5     |        |        |        |      |        |      |       |
| 2011     | May 13 | May 14 | Jun 3  | 22   | 8 (11%)  | 2    | 12    | Aug 11 | Aug 11 | Aug 11 | 1    | 1 (1%) | 2    | 2     |
| 2012     | May 5  | May 5  | May 5  | 1    | 1 (1%)   | 1    | 1     |        |        |        |      |        |      |       |
| 2013     | May 4  | May 15 | May 31 | 28   | 4 (6%)   | 3    | 7     | Aug 12 | Aug 12 | Aug 25 | 14   | 2 (2%) | 3    | 4     |
| 2014     | May 16 | May 16 | May 31 | 16   | 4 (6%)   | 2    | 7     | Aug 8  | Aug 8  | Aug 8  | 1    | 1 (1%) | 1    | 1     |
| Mean     | May 8  | May 15 | May 27 | 19   | 6 (9%)   | 4    | 14    | Aug 15 | Aug 17 | Aug 19 | 5    | 2 (2%) | 3    | 2.6   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |     |     |     | 0.1 |     | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    | 3.4 | 4.3 | 0.4 | 0.6 |     | 0.9    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    | 0.1 | 0.7 | 0.3 | 1.9 | 0.4 | 0.3    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |     | 1.3 | 1.4 | 0.1 |     | 0.3    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.1 |     |     |     | 0.1 | 0.03   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    | 0.1 | 0.1 | 0.3 | 0.1 |     | 0.07   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |     | 0.6 | 0.1 | 0.3 | 0.7 | 0.2    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    | 0.1 |     |     |     |     | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    | 0.3 | 0.4 | 0.1 |     | 0.1 | 0.1    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |     |     | 0.6 | 0.3 | 0.2 | 0.1    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.4 | 0.7 | 0.3 | 0.3 | 0.2 | 0.2    |

| Observed | Jun | Jul  | Summer | F1  | F2   | F3  | F4   | F5  | F6   | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|-----|------|-----|------|-----|------|----|----|----|-----|-----|-----|-----|------|
| 2005     |     | 0.2  | 0.1    |     |      |     |      |     | 0.1  |    |    |    |     |     |     |     | 0.01 |
| 2006     |     |      |        |     |      |     |      |     |      |    |    |    |     |     |     |     |      |
| 2007     | 2.4 |      | 1.3    |     |      | 0.4 |      |     |      |    |    |    |     |     |     |     | 0.03 |
| 2008     |     |      |        | 1.1 |      | 1.0 |      |     |      |    |    |    |     |     |     |     | 0.2  |
| 2009     |     |      |        |     |      |     |      |     |      |    |    |    |     |     |     |     |      |
| 2010     |     |      |        |     |      |     |      |     |      |    |    |    |     |     |     |     |      |
| 2011     |     |      |        |     |      | 0.3 |      |     |      |    |    |    |     |     |     |     | 0.02 |
| 2012     |     |      |        |     |      |     |      |     |      |    |    |    |     |     |     |     |      |
| 2013     |     |      |        |     |      | 0.4 |      | 0.1 |      |    |    |    |     |     |     |     | 0.04 |
| 2014     |     |      |        |     |      | 0.1 |      |     |      |    |    |    |     |     |     |     | 0.01 |
| Mean     | 0.3 | 0.06 | 0.2    | 0.1 | 0.09 | 0.1 | 0.01 |     | 0.01 |    |    |    |     |     |     |     | 0.03 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   |     | 1      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   |     | 1      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    | 2   |     |     | 2      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.2 | 0.2 |     | 0.4    |

Northern Rough-winged Swallow is observed at MBO each spring, and has also been recorded in six of ten fall seasons. All spring sightings have been in May, with the peak varying from week 6 to 10. Numbers have generally been low, except in 2006 when higher counts were observed in both weeks 6 and 7. Spring counts show a declining trend over time. Fall numbers have been low in all years, with all observations coming in August except for the first one in 2005. Summer sightings have occurred in just two years – 2005 and 2007. Only four individuals have been banded, all in spring.

**BANS: Bank Swallow / Hirondelle de rivage (*Riparia riparia*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 18 | Apr 18 | May 17 | 30   | 2 (3%)  | 1    | 2     | Aug 9  | Aug 21 | Aug 21 | 13   | 2 (2%) | 6    | 7     |
| 2006     |        |        |        |      |         |      |       |        |        |        |      |        |      |       |
| 2007     | May 1  | May 27 | Jun 5  | 36   | 4 (6%)  | 2    | 7     |        |        |        |      |        |      |       |
| 2008     | May 27 | May 27 | May 27 | 1    | 1 (1%)  | 2    | 2     |        |        |        |      |        |      |       |
| 2009     | May 13 | May 19 | May 19 | 7    | 2 (3%)  | 3    | 5     |        |        |        |      |        |      |       |
| 2010     | May 10 | May 18 | May 24 | 15   | 6 (9%)  | 2    | 11    | Aug 31 | Aug 31 | Aug 31 | 1    | 1 (1%) | 5    | 5     |
| 2011     | May 12 | Jun 1  | Jun 1  | 21   | 7 (10%) | 4    | 17    | Aug 1  | Aug 1  | Aug 19 | 19   | 2 (2%) | 4    | 6     |
| 2012     | Apr 24 | Apr 24 | May 5  | 12   | 2 (3%)  | 1    | 2     |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |         |      |       | Aug 7  | Aug 7  | Aug 7  | 1    | 1 (1%) | 2    | 2     |
| 2014     |        |        |        |      |         |      |       |        |        |        |      |        |      |       |
| Mean     | May 6  | May 15 | May 22 | 17   | 3 (5%)  | 2    | 4.6   | Aug 12 | Aug 15 | Aug 19 | 8    | 2 (2%) | 4    | 2.0   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5   | S6   | S7   | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|------|------|------|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    | 0.2  |      |      |      | 0.1 |     |     | 0.03   |
| 2006     |     |     |     |     |     |        |    |    |    |      |      |      |      |     |     |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |      | 0.1  |      |      |     | 0.6 | 0.3 | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |    |      |      |      |      |     | 0.3 |     | 0.03   |
| 2009     |     |     |     |     |     |        |    |    |    |      |      |      | 0.3  | 0.4 |     |     | 0.07   |
| 2010     |     |     |     |     |     |        |    |    |    |      |      |      | 0.1  | 1.1 | 0.3 |     | 0.2    |
| 2011     |     |     |     |     |     |        |    |    |    |      |      |      | 0.3  |     | 1.0 | 1.1 | 0.2    |
| 2012     |     |     |     |     |     |        |    |    |    | 0.1  |      | 0.1  |      |     |     |     | 0.03   |
| 2013     |     |     |     |     |     |        |    |    |    |      |      |      |      |     |     |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |      |      |      |      |     |     |     |        |
| Mean     |     |     |     |     |     |        |    |    |    | 0.03 | 0.01 | 0.01 | 0.07 | 0.2 | 0.2 | 0.1 | 0.07   |

| Observed | Jun | Jul | Summer | F1   | F2   | F3  | F4 | F5   | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|------|------|-----|----|------|----|----|----|----|-----|-----|-----|-----|------|
| 2005     |     |     |        |      | 0.1  | 0.9 |    |      |    |    |    |    |     |     |     |     | 0.08 |
| 2006     |     |     |        |      |      |     |    |      |    |    |    |    |     |     |     |     |      |
| 2007     |     |     |        |      |      |     |    |      |    |    |    |    |     |     |     |     |      |
| 2008     |     |     |        |      |      |     |    |      |    |    |    |    |     |     |     |     |      |
| 2009     |     |     |        |      |      |     |    |      |    |    |    |    |     |     |     |     |      |
| 2010     |     |     |        |      |      |     |    | 0.7  |    |    |    |    |     |     |     |     | 0.05 |
| 2011     |     |     |        | 0.6  |      | 0.3 |    |      |    |    |    |    |     |     |     |     | 0.07 |
| 2012     |     |     |        |      |      |     |    |      |    |    |    |    |     |     |     |     |      |
| 2013     |     |     |        | 0.3  |      |     |    |      |    |    |    |    |     |     |     |     | 0.02 |
| 2014     |     |     |        |      |      |     |    |      |    |    |    |    |     |     |     |     |      |
| Mean     |     |     |        | 0.09 | 0.01 | 0.1 |    | 0.07 |    |    |    |    |     |     |     |     | 0.02 |

Bank Swallow is an irregular migrant at MBO, with sightings in seven spring and four fall seasons; none were observed in any season in 2006 or 2014. Spring sightings range from week 4 to 10, with only a weak overall peak in weeks 8 and 9. All fall sightings have been in August, but there are few observations to detect a pattern in timing.

**CLSW: Cliff Swallow / Hirondelle à front blanc (*Petrochelidon pyrrhonota*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | May 7  | May 27 | May 27 | 21   | 5 (8%)   | 30   | 41    | Aug 1  | Aug 1  | Sep 9  | 40   | 5 (6%) | 12   | 32    |
| 2006     | May 5  | May 10 | Jun 4  | 31   | 13 (19%) | 150  | 351   |        |        |        |      |        |      |       |
| 2007     | May 1  | May 1  | Jun 4  | 35   | 23 (33%) | 50   | 476   | Aug 15 | Aug 15 | Aug 15 | 1    | 1 (1%) | 22   | 22    |
| 2008     | Apr 21 | May 9  | Jun 5  | 46   | 36 (51%) | 55   | 783   | Aug 2  | Aug 6  | Aug 6  | 5    | 2 (2%) | 14   | 21    |
| 2009     | Apr 20 | May 15 | Jun 5  | 47   | 39 (57%) | 99   | 681   |        |        |        |      |        |      |       |
| 2010     | Apr 24 | May 23 | Jun 5  | 43   | 38 (54%) | 72   | 854   |        |        |        |      |        |      |       |
| 2011     | Apr 22 | May 25 | Jun 5  | 45   | 31 (44%) | 40   | 337   | Aug 3  | Aug 11 | Aug 11 | 9    | 2 (2%) | 2    | 3     |
| 2012     | May 1  | May 25 | Jun 5  | 36   | 27 (39%) | 18   | 172   |        |        |        |      |        |      |       |
| 2013     | May 1  | Jun 4  | Jun 5  | 36   | 31 (44%) | 30   | 319   |        |        |        |      |        |      |       |
| 2014     | May 3  | May 25 | Jun 3  | 32   | 29 (43%) | 22   | 305   | Aug 10 | Aug 16 | Aug 27 | 18   | 3 (3%) | 5    | 8     |
| Mean     | Apr 28 | May 19 | Jun 3  | 37   | 27 (40%) | 57   | 432   | Aug 6  | Aug 9  | Aug 19 | 15   | 3 (3%) | 11   | 8.6   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6   | S7   | S8   | S9   | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|------|------|------|------|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |     |     | 1.0  |      | 0.6  | 4.3  |      | 0.7    |
| 2006     |     |     |     |     |     |        |    |    |    |     |     | 1.3  | 37.4 | 6.9  | 1.7  | 2.9  | 5.1    |
| 2007     |     |     |     |     |     |        |    |    |    |     | 7.1 | 20.7 | 13.4 | 7.6  | 13.4 | 5.7  | 6.8    |
| 2008     |     |     |     |     |     |        |    |    |    | 1.3 | 1.1 | 21.7 | 30.4 | 16.1 | 32.3 | 8.9  | 11.2   |
| 2009     |     |     |     |     |     |        |    |    |    | 2.3 | 5.0 | 4.1  | 35.3 | 22.1 | 20.6 | 7.9  | 9.9    |
| 2010     |     |     |     |     |     |        |    |    |    | 0.7 | 3.3 | 23.0 | 18.9 | 37.6 | 33.3 | 5.3  | 12.2   |
| 2011     |     |     |     |     |     |        |    |    |    | 0.7 | 3.4 | 8.4  | 5.1  | 6.3  | 16.1 | 8.0  | 4.8    |
| 2012     |     |     |     |     |     |        |    |    |    |     | 0.1 | 3.7  | 5.4  | 4.7  | 6.7  | 3.9  | 2.5    |
| 2013     |     |     |     |     |     |        |    |    |    |     | 0.3 | 8.4  | 3.6  | 14.7 | 6.7  | 11.9 | 4.6    |
| 2014     |     |     |     |     |     |        |    |    |    |     |     | 6.0  | 10.7 | 8.7  | 9.9  | 9.7  | 4.5    |
| Mean     |     |     |     |     |     |        |    |    |    | 0.5 | 2.0 | 9.8  | 16.0 | 12.5 | 14.5 | 6.5  | 6.3    |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4   | F5 | F6  | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|-----|-----|-----|------|----|-----|----|----|----|-----|-----|-----|-----|------|
| 2005     |     | 0.5  | 0.2    | 2.1 | 1.0 |     |      |    | 1.4 |    |    |    |     |     |     |     | 0.4  |
| 2006     | 5.7 | 12.2 | 9.2    |     |     |     |      |    |     |    |    |    |     |     |     |     |      |
| 2007     | 2.7 | 1.2  | 2.0    |     |     | 3.1 |      |    |     |    |    |    |     |     |     |     | 0.2  |
| 2008     | 6.2 | 11.8 | 9.0    | 3.0 |     |     |      |    |     |    |    |    |     |     |     |     | 0.2  |
| 2009     |     |      |        |     |     |     |      |    |     |    |    |    |     |     |     |     |      |
| 2010     |     |      |        |     |     |     |      |    |     |    |    |    |     |     |     |     |      |
| 2011     | 4.3 | 0.5  | 2.1    | 0.1 | 0.3 |     |      |    |     |    |    |    |     |     |     |     | 0.03 |
| 2012     |     |      |        |     |     |     |      |    |     |    |    |    |     |     |     |     |      |
| 2013     |     |      |        |     |     |     |      |    |     |    |    |    |     |     |     |     |      |
| 2014     |     |      |        |     | 0.3 | 0.7 | 0.1  |    |     |    |    |    |     |     |     |     | 0.09 |
| Mean     | 2.1 | 3.4  | 2.8    | 0.5 | 0.2 | 0.4 | 0.01 |    | 0.1 |    |    |    |     |     |     |     | 0.09 |

Cliff Swallow is a common spring but irregular fall species at MBO. From 2005 to 2007 and again from 2012 to 2014, the first spring arrivals returned between May 1 and 7, but in the intervening years from 2008 to 2011 spring arrival was much earlier, between April 20 and 24. Regardless of arrival date, the peak has occurred between week 7 and 9, except for week 6 in 2007. Most spring observations are of individuals from the colony on the nearby McGill radar station, and these sightings carry over into summer in some years. The decline in spring and summer counts in more recent years at least partly reflects a reduction in the level of activity at the colony, and is consistent with the downward trend of most other swallows. However, the scarcity of summer records since 2009 also is a function of observations being largely limited to the south end of MBO where the MAPS program operates, and from which the colony cannot be seen; in earlier years summer observations were spread out more across the site and included views toward the breeding site. Fall records are generally rare and scattered throughout August, with September observations only in 2005.

**BARS: Barn Swallow / Hirondelle rustique (*Hirundo rustica*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 19 | May 16 | May 20 | 32   | 11 (19%) | 6    | 27    | Aug 9 | Aug 17 | Sep 7  | 30   | 5 (6%)   | 3    | 10    |
| 2006     | Apr 21 | May 14 | May 26 | 36   | 19 (28%) | 5    | 37    | Aug 2 | Aug 7  | Sep 5  | 35   | 12 (13%) | 7    | 31    |
| 2007     | Apr 24 | May 3  | Jun 1  | 39   | 22 (31%) | 4    | 45    | Aug 1 | Aug 26 | Aug 30 | 30   | 12 (13%) | 25   | 69    |
| 2008     | Apr 19 | May 20 | May 30 | 42   | 17 (24%) | 5    | 31    | Aug 4 | Aug 16 | Aug 18 | 15   | 8 (9%)   | 5    | 18    |
| 2009     | Apr 15 | May 2  | May 28 | 44   | 11 (16%) | 3    | 16    | Aug 1 | Aug 14 | Aug 26 | 26   | 7 (8%)   | 2    | 8     |
| 2010     | Apr 21 | May 26 | Jun 5  | 46   | 16 (23%) | 3    | 24    | Aug 2 | Aug 4  | Aug 15 | 14   | 4 (4%)   | 4    | 7     |
| 2011     | Apr 24 | May 25 | Jun 1  | 39   | 14 (20%) | 7    | 33    | Aug 2 | Aug 12 | Aug 23 | 22   | 6 (7%)   | 16   | 44    |
| 2012     | Apr 29 | May 3  | Jun 1  | 34   | 23 (33%) | 2    | 31    | Aug 3 | Aug 11 | Aug 11 | 9    | 4 (4%)   | 5    | 9     |
| 2013     | Apr 29 | May 11 | May 31 | 33   | 13 (19%) | 4    | 24    | Aug 8 | Aug 27 | Aug 27 | 20   | 4 (4%)   | 16   | 21    |
| 2014     | May 2  | May 19 | Jun 1  | 31   | 14 (21%) | 5    | 26    | Aug 7 | Aug 19 | Aug 27 | 21   | 6 (7%)   | 8    | 19    |
| Mean     | Apr 23 | May 13 | May 29 | 38   | 16 (23%) | 4    | 29    | Aug 3 | Aug 15 | Aug 25 | 22   | 7 (7%)   | 9    | 24    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3   | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|------|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |      | 0.3 |     | 0.4 | 0.6 | 2.6 |     |     | 0.5    |
| 2006     |     |     |     |     |     |        |    |    |      | 0.4 | 0.1 | 1.3 | 2.0 | 1.0 | 0.4 |     | 0.5    |
| 2007     |     |     |     |     |     |        |    |    |      | 0.1 | 0.4 | 1.4 | 1.7 | 1.6 | 1.0 | 0.1 | 0.6    |
| 2008     |     |     |     |     |     |        |    |    |      | 0.1 | 0.3 |     | 1.4 | 2.0 | 0.4 | 0.1 | 0.4    |
| 2009     |     |     |     |     |     |        |    |    | 0.1  |     |     | 0.4 | 0.7 | 0.3 | 0.7 |     | 0.2    |
| 2010     |     |     |     |     |     |        |    |    |      | 0.1 |     | 0.4 | 0.4 | 0.9 | 1.4 | 0.1 | 0.3    |
| 2011     |     |     |     |     |     |        |    |    |      | 0.3 |     |     | 1.4 | 0.7 | 1.6 | 0.7 | 0.5    |
| 2012     |     |     |     |     |     |        |    |    |      |     | 0.3 | 1.1 | 1.1 | 0.9 | 0.9 | 0.1 | 0.4    |
| 2013     |     |     |     |     |     |        |    |    |      |     | 0.3 |     | 1.7 | 1.0 | 0.3 | 0.1 | 0.3    |
| 2014     |     |     |     |     |     |        |    |    |      |     |     | 0.6 | 0.3 | 1.7 | 0.4 | 0.8 | 0.4    |
| Mean     |     |     |     |     |     |        |    |    | 0.01 | 0.1 | 0.1 | 0.6 | 1.1 | 1.3 | 0.7 | 0.2 | 0.4    |

| Observed | Jun  | Jul  | Summer | F1  | F2  | F3  | F4  | F5   | F6   | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|------|------|--------|-----|-----|-----|-----|------|------|----|----|----|-----|-----|-----|-----|------|
| 2005     | 0.06 |      | 0.03   |     | 0.1 | 0.6 | 0.4 |      | 0.3  |    |    |    |     |     |     |     | 0.1  |
| 2006     |      | 0.08 | 0.05   | 2.0 | 0.3 | 1.6 |     | 0.1  | 0.4  |    |    |    |     |     |     |     | 0.3  |
| 2007     |      |      |        | 1.4 | 0.9 | 3.0 | 4.4 | 0.1  |      |    |    |    |     |     |     |     | 0.8  |
| 2008     |      | 0.8  | 0.4    | 0.4 | 1.1 | 1.0 |     |      |      |    |    |    |     |     |     |     | 0.2  |
| 2009     |      |      |        | 0.1 | 0.3 | 0.4 | 0.3 |      |      |    |    |    |     |     |     |     | 0.09 |
| 2010     |      |      |        | 0.7 | 0.1 | 0.1 |     |      |      |    |    |    |     |     |     |     | 0.08 |
| 2011     |      |      |        | 0.3 | 4.3 | 0.7 | 1.0 |      |      |    |    |    |     |     |     |     | 0.5  |
| 2012     |      |      |        | 0.4 | 0.9 |     |     |      |      |    |    |    |     |     |     |     | 0.10 |
| 2013     |      |      |        |     | 0.1 | 0.3 | 2.6 |      |      |    |    |    |     |     |     |     | 0.2  |
| 2014     |      |      |        | 0.3 | 0.1 | 1.1 | 1.1 |      |      |    |    |    |     |     |     |     | 0.2  |
| Mean     | 0.02 | 0.08 | 0.05   | 0.6 | 0.8 | 0.9 | 1.0 | 0.03 | 0.07 |    |    |    |     |     |     |     | 0.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |    |    |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 |    |    |     | 0.1    |

Barn Swallow has been observed at MBO in every spring and fall, but only in three summer seasons. Unlike most other swallows, there is no clear trend in numbers over the years. The first spring arrivals were between April 15 and 24 for the first seven years, but have been between April 29 and May 2 since 2012. The spring peak has ranged between weeks 6 and 9, but overall numbers are greatest in week 8. Only one Barn Swallow has been banded, an individual that flew in through the open door of the banding cabin and was captured by hand. Aside from a few early September sightings in 2005 and 2006, all fall observations have been in August, with the peak varying across the first four weeks of the season.

**BCCH: Black-capped Chickadee / Mésange à tête noire (*Poecile atricapillus*)**

| Observed | First  | Peak   | Last  | Span | # days    | High | Total | First | Peak   | Last   | Span | # days    | High | Total |
|----------|--------|--------|-------|------|-----------|------|-------|-------|--------|--------|------|-----------|------|-------|
| 2005     | Apr 5  | Apr 9  | Jun 3 | 60   | 59 (100%) | 25   | 460   | Aug 1 | Oct 3  | Oct 30 | 91   | 88 (100%) | 70   | 2148  |
| 2006     | Mar 28 | Apr 5  | Jun 5 | 70   | 68 (99%)  | 28   | 640   | Aug 1 | Sep 8  | Oct 30 | 91   | 91 (100%) | 30   | 1428  |
| 2007     | Mar 28 | Apr 18 | Jun 5 | 70   | 66 (94%)  | 24   | 599   | Aug 1 | Oct 2  | Oct 30 | 91   | 91 (100%) | 50   | 1594  |
| 2008     | Mar 28 | Apr 24 | Jun 5 | 70   | 70 (100%) | 20   | 557   | Aug 1 | Oct 20 | Oct 30 | 91   | 91 (100%) | 39   | 1494  |
| 2009     | Mar 28 | Apr 3  | Jun 5 | 70   | 69 (100%) | 17   | 566   | Aug 1 | Oct 26 | Oct 30 | 91   | 91 (100%) | 56   | 1782  |
| 2010     | Mar 28 | May 11 | Jun 5 | 70   | 69 (99%)  | 22   | 685   | Aug 1 | Oct 17 | Oct 30 | 91   | 91 (100%) | 102  | 2628  |
| 2011     | Mar 28 | Apr 18 | Jun 5 | 70   | 68 (97%)  | 45   | 840   | Aug 1 | Aug 19 | Oct 30 | 91   | 90 (99%)  | 58   | 1930  |
| 2012     | Mar 28 | Apr 20 | Jun 5 | 70   | 70 (100%) | 27   | 914   | Aug 1 | Oct 23 | Oct 30 | 91   | 91 (100%) | 67   | 1904  |
| 2013     | Mar 28 | Apr 18 | Jun 5 | 70   | 70 (100%) | 25   | 810   | Aug 1 | Aug 27 | Oct 30 | 91   | 91 (100%) | 42   | 1641  |
| 2014     | Mar 29 | May 2  | Jun 4 | 68   | 66 (97%)  | 26   | 676   | Aug 1 | Oct 28 | Oct 30 | 91   | 91 (100%) | 40   | 1567  |
| Mean     | Mar 28 | Apr 18 | Jun 4 | 69   | 68 (99%)  | 26   | 675   | Aug 1 | Oct 2  | Oct 30 | 91   | 91 (100%) | 55   | 1812  |

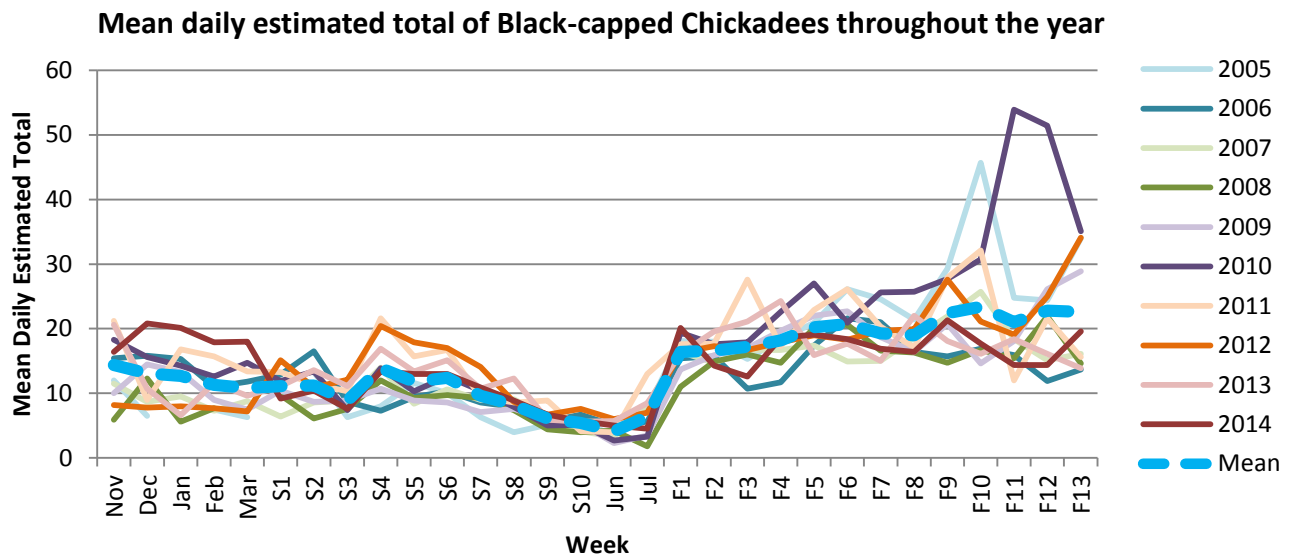
| Observed | Nov  | Dec  | Jan  | Feb  | Mar  | Winter | S1   | S2   | S3   | S4   | S5   | S6   | S7   | S8   | S9  | S10 | Spring |
|----------|------|------|------|------|------|--------|------|------|------|------|------|------|------|------|-----|-----|--------|
| 2005     | 12.0 | 6.5  |      | 7.5  | 6.3  | 8.3    |      | 13.3 | 6.3  | 8.0  | 11.6 | 10.0 | 6.3  | 4.0  | 5.1 | 5.8 | 7.8    |
| 2006     | 15.4 | 15.8 | 15.3 | 11.0 | 11.8 | 14.0   | 12.9 | 16.5 | 8.7  | 7.3  | 9.4  | 10.3 | 8.6  | 7.9  | 5.6 | 6.7 | 9.3    |
| 2007     | 11.5 | 8.7  | 9.5  | 7.3  | 8.8  | 9.7    | 6.4  | 8.6  | 8.9  | 14.0 | 8.4  | 10.6 | 9.0  | 9.1  | 6.4 | 4.1 | 8.6    |
| 2008     | 5.9  | 12.3 | 5.6  | 7.7  |      | 7.4    | 9.7  | 6.1  | 7.6  | 12.0 | 9.3  | 9.7  | 9.3  | 7.4  | 4.4 | 4.0 | 8.0    |
| 2009     | 10.0 | 14.5 | 13.3 | 9.0  | 7.5  | 9.4    | 10.4 | 8.7  | 8.9  | 10.7 | 8.9  | 8.6  | 7.1  | 7.6  | 6.0 | 5.3 | 8.2    |
| 2010     | 18.3 | 15.6 | 14.3 | 12.6 | 14.7 | 15.4   | 11.9 | 13.4 | 7.4  | 13.9 | 10.3 | 12.6 | 10.4 | 7.9  | 5.0 | 5.1 | 9.8    |
| 2011     | 21.2 | 9.0  | 16.8 | 15.7 | 13.4 | 16.9   | 13.3 | 11.4 | 10.3 | 21.6 | 15.7 | 16.7 | 9.4  | 8.6  | 8.9 | 4.1 | 12.0   |
| 2012     | 8.2  | 7.8  | 8.0  | 7.7  | 7.2  | 7.8    | 15.1 | 10.9 | 12.1 | 20.4 | 17.9 | 17.0 | 14.1 | 8.7  | 6.7 | 7.6 | 13.1   |
| 2013     | 20.6 | 10.7 | 6.6  | 11.6 | 9.6  | 10.9   | 11.1 | 13.6 | 11.1 | 16.9 | 13.4 | 15.1 | 10.7 | 12.3 | 5.9 | 5.6 | 11.6   |
| 2014     | 16.4 | 20.8 | 20.1 | 17.9 | 18.0 | 18.6   | 9.2  | 10.4 | 7.6  | 13.4 | 13.0 | 13.0 | 10.9 | 8.9  | 6.7 | 5.7 | 9.9    |
| Mean     | 14.4 | 13.1 | 12.7 | 11.3 | 10.8 | 12.5   | 11.1 | 11.2 | 8.9  | 13.9 | 11.8 | 12.4 | 9.6  | 8.2  | 6.1 | 5.4 | 9.8    |

| Observed | Jun | Jul  | Summer | F1   | F2   | F3   | F4   | F5   | F6   | F7   | F8   | F9   | F10  | F11  | F12  | F13  | Fall |
|----------|-----|------|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2005     | 3.4 | 7.6  | 5.6    | 18.1 | 18.0 | 15.3 | 18.4 | 20.9 | 26.1 | 24.6 | 21.4 | 29.3 | 45.7 | 24.8 | 24.4 | 34.0 | 24.4 |
| 2006     | 5.0 | 5.6  | 5.3    | 15.4 | 15.7 | 10.7 | 11.7 | 17.4 | 21.6 | 21.0 | 16.4 | 15.7 | 16.9 | 15.9 | 11.9 | 13.7 | 15.7 |
| 2007     | 3.3 | 8.3  | 5.6    | 16.4 | 14.7 | 16.7 | 16.7 | 17.4 | 14.9 | 15.0 | 18.6 | 21.9 | 25.7 | 18.4 | 15.1 | 16.1 | 17.5 |
| 2008     | 4.2 | 1.8  | 3.0    | 11.0 | 14.9 | 16.0 | 14.7 | 20.1 | 20.6 | 16.6 | 16.3 | 14.7 | 16.7 | 15.4 | 21.9 | 14.6 | 16.4 |
| 2009     | 2.3 | 3.5  | 3.0    | 13.7 | 15.9 | 17.0 | 19.7 | 22.0 | 22.7 | 18.7 | 16.4 | 20.7 | 14.6 | 18.1 | 26.1 | 28.9 | 19.6 |
| 2010     | 2.7 | 3.3  | 3.1    | 19.4 | 17.6 | 17.9 | 22.6 | 27.0 | 20.9 | 25.6 | 25.7 | 27.7 | 30.7 | 53.9 | 51.4 | 35.1 | 28.9 |
| 2011     | 4.0 | 13.0 | 9.1    | 17.6 | 17.7 | 27.6 | 17.3 | 22.9 | 26.1 | 20.3 | 17.1 | 27.9 | 32.1 | 12.0 | 21.6 | 15.6 | 21.2 |
| 2012     | 6.0 | 7.0  | 6.5    | 16.3 | 17.3 | 16.7 | 17.9 | 19.0 | 18.3 | 19.7 | 19.9 | 27.6 | 21.1 | 19.1 | 25.0 | 34.1 | 20.9 |
| 2013     | 5.7 | 8.5  | 7.3    | 16.1 | 19.6 | 21.1 | 24.3 | 15.9 | 17.7 | 15.0 | 22.0 | 18.1 | 16.1 | 18.4 | 16.1 | 13.9 | 18.0 |
| 2014     | 5.0 | 4.5  | 4.7    | 20.1 | 14.3 | 12.6 | 18.6 | 19.1 | 18.4 | 16.9 | 16.4 | 21.3 | 17.7 | 14.4 | 14.4 | 19.6 | 17.2 |
| Mean     | 4.1 | 6.4  | 5.3    | 16.4 | 16.6 | 17.2 | 18.2 | 20.2 | 20.7 | 19.3 | 19.0 | 22.4 | 23.4 | 21.0 | 22.8 | 22.6 | 20.0 |

| Banded | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|------|-----|-----|-----|-----|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   | 7    |     |     | 12  | 7   | 26     |    | 1   | 1   |     |     |     |     |     |     | 1   | 3      |
| 2006   | 14   | 11  | 7   | 8   | 11  | 51     |    | 2   | 1   | 1   |     | 2   |     |     |     | 2   | 8      |
| 2007   | 3    | 4   | 6   |     | 4   | 17     |    |     |     | 3   |     | 1   | 4   | 1   | 1   |     | 10     |
| 2008   |      |     |     |     |     |        |    |     |     |     |     |     |     |     |     |     |        |
| 2009   |      |     |     |     | 3   | 3      |    |     |     | 1   |     |     |     | 1   |     |     | 2      |
| 2010   | 12   |     | 11  | 10  | 21  | 54     |    |     |     | 2   |     |     | 1   |     |     |     | 3      |
| 2011   | 26   |     |     | 2   | 5   | 33     |    |     |     | 4   | 1   | 2   | 2   |     |     |     | 9      |
| 2012   | 2    | 2   |     | 7   | 1   | 12     |    |     |     |     | 3   |     |     | 1   |     |     | 4      |
| 2013   | 15   | 2   |     | 1   | 10  | 28     |    |     |     | 14  |     | 1   |     |     |     |     | 15     |
| 2014   | 1    | 5   |     |     |     | 6      |    |     |     | 5   | 1   |     |     |     | 2   |     | 8      |
| Mean   | 10.0 | 3.4 | 8.0 | 6.7 | 7.8 | 25.6   |    | 1.5 | 1.0 | 3.0 | 0.5 | 0.6 | 0.7 | 0.3 | 0.3 | 0.3 | 6.2    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10  | F11  | F12  | F13  | Fall  |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|-------|
| 2005   |     |     |        | 9   | 2   | 5   | 4   | 9   | 5   | 5   | 8   | 38  | 54   | 15   | 37   | 31   | 222   |
| 2006   |     |     |        | 6   | 3   | 2   |     | 1   | 7   | 4   | 1   |     | 1    | 2    |      |      | 27    |
| 2007   |     |     |        | 7   | 7   | 4   | 1   | 2   | 2   | 4   | 7   | 16  | 52   | 34   | 21   | 15   | 172   |
| 2008   |     |     |        | 9   | 7   | 5   | 4   | 6   | 2   | 1   | 4   |     | 1    |      | 9    | 1    | 49    |
| 2009   | 2   | 9   | 11     | 5   | 1   | 3   | 11  | 6   | 4   | 5   | 6   | 2   | 2    | 15   | 31   | 44   | 135   |
| 2010   | 5   | 9   | 14     | 13  | 5   | 4   | 4   | 2   | 6   | 8   | 17  | 15  | 8    | 139  | 132  | 87   | 440   |
| 2011   | 4   | 4   | 8      | 10  | 4   | 4   | 6   | 4   | 3   | 1   | 5   | 3   | 2    | 2    | 1    | 3    | 48    |
| 2012   | 1   | 12  | 13     | 10  | 7   | 4   | 6   | 5   | 2   | 11  | 6   | 10  | 12   | 8    | 62   | 28   | 171   |
| 2013   |     | 1   | 1      | 8   | 9   | 3   | 3   | 3   | 2   | 4   | 1   | 5   | 3    | 2    | 1    | 3    | 47    |
| 2014   |     | 3   | 3      | 11  | 6   |     | 3   | 2   | 7   | 1   | 3   | 5   | 6    | 8    | 14   | 7    | 73    |
| Mean   | 2.0 | 4.2 | 5.6    | 8.8 | 5.1 | 3.4 | 4.2 | 4.0 | 4.0 | 4.4 | 5.8 | 9.4 | 14.1 | 22.5 | 30.8 | 21.9 | 138.4 |

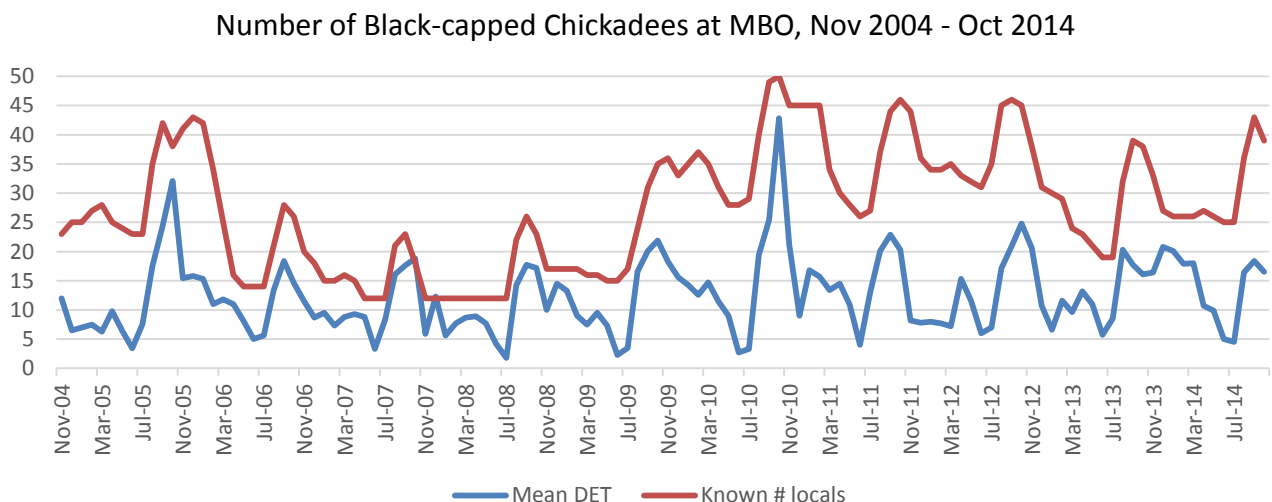
Black-capped Chickadee is the most abundant year-round resident at MBO, and there have been only a handful of days over the past ten years when none were observed (generally very rainy conditions with minimal bird activity). Despite largely being a resident, numbers almost always peak in week 4 in spring, and at some point in October during fall. Large numbers of migrants pass through in fall in some years, with 2005 and 2010 being the most notable movements, but banding totals in 2007, 2009, and 2012 also indicating that far more than just the local breeders and their offspring were present. Spring numbers were above average from 2011-2013.



The figure above shows that the number of Black-capped Chickadees spikes in early August, reflecting the reproduction of the local pairs, and builds slightly over the course of fall, then declines gradually until summer. Mostly this illustrates the cycle of the local population, although in some years this is supplemented by a notable spike of migrants in late fall.

Since November 2004, 330 individuals have been recaptured at least 28 days after being banded, and are therefore classified as residents rather than migrants. Among these, 88 have been recaptured at least one year after banding; the record holder for both longevity and number of recaptures is 2500-65165, a female banded as a juvenile on 2 August 2008 and most recently recaptured on 22 October 2014, for a span of 2272 days over 43 captures. Another 26 individuals have a history at MBO spanning at least 3 years.

The figure below was generated through reviewing the history of Black-capped Chickadees recaptured at MBO. By identifying the banding date and most recent recovery date of each individual, the minimum number of known living individuals in the local population was calculated for each date, and averaged by month. While there is likely some local movement (e.g., some individuals may be more prominent at the feeders in winter, but breed in the adjacent Morgan Arboretum), these birds are almost certainly all residents in the area. The figure shows a distinct annual cycle, with numbers peaking in late fall, and at their lowest in early summer. This generally correlates with the observed daily estimated totals, although they are always lower, even in fall 2005 and 2010 when large numbers of migrants were moving through.





**BOCH: Boreal Chickadee / Mésange à tête brune (*Poecile hudsonicus*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       | Oct 20 | Oct 20 | Oct 20 | 1    | 1 (1%) | 1    | 1     |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| Mean     |       |      |      |      |        |      |       | Oct 20 | Oct 20 | Oct 20 | 1    | 1 (1%) | 1    | 0.1   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12  | F13 | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|------|-----|-------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 0.1  |     | 0.01  |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |       |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |       |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |       |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |       |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |       |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |       |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |       |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |       |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |       |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 0.01 |     | <0.01 |

A single Boreal Chickadee was observed with Black-capped Chickadees during the late part of a strong chickadee migration in October 2005.

**TUTI: Tufted Titmouse / Mésange bicolor (*Baeolophus bicolor*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2012     | Jun 3  | Jun 3  | Jun 3  | 1    | 1 (1%) | 1    | 1     |       |      |      |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2014     | Mar 29 | Mar 29 | Apr 10 | 13   | 2 (3%) | 1    | 2     |       |      |      |      |        |      |       |
| Mean     | May 1  | May 1  | May 7  | 7    | 2 (2%) | 1    | 0.3   |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar  | Winter | S1   | S2   | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10  | Spring |
|----------|-----|-----|-----|-----|------|--------|------|------|----|----|----|----|----|----|----|------|--------|
| 2005     |     |     |     |     |      |        |      |      |    |    |    |    |    |    |    |      |        |
| 2006     |     |     |     |     |      |        |      |      |    |    |    |    |    |    |    |      |        |
| 2007     |     |     |     |     |      |        |      |      |    |    |    |    |    |    |    |      |        |
| 2008     |     |     |     |     |      |        |      |      |    |    |    |    |    |    |    |      |        |
| 2009     |     |     |     |     |      |        |      |      |    |    |    |    |    |    |    |      |        |
| 2010     |     |     |     |     |      |        |      |      |    |    |    |    |    |    |    |      |        |
| 2011     |     |     |     |     |      |        |      |      |    |    |    |    |    |    |    |      |        |
| 2012     |     |     |     |     |      |        |      |      |    |    |    |    |    |    |    | 0.1  | 0.01   |
| 2013     |     |     |     |     |      |        |      |      |    |    |    |    |    |    |    |      |        |
| 2014     |     |     |     | 1.0 | 0.6  | 0.4    | 0.2  | 0.1  |    |    |    |    |    |    |    |      | 0.03   |
| Mean     |     |     |     | 0.1 | 0.04 | 0.03   | 0.02 | 0.01 |    |    |    |    |    |    |    | 0.01 | <0.01  |

MBO's first Tufted Titmouse showed up near the end of spring 2012. A second was first observed at the feeders in February 2014, and was seen regularly until early April.

**RBNU: Red-breasted Nuthatch / Sittelle à poitrine rousse (*Sitta canadensis*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     |        |        |        |      |         |      |       | Aug 12 | Aug 21 | Oct 28 | 78   | 37 (42%) | 3    | 49    |
| 2006     | Apr 2  | May 4  | May 26 | 55   | 6 (9%)  | 2    | 7     | Aug 5  | Sep 8  | Oct 14 | 71   | 9 (10%)  | 2    | 10    |
| 2007     | May 7  | May 7  | May 7  | 1    | 1 (1%)  | 1    | 1     | Aug 2  | Aug 5  | Oct 24 | 84   | 21 (23%) | 2    | 24    |
| 2008     | Apr 22 | Apr 28 | Jun 5  | 45   | 9 (13%) | 2    | 12    | Aug 7  | Aug 20 | Oct 17 | 72   | 23 (25%) | 4    | 37    |
| 2009     | May 13 | May 13 | May 27 | 15   | 2 (3%)  | 2    | 3     | Aug 7  | Aug 22 | Oct 29 | 84   | 22 (24%) | 2    | 25    |
| 2010     | Apr 5  | Apr 5  | May 7  | 33   | 3 (4%)  | 1    | 3     | Aug 12 | Oct 3  | Oct 28 | 78   | 15 (16%) | 5    | 19    |
| 2011     | May 6  | May 12 | May 28 | 23   | 5 (7%)  | 2    | 7     | Aug 13 | Aug 13 | Oct 4  | 53   | 7 (8%)   | 1    | 7     |
| 2012     | Apr 3  | Apr 3  | May 31 | 59   | 6 (9%)  | 1    | 6     | Aug 12 | Aug 17 | Oct 30 | 80   | 40 (44%) | 5    | 61    |
| 2013     | Apr 6  | May 25 | May 27 | 52   | 5 (7%)  | 3    | 7     | Aug 1  | Aug 7  | Oct 19 | 80   | 20 (22%) | 2    | 26    |
| 2014     | May 2  | May 2  | May 21 | 20   | 3 (4%)  | 1    | 3     | Aug 10 | Aug 10 | Oct 10 | 62   | 14 (15%) | 3    | 18    |
| Mean     | Apr 20 | May 1  | May 23 | 34   | 4 (6%)  | 2    | 4.9   | Aug 8  | Aug 21 | Oct 20 | 74   | 21 (23%) | 3    | 28    |

| Observed | Nov  | Dec  | Jan | Feb  | Mar  | Winter | S1   | S2   | S3 | S4   | S5   | S6   | S7  | S8   | S9  | S10  | Spring |
|----------|------|------|-----|------|------|--------|------|------|----|------|------|------|-----|------|-----|------|--------|
| 2005     |      |      |     |      |      |        |      |      |    |      |      |      |     |      |     |      |        |
| 2006     |      | 0.07 | 0.4 | 0.4  | 0.3  | 0.2    | 0.1  |      |    |      |      | 0.3  |     | 0.3  | 0.3 |      | 0.1    |
| 2007     |      |      |     |      |      |        |      |      |    |      |      | 0.1  |     |      |     |      | 0.01   |
| 2008     |      |      |     |      |      |        |      |      |    | 0.1  | 0.3  |      | 0.7 |      | 0.4 | 0.1  | 0.2    |
| 2009     |      |      |     |      | 0.07 | 0.03   |      |      |    |      |      |      | 0.3 |      | 0.1 |      | 0.04   |
| 2010     | 0.1  |      |     |      |      | 0.03   |      | 0.1  |    | 0.1  |      | 0.1  |     |      |     |      | 0.04   |
| 2011     |      |      |     |      |      |        |      |      |    |      |      | 0.1  | 0.3 | 0.1  | 0.4 |      | 0.1    |
| 2012     |      |      |     |      |      |        | 0.1  |      |    | 0.3  | 0.1  |      | 0.1 |      |     | 0.1  | 0.09   |
| 2013     | 0.1  | 0.1  | 0.2 | 0.2  | 0.3  | 0.2    |      | 0.3  |    |      | 0.1  |      |     |      | 0.6 |      | 0.1    |
| 2014     | 0.2  |      | 0.3 |      |      | 0.1    |      |      |    |      |      | 0.1  |     | 0.3  |     |      | 0.04   |
| Mean     | 0.04 | 0.04 | 0.1 | 0.07 | 0.09 | 0.08   | 0.03 | 0.04 |    | 0.06 | 0.06 | 0.09 | 0.1 | 0.07 | 0.2 | 0.03 | 0.07   |

| Observed | Jun  | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|------|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     |      |      |        |     | 0.1 | 1.3 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 1.0 | 0.5 | 0.6 | 0.4 | 0.6  |
| 2006     |      |      |        | 0.1 | 0.4 | 0.1 | 0.1 | 0.1 | 0.3 |     |     |     |     | 0.1 |     |     | 0.1  |
| 2007     |      | 0.2  | 0.08   | 0.4 | 0.1 | 0.9 | 0.1 | 0.4 | 0.3 |     | 0.3 |     | 0.6 | 0.1 |     | 0.1 | 0.3  |
| 2008     |      | 0.2  | 0.1    | 0.1 |     | 0.6 | 0.1 | 0.6 | 0.3 | 0.7 | 1.1 | 0.4 | 0.9 | 0.3 | 0.1 |     | 0.4  |
| 2009     |      |      |        | 0.1 | 0.3 |     | 0.6 | 0.1 | 0.6 |     | 0.3 | 0.1 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3  |
| 2010     |      |      |        |     | 0.3 | 0.1 |     | 0.1 | 0.3 | 0.1 | 0.6 | 0.1 | 0.9 |     |     | 0.1 | 0.2  |
| 2011     |      |      |        |     | 0.1 | 0.3 | 0.1 | 0.1 |     | 0.1 |     |     | 0.1 |     |     |     | 0.08 |
| 2012     | 0.3  | 0.8  | 0.5    |     | 0.3 | 1.1 | 0.4 | 0.3 | 0.7 | 1.4 | 0.6 | 1.3 | 0.6 | 0.3 | 0.9 | 0.9 | 0.7  |
| 2013     |      |      |        | 0.4 |     | 0.1 | 0.3 | 0.7 | 0.4 | 0.4 | 0.1 | 0.4 | 0.1 | 0.4 | 0.1 |     | 0.3  |
| 2014     |      |      |        |     | 1.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.1 | 0.1 | 0.3 | 0.1 |     |     | 0.2  |
| Mean     | 0.02 | 0.08 | 0.05   | 0.1 | 0.3 | 0.5 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.5 | 0.2 | 0.2 | 0.2 | 0.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2006   |     |     | 1   |     |     | 1      |    |    |    |    |    |    |    |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| Mean   |     |     | 0.3 |     |     | 0.1    |    |    |    |    |    |    |    |    |    |     |        |

| Banded | Jun | Jul | Summer | F1 | F2 | F3  | F4  | F5 | F6 | F7  | F8 | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|-----|-----|----|----|-----|----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    | 1   |     |    |    |     |    |     |     |     |     |     | 1    |
| 2006   |     |     |        |    |    |     |     |    |    |     |    |     |     |     |     |     |      |
| 2007   |     |     |        |    |    |     |     |    |    |     |    |     |     |     |     |     |      |
| 2008   |     |     |        |    |    |     |     |    |    |     |    |     |     |     |     |     |      |
| 2009   |     |     |        |    | 1  |     |     |    |    |     |    | 1   | 1   | 1   |     |     | 4    |
| 2010   |     |     |        |    |    |     |     |    |    |     |    |     | 1   |     |     |     | 1    |
| 2011   |     |     |        |    |    |     |     |    |    |     |    |     |     |     |     |     |      |
| 2012   |     | 2   | 2      |    |    |     |     |    |    | 1   |    |     |     |     |     |     | 1    |
| 2013   |     |     |        |    |    |     |     |    |    |     |    |     |     |     |     |     |      |
| 2014   |     |     |        |    |    |     |     |    |    |     |    |     |     |     |     |     |      |
| Mean   |     | 0.2 | 0.2    |    |    | 0.1 | 0.1 |    |    | 0.1 |    | 0.1 | 0.2 | 0.1 |     |     | 0.7  |

Red-breasted Nuthatch is an uncommon and irregular species at MBO in all seasons. Both in spring and fall, observations are spread throughout the season, with small peaks varying widely from year to year and little overall pattern. Spring numbers have been similarly low in most years, while in fall there have been occasional low years (2006 and 2011) and high years (2005 and 2012) that stand out from the more typical seasons. Only ten individuals have been banded, covering all seasons except spring.

**WBNU: White-breasted Nuthatch / Sittelle à poitrine blanche (*Sitta carolinensis*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 12 | May 27 | 53   | 42 (71%) | 3    | 54    | Aug 2 | Aug 27 | Oct 30 | 90   | 54 (61%) | 6    | 107   |
| 2006     | Mar 30 | Apr 27 | Jun 5  | 68   | 40 (58%) | 3    | 53    | Aug 1 | Aug 22 | Oct 30 | 91   | 72 (79%) | 9    | 164   |
| 2007     | Mar 28 | Apr 7  | Jun 1  | 66   | 26 (37%) | 4    | 37    | Aug 1 | Aug 9  | Oct 25 | 86   | 55 (60%) | 8    | 87    |
| 2008     | Apr 6  | May 14 | May 30 | 55   | 19 (27%) | 3    | 23    | Aug 1 | Sep 24 | Oct 25 | 86   | 34 (37%) | 3    | 49    |
| 2009     | Apr 4  | Apr 4  | Jun 1  | 59   | 14 (20%) | 2    | 15    | Aug 1 | Aug 22 | Oct 30 | 91   | 49 (54%) | 7    | 78    |
| 2010     | Apr 2  | Apr 19 | May 24 | 53   | 21 (30%) | 2    | 23    | Aug 2 | Sep 20 | Oct 30 | 90   | 53 (58%) | 6    | 87    |
| 2011     | Mar 29 | Apr 18 | May 31 | 64   | 11 (16%) | 2    | 14    | Aug 1 | Sep 8  | Oct 28 | 89   | 66 (73%) | 5    | 125   |
| 2012     | Apr 2  | Apr 12 | May 27 | 56   | 32 (46%) | 2    | 39    | Aug 1 | Sep 12 | Oct 30 | 91   | 76 (84%) | 8    | 178   |
| 2013     | Mar 31 | Apr 28 | May 31 | 62   | 34 (49%) | 3    | 48    | Aug 1 | Aug 27 | Oct 30 | 91   | 79 (87%) | 6    | 194   |
| 2014     | Mar 29 | Mar 29 | Jun 4  | 68   | 28 (41%) | 3    | 40    | Aug 1 | Aug 10 | Oct 30 | 91   | 68 (75%) | 9    | 138   |
| Mean     | Apr 1  | Apr 16 | May 30 | 60   | 27 (39%) | 3    | 35    | Aug 1 | Aug 30 | Oct 28 | 90   | 61 (67%) | 7    | 121   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     | 0.5 |     |     | 0.5 | 0.3 | 0.4    |     | 0.8 | 1.6 | 1.3 | 0.6 | 1.3 | 1.0 | 0.9 | 0.6 |     | 0.9    |
| 2006     | 0.4 | 0.4 | 0.6 | 0.6 | 0.2 | 0.4    | 0.4 | 0.3 | 0.6 | 0.7 | 0.9 | 0.9 | 0.4 | 1.4 | 1.3 | 0.7 | 0.8    |
| 2007     | 0.9 | 0.9 | 0.5 |     | 0.6 | 0.7    | 0.6 | 1.0 | 0.1 | 0.6 | 0.4 | 1.0 | 0.9 | 0.4 | 0.1 | 0.1 | 0.5    |
| 2008     | 0.3 | 0.3 | 0.4 | 1.3 |     | 0.6    |     | 0.1 | 0.1 | 0.3 | 1.1 | 0.4 | 0.7 | 0.1 | 0.1 | 0.1 | 0.3    |
| 2009     | 0.4 | 0.5 |     | 0.3 | 0.5 | 0.4    |     | 0.7 | 0.1 | 0.1 | 0.6 | 0.1 | 0.3 |     | 0.1 | 0.1 | 0.2    |
| 2010     | 0.6 |     | 0.2 | 0.4 | 0.4 | 0.4    | 0.1 | 0.7 | 0.1 | 0.9 | 0.3 | 0.1 | 0.3 | 0.6 | 0.1 |     | 0.3    |
| 2011     | 0.2 | 1.0 | 0.4 | 0.8 | 0.3 | 0.4    | 0.1 |     |     | 0.4 | 0.1 | 0.1 | 0.3 | 0.6 | 0.1 | 0.1 | 0.2    |
| 2012     | 0.2 |     |     |     | 0.6 | 0.2    | 0.3 | 0.7 | 0.9 | 1.0 | 0.4 | 1.0 | 0.7 | 0.4 | 0.1 |     | 0.6    |
| 2013     | 0.6 | 0.1 | 0.5 | 0.4 | 0.6 | 0.5    | 0.3 | 0.6 | 0.6 | 1.0 | 1.0 | 1.3 | 0.6 | 0.4 | 0.9 | 0.3 | 0.7    |
| 2014     | 2.4 | 1.0 | 0.9 | 0.6 | 0.6 | 1.0    | 1.3 | 0.6 | 0.1 | 1.1 | 0.1 | 0.6 | 0.7 | 0.1 | 0.6 | 0.7 | 0.6    |
| Mean     | 0.6 | 0.4 | 0.4 | 0.5 | 0.4 | 0.5    | 0.3 | 0.6 | 0.4 | 0.7 | 0.6 | 0.7 | 0.6 | 0.5 | 0.4 | 0.2 | 0.5    |

| Observed | Jun  | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|------|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     | 0.06 | 0.3 | 0.2    | 1.3 | 1.7 | 1.3 | 1.4 | 1.1 | 0.9 | 1.0 | 2.1 | 0.8 | 1.7 | 0.8 | 0.4 | 1.1 | 1.2  |
| 2006     | 0.6  | 1.4 | 1.0    | 1.9 | 2.0 | 2.9 | 3.1 | 1.1 | 1.7 | 1.6 | 1.4 | 1.3 | 1.1 | 1.7 | 2.1 | 1.4 | 1.8  |
| 2007     | 0.1  | 0.5 | 0.3    | 0.7 | 1.9 | 1.6 | 1.3 | 1.1 | 1.3 | 0.7 | 0.6 | 0.9 | 0.7 | 0.6 | 0.9 | 0.3 | 1.0  |
| 2008     |      |     |        | 0.1 | 0.3 | 0.4 | 0.1 | 0.1 | 0.3 | 0.3 | 1.0 | 0.9 | 1.1 | 1.3 | 0.7 | 0.3 | 0.5  |
| 2009     | 0.3  |     | 0.1    | 1.3 | 1.3 | 0.9 | 1.7 | 1.0 | 0.9 | 0.1 | 0.4 | 0.6 | 0.4 | 0.4 | 0.9 | 1.3 | 0.9  |
| 2010     |      | 0.2 | 0.1    | 0.6 | 0.9 | 1.4 | 0.9 | 1.1 | 0.7 | 0.4 | 1.9 | 0.7 | 1.7 | 0.4 | 0.7 | 1.0 | 1.0  |
| 2011     |      | 0.8 | 0.4    | 1.6 | 1.6 | 2.4 | 1.6 | 1.9 | 2.3 | 0.7 | 1.0 | 0.6 | 1.3 | 0.9 | 1.6 | 0.6 | 1.4  |
| 2012     |      | 1.0 | 0.5    | 2.1 | 2.6 | 2.3 | 3.1 | 1.9 | 1.9 | 2.6 | 1.9 | 1.1 | 1.9 | 0.9 | 1.1 | 2.1 | 2.0  |
| 2013     | 0.3  | 1.5 | 1.0    | 2.1 | 1.9 | 2.0 | 3.4 | 3.4 | 1.1 | 1.1 | 2.3 | 2.7 | 2.1 | 2.3 | 1.4 | 1.7 | 2.1  |
| 2014     | 1.0  | 1.3 | 1.1    | 1.6 | 3.4 | 2.0 | 1.0 | 2.4 | 1.7 | 1.3 | 1.4 | 0.7 | 0.6 | 1.1 | 0.7 | 1.7 | 1.5  |
| Mean     | 0.2  | 0.7 | 0.5    | 1.3 | 1.7 | 1.7 | 1.8 | 1.5 | 1.3 | 1.0 | 1.4 | 1.0 | 1.3 | 1.0 | 1.1 | 1.2 | 1.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6 | S7  | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|-----|----|-----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |     |    |     | 1   |    |     | 1      |
| 2006   |     |     |     |     |     |        |    |    |    |    | 1   |    |     |     |    |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |    |     |    |     |     |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |     |    |     |     |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |     |    |     |     |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |     |    |     |     |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |     |    |     |     |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |     |    |     |     |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |     |    | 1   |     |    |     | 1      |
| 2014   | 3   |     |     |     |     | 3      |    |    |    |    |     |    |     |     |    |     |        |
| Mean   | 0.4 |     |     |     |     | 0.3    |    |    |    |    | 0.1 |    | 0.1 | 0.1 |    |     | 0.3    |

| Banded | Jun | Jul | Summer | F1  | F2 | F3 | F4  | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|----|----|-----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |    |    |     |    |    |    |    |    |     |     | 1   |     | 1    |
| 2006   |     |     |        |     |    |    | 1   |    |    |    |    |    |     |     |     |     | 1    |
| 2007   |     |     |        |     |    |    |     |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |     |    |    |     |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |     |    |    |     |    |    |    |    |    |     |     |     | 1   | 1    |
| 2010   |     |     |        |     |    |    |     |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |     |    |    |     |    |    |    |    |    |     | 1   |     |     | 1    |
| 2012   |     |     |        | 3   |    |    |     |    |    |    |    |    | 1   |     |     | 1   | 5    |
| 2013   |     |     |        | 1   |    |    |     |    |    |    |    |    |     |     |     | 1   | 2    |
| 2014   |     |     |        |     |    |    |     |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        | 0.4 |    |    | 0.1 |    |    |    |    |    | 0.1 | 0.1 | 0.1 | 0.3 | 1.1  |

White-breasted Nuthatch is a fairly common resident at MBO, with observations in all fall periods each year, and few gaps in winter, spring, and summer. Mean daily counts are relatively consistent throughout winter, spring, and summer; they increase in early fall, presumably due to the influx of juveniles to the local population, and start to taper off by mid-season, consistent with juvenile dispersal. Only 17 individuals have been banded, 70% of them within the past four years. Numbers were somewhat lower from 2007 to 2010 in fall and 2008 to 2011 in spring.

**BRCR: Brown Creeper / Grimpereau brun (*Certhia americana*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 7  | Apr 16 | Apr 28 | 22   | 5 (8%)   | 2    | 6     | Sep 5  | Oct 6  | Oct 29 | 55   | 16 (18%) | 3    | 21    |
| 2006     | Mar 31 | Apr 22 | May 1  | 32   | 10 (14%) | 5    | 16    | Sep 22 | Oct 6  | Oct 29 | 38   | 10 (11%) | 2    | 11    |
| 2007     | Apr 9  | Apr 9  | May 22 | 44   | 3 (4%)   | 1    | 3     | Aug 2  | Sep 16 | Oct 3  | 63   | 9 (10%)  | 2    | 10    |
| 2008     | Apr 20 | Apr 22 | Apr 27 | 8    | 3 (4%)   | 3    | 5     | Sep 1  | Sep 26 | Oct 24 | 54   | 9 (10%)  | 3    | 12    |
| 2009     | Apr 2  | Apr 24 | Apr 27 | 26   | 4 (6%)   | 2    | 5     | Aug 8  | Sep 19 | Oct 21 | 75   | 16 (18%) | 2    | 18    |
| 2010     | Apr 1  | Apr 1  | Apr 21 | 21   | 4 (6%)   | 1    | 4     | Sep 10 | Sep 21 | Oct 29 | 50   | 16 (18%) | 3    | 19    |
| 2011     | Mar 31 | Apr 19 | Apr 22 | 23   | 4 (6%)   | 4    | 8     | Aug 12 | Oct 7  | Oct 30 | 80   | 20 (22%) | 3    | 28    |
| 2012     | Apr 7  | Apr 7  | Apr 29 | 23   | 5 (7%)   | 2    | 6     | Sep 17 | Oct 12 | Oct 24 | 38   | 19 (21%) | 8    | 40    |
| 2013     | Apr 11 | Apr 11 | May 15 | 35   | 6 (9%)   | 2    | 7     | Sep 15 | Oct 30 | Oct 30 | 46   | 14 (15%) | 2    | 15    |
| 2014     | Apr 7  | Apr 14 | May 22 | 46   | 15 (22%) | 3    | 23    | Sep 20 | Sep 23 | Oct 28 | 39   | 13 (14%) | 2    | 16    |
| Mean     | Apr 6  | Apr 14 | May 3  | 28   | 6 (9%)   | 2    | 8.3   | Sep 1  | Oct 1  | Oct 24 | 54   | 14 (16%) | 3    | 19    |

| Observed | Nov | Dec  | Jan  | Feb  | Mar  | Winter | S1  | S2  | S3  | S4  | S5  | S6   | S7   | S8   | S9 | S10 | Spring |
|----------|-----|------|------|------|------|--------|-----|-----|-----|-----|-----|------|------|------|----|-----|--------|
| 2005     |     |      |      | 0.3  |      | 0.07   |     | 0.2 | 0.4 | 0.2 | 0.1 |      |      |      |    |     | 0.1    |
| 2006     |     | 0.07 | 0.08 |      |      | 0.03   | 0.6 | 0.3 | 0.3 | 0.7 | 0.4 |      |      |      |    |     | 0.2    |
| 2007     | 0.3 |      |      |      |      | 0.1    |     | 0.1 |     | 0.1 |     |      |      | 0.1  |    |     | 0.04   |
| 2008     |     | 0.3  |      |      |      | 0.04   |     |     |     | 0.6 | 0.1 |      |      |      |    |     | 0.07   |
| 2009     |     |      |      | 0.7  | 0.07 | 0.2    | 0.1 |     |     | 0.4 | 0.1 |      |      |      |    |     | 0.07   |
| 2010     | 0.2 |      |      | 0.08 | 0.2  | 0.10   | 0.1 |     | 0.1 | 0.3 |     |      |      |      |    |     | 0.06   |
| 2011     | 0.3 |      | 0.08 |      | 0.1  | 0.1    | 0.1 |     |     | 1.0 |     |      |      |      |    |     | 0.1    |
| 2012     |     |      |      |      | 0.2  | 0.04   |     | 0.3 |     | 0.3 | 0.3 |      |      |      |    |     | 0.09   |
| 2013     |     |      |      |      | 0.07 | 0.02   |     |     | 0.3 | 0.3 | 0.1 | 0.1  | 0.1  |      |    |     | 0.1    |
| 2014     |     |      |      |      |      |        |     | 0.3 | 1.0 | 1.0 | 0.9 |      |      | 0.1  |    |     | 0.3    |
| Mean     | 0.1 | 0.04 | 0.03 | 0.1  | 0.07 | 0.08   | 0.1 | 0.1 | 0.2 | 0.5 | 0.2 | 0.01 | 0.01 | 0.03 |    |     | 0.1    |

| Observed | Jun | Jul | Summer | F1   | F2   | F3   | F4 | F5   | F6   | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|------|------|------|----|------|------|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     |     |     |        |      |      |      |    |      | 0.4  | 0.1 | 0.3 | 0.2 | 1.0 | 1.0 | 0.3 | 0.3 | 0.2  |
| 2006     |     |     |        |      |      |      |    |      |      |     | 0.1 |     | 0.7 | 0.1 | 0.1 | 0.4 | 0.1  |
| 2007     |     |     |        | 0.1  |      | 0.1  |    |      | 0.1  | 0.3 | 0.3 | 0.3 | 0.1 |     |     |     | 0.1  |
| 2008     |     |     |        |      |      |      |    | 0.1  | 0.1  | 0.3 | 0.1 | 0.4 | 0.3 | 0.1 |     | 0.1 | 0.1  |
| 2009     |     |     |        |      | 0.1  |      |    | 0.1  |      | 0.3 | 0.9 | 0.4 | 0.4 | 0.1 | 0.1 |     | 0.2  |
| 2010     |     |     |        |      |      |      |    |      | 0.1  | 0.1 | 0.6 | 0.1 | 0.4 | 0.9 | 0.1 | 0.3 | 0.2  |
| 2011     |     |     |        |      | 0.1  | 0.1  |    |      |      | 0.4 | 0.9 | 0.6 | 1.1 |     | 0.1 | 0.6 | 0.3  |
| 2012     |     |     |        |      |      |      |    |      |      | 0.1 | 1.4 | 0.4 | 0.9 | 2.1 | 0.6 | 0.1 | 0.4  |
| 2013     |     |     |        |      |      |      |    |      |      | 0.3 | 0.6 | 0.3 | 0.1 | 0.1 | 0.3 | 0.4 | 0.2  |
| 2014     |     |     |        |      |      |      |    |      |      |     | 0.4 | 0.3 | 0.6 | 0.3 | 0.6 | 0.1 | 0.2  |
| Mean     |     |     |        | 0.01 | 0.03 | 0.03 |    | 0.03 | 0.09 | 0.2 | 0.6 | 0.3 | 0.6 | 0.5 | 0.2 | 0.2 | 0.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3 | S4  | S5  | S6 | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|-----|----|-----|-----|----|----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |     |    |     | 1   |    |    |    |    |     | 1      |
| 2006   |     |     |     |     |     |        |    | 1   |    |     |     |    |    |    |    |     | 1      |
| 2007   |     |     |     |     |     |        |    |     |    |     |     |    |    |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |     |    | 1   |     |    |    |    |    |     | 1      |
| 2009   |     |     |     |     |     |        |    |     |    | 2   |     |    |    |    |    |     | 2      |
| 2010   |     |     |     |     |     |        |    |     |    | 1   |     |    |    |    |    |     | 1      |
| 2011   | 1   |     |     |     |     | 1      |    |     |    | 1   |     |    |    |    |    |     | 1      |
| 2012   |     |     |     |     |     |        |    |     |    | 1   |     |    |    |    |    |     | 1      |
| 2013   |     |     |     |     |     |        |    |     |    | 1   |     |    |    |    |    |     | 1      |
| 2014   |     |     |     |     |     |        |    |     |    | 1   | 3   |    |    |    |    |     | 4      |
| Mean   | 0.1 |     |     |     |     | 0.1    |    | 0.5 |    | 0.8 | 0.4 |    |    |    |    |     | 1.3    |

| Banded | Jun | Jul | Summer | F1 | F2  | F3 | F4 | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |     |    |    |     | 2   | 1   | 2   |     | 4   | 2   |     | 1   | 12   |
| 2006   |     |     |        |    |     |    |    |     |     |     |     |     | 3   | 1   |     |     | 4    |
| 2007   |     |     |        |    |     |    |    |     | 1   | 1   | 2   | 1   | 1   |     |     |     | 6    |
| 2008   |     |     |        |    |     |    |    | 1   | 1   | 1   | 1   | 1   | 2   |     |     | 1   | 8    |
| 2009   |     |     |        |    | 1   |    |    |     |     | 1   | 2   | 2   |     |     | 1   |     | 7    |
| 2010   |     |     |        |    |     |    |    |     |     | 1   | 4   | 1   | 2   | 2   |     | 1   | 11   |
| 2011   |     |     |        |    | 1   |    |    |     |     | 1   | 3   |     | 7   |     |     | 2   | 14   |
| 2012   |     |     |        |    |     |    |    |     |     | 1   | 5   | 3   | 6   | 5   |     | 1   | 21   |
| 2013   |     |     |        |    |     |    |    |     |     | 2   | 2   | 2   | 1   | 1   | 1   | 1   | 10   |
| 2014   |     |     |        |    |     |    |    |     |     |     | 2   | 2   | 1   | 1   | 2   | 1   | 9    |
| Mean   |     |     |        |    | 0.2 |    |    | 0.1 | 0.4 | 0.9 | 2.3 | 1.2 | 2.7 | 1.2 | 0.4 | 0.8 | 10.2 |

Brown Creeper is an uncommon early spring and late fall migrant, with scattered sightings almost every winter. Spring sightings are heavily concentrated in April, with a distinct overall peak in week 4; observations have extended past week 5 in just three years. There were unusually early sightings in the first half of August in 2007, 2009, and 2011, but the bulk of migration generally begins only around mid-season, and peaks in early October. Numbers have varied relatively little from year to year, aside from unusual highs in fall 2012 and spring 2014.

# HOWR: House Wren / Troglodyte familier (*Troglodytes aedon*)

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 17 | May 24 | Jun 3  | 18   | 15 (25%) | 2    | 21    | Aug 1 | Aug 15 | Oct 4  | 65   | 37 (42%) | 3    | 51    |
| 2006     | May 4  | May 4  | May 31 | 28   | 3 (4%)   | 1    | 3     | Aug 1 | Aug 2  | Oct 21 | 82   | 45 (49%) | 8    | 97    |
| 2007     | May 11 | May 13 | Jun 5  | 26   | 20 (29%) | 3    | 28    | Aug 1 | Aug 9  | Oct 14 | 75   | 63 (69%) | 13   | 255   |
| 2008     | Apr 24 | Jun 2  | Jun 5  | 43   | 37 (53%) | 7    | 136   | Aug 1 | Aug 5  | Oct 4  | 65   | 55 (60%) | 9    | 176   |
| 2009     | Apr 28 | May 8  | Jun 5  | 39   | 38 (55%) | 6    | 126   | Aug 1 | Aug 6  | Oct 12 | 73   | 63 (69%) | 12   | 298   |
| 2010     | Apr 24 | May 5  | Jun 4  | 42   | 35 (50%) | 9    | 155   | Aug 1 | Aug 16 | Sep 26 | 57   | 32 (35%) | 6    | 69    |
| 2011     | Apr 30 | May 19 | Jun 5  | 37   | 37 (53%) | 12   | 172   | Aug 1 | Aug 5  | Oct 21 | 82   | 43 (47%) | 7    | 102   |
| 2012     | Apr 20 | May 10 | Jun 5  | 47   | 46 (66%) | 9    | 238   | Aug 1 | Sep 12 | Oct 8  | 69   | 55 (60%) | 4    | 104   |
| 2013     | Apr 22 | May 2  | Jun 5  | 45   | 43 (61%) | 8    | 145   | Aug 1 | Aug 3  | Oct 5  | 66   | 55 (60%) | 7    | 132   |
| 2014     | Apr 21 | Jun 4  | Jun 4  | 45   | 30 (44%) | 10   | 105   | Aug 1 | Aug 10 | Oct 11 | 72   | 66 (73%) | 8    | 201   |
| Mean     | Apr 29 | May 15 | Jun 4  | 37   | 30 (44%) | 7    | 113   | Aug 1 | Aug 11 | Oct 9  | 71   | 51 (57%) | 8    | 149   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |     |     |     |     | 0.9 | 1.0 | 1.6 | 0.4    |
| 2006     |     |     |     |     |     |        |    |    |    |     |     | 0.1 |     | 0.1 |     | 0.1 | 0.04   |
| 2007     |     |     |     |     |     |        |    |    |    |     |     |     | 1.4 | 1.0 | 0.7 | 0.9 | 0.4    |
| 2008     |     |     |     |     |     |        |    |    |    | 0.1 | 0.6 | 2.4 | 3.9 | 4.6 | 3.7 | 4.1 | 1.9    |
| 2009     |     |     |     |     |     |        |    |    |    |     | 1.1 | 3.7 | 3.9 | 3.1 | 3.1 | 3.0 | 1.8    |
| 2010     |     |     |     |     |     |        |    |    |    | 0.1 |     | 3.3 | 3.6 | 4.4 | 6.0 | 4.7 | 2.2    |
| 2011     |     |     |     |     |     |        |    |    |    |     | 0.7 | 2.1 | 3.6 | 5.6 | 7.0 | 5.6 | 2.5    |
| 2012     |     |     |     |     |     |        |    |    |    | 0.9 | 3.1 | 4.4 | 7.4 | 6.3 | 5.9 | 6.0 | 3.4    |
| 2013     |     |     |     |     |     |        |    |    |    | 0.4 | 1.7 | 5.1 | 3.9 | 4.7 | 2.4 | 2.4 | 2.1    |
| 2014     |     |     |     |     |     |        |    |    |    | 0.1 |     | 0.9 | 3.4 | 2.9 | 3.3 | 5.2 | 1.5    |
| Mean     |     |     |     |     |     |        |    |    |    | 0.2 | 0.7 | 2.2 | 3.1 | 3.4 | 3.3 | 3.4 | 1.6    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12  | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|
| 2005     | 0.6 | 0.6 | 0.6    | 0.7 | 0.6 | 0.9 | 0.9 | 0.6 | 0.9 | 0.9 | 1.1 | 0.8 | 0.2 |     |      |     | 0.6  |
| 2006     |     | 0.4 | 0.2    | 2.7 | 1.9 | 2.0 | 0.6 | 1.6 | 1.1 | 1.9 | 0.9 | 0.6 | 0.6 |     | 0.1  |     | 1.1  |
| 2007     | 2.0 | 2.8 | 2.4    | 6.0 | 6.0 | 5.9 | 6.0 | 2.9 | 3.0 | 2.4 | 1.7 | 2.0 | 0.1 | 0.4 |      |     | 2.8  |
| 2008     | 4.6 | 3.2 | 3.9    | 5.1 | 4.7 | 3.9 | 3.4 | 2.3 | 1.6 | 1.7 | 0.7 | 1.3 | 0.4 |     |      |     | 1.9  |
| 2009     | 2.0 | 0.8 | 1.3    | 8.3 | 8.4 | 7.6 | 4.4 | 3.3 | 3.6 | 2.0 | 2.1 | 2.0 | 0.6 | 0.3 |      |     | 3.3  |
| 2010     | 0.7 | 2.3 | 1.8    | 3.4 | 1.3 | 1.9 | 1.3 | 0.6 | 0.6 | 0.7 |     | 0.1 |     |     |      |     | 0.8  |
| 2011     | 1.0 | 3.0 | 2.1    | 4.3 | 2.9 | 2.3 | 0.7 | 0.1 | 1.0 | 1.1 | 1.1 | 0.6 | 0.3 |     | 0.1  |     | 1.1  |
| 2012     | 1.0 | 1.3 | 1.1    | 2.0 | 1.9 | 1.7 | 1.7 | 0.9 | 1.0 | 2.3 | 1.9 | 1.4 | 0.1 |     |      |     | 1.1  |
| 2013     | 1.7 | 2.8 | 2.3    | 5.6 | 3.7 | 2.1 | 1.0 | 1.0 | 1.0 | 2.1 | 1.0 | 1.0 | 0.3 |     |      |     | 1.5  |
| 2014     | 2.7 | 1.0 | 1.7    | 3.3 | 4.0 | 4.1 | 4.4 | 3.4 | 2.4 | 2.1 | 2.3 | 1.6 | 0.6 | 0.4 |      |     | 2.2  |
| Mean     | 1.3 | 1.5 | 1.4    | 4.1 | 3.5 | 3.2 | 2.4 | 1.7 | 1.6 | 1.7 | 1.3 | 1.1 | 0.3 | 0.1 | 0.03 |     | 1.6  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |     |     |     |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |     |     |     |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |     |     | 1   |     |     |     | 1      |
| 2008   |     |     |     |     |     |        |    |    |    |    |     |     | 1   | 3   |     |     | 4      |
| 2009   |     |     |     |     |     |        |    |    |    |    |     |     |     | 1   | 1   | 1   | 3      |
| 2010   |     |     |     |     |     |        |    |    |    |    |     |     | 2   |     |     | 1   | 3      |
| 2011   |     |     |     |     |     |        |    |    |    |    |     | 2   | 1   | 1   | 1   |     | 5      |
| 2012   |     |     |     |     |     |        |    |    |    |    | 1   |     | 5   | 3   |     |     | 9      |
| 2013   |     |     |     |     |     |        |    |    |    |    | 1   | 3   | 1   | 2   |     |     | 7      |
| 2014   |     |     |     |     |     |        |    |    |    |    |     |     | 1   | 1   | 1   | 1   | 4      |
| Mean   |     |     |     |     |     |        |    |    |    |    | 0.2 | 0.5 | 1.2 | 1.1 | 0.3 | 0.3 | 3.6    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        | 2   |     | 1   | 2   | 1   | 1   | 2   | 3   | 1   | 1   |     |     |     | 14   |
| 2006   |     | 1   | 1      | 4   | 2   | 4   | 1   |     | 1   | 3   | 1   |     |     |     |     |     | 16   |
| 2007   | 6   |     |        | 11  | 3   | 4   | 5   | 6   | 3   |     | 1   | 2   |     | 1   |     |     | 36   |
| 2008   |     | 5   |        | 3   | 2   |     | 2   | 2   | 3   | 1   |     | 2   |     |     |     |     | 15   |
| 2009   |     | 2   | 2      | 13  | 4   | 4   |     | 4   | 1   | 1   | 3   | 1   |     | 1   |     |     | 32   |
| 2010   |     | 1   | 1      | 5   | 2   |     |     |     |     | 1   |     |     |     |     |     |     | 8    |
| 2011   |     | 3   | 3      | 5   | 1   | 2   |     |     |     |     | 1   |     |     |     |     |     | 9    |
| 2012   |     | 5   | 1      |     |     |     |     |     | 2   | 4   | 2   | 1   |     |     |     |     | 9    |
| 2013   |     | 2   | 2      | 2   | 3   | 1   |     |     | 1   | 2   | 1   | 1   |     |     |     |     | 11   |
| 2014   | 1   |     | 1      | 1   |     |     | 5   | 2   | 3   |     | 1   | 2   |     |     |     |     | 14   |
| Mean   | 1.2 | 2.1 | 2.9    | 4.6 | 1.7 | 1.6 | 1.5 | 1.5 | 1.5 | 1.4 | 1.3 | 1.0 | 0.1 | 0.2 |     |     | 16.4 |

House Wren sightings were relatively scarce in spring in the first three years, not beginning until May; since 2008 the first sighting has been between April 20 and 30, usually with weekly records through the end of the season. Numbers increased steadily until 2012, then started declining again. Summer numbers were also lowest in 2005 and 2006, but have oscillated up and down over the past 8 years; in 2007 and 2008 nestlings were banded at nest boxes although there was no formal banding program. Fall numbers have also varied irregularly across years, although more than twice as many were banded from 2005 to 2009 as from 2010 to 2014. The fall count peaks in week 1 and declines steadily through the season, lasting into October in all but one year.

**WIWR: Winter Wren / Troglodyte des forêts (*Troglodytes hiemalis*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     |        |        |        |      |          |      |       | Sep 4  | Oct 8  | Oct 30 | 57   | 21 (24%) | 4    | 29    |
| 2006     | Apr 2  | Apr 2  | May 26 | 55   | 5 (7%)   | 1    | 5     | Sep 5  | Oct 5  | Oct 27 | 53   | 22 (24%) | 6    | 41    |
| 2007     | Apr 23 | Apr 23 | May 17 | 25   | 2 (3%)   | 1    | 2     | Sep 13 | Sep 24 | Oct 24 | 42   | 12 (13%) | 4    | 19    |
| 2008     |        |        |        |      |          |      |       | Aug 16 | Oct 22 | Oct 22 | 68   | 11 (12%) | 2    | 12    |
| 2009     | Mar 28 | Mar 28 | Apr 22 | 26   | 2 (3%)   | 2    | 3     | Sep 20 | Oct 2  | Oct 12 | 23   | 9 (10%)  | 2    | 11    |
| 2010     | May 5  | May 5  | May 5  | 1    | 1 (1%)   | 1    | 1     | Aug 9  | Oct 2  | Oct 29 | 82   | 18 (20%) | 8    | 35    |
| 2011     | Apr 18 | Apr 27 | May 22 | 35   | 5 (7%)   | 2    | 6     | Sep 2  | Sep 28 | Oct 26 | 55   | 6 (7%)   | 2    | 9     |
| 2012     | Apr 1  | Apr 1  | May 5  | 35   | 5 (7%)   | 1    | 5     | Sep 15 | Oct 3  | Oct 21 | 37   | 19 (21%) | 3    | 25    |
| 2013     | Apr 17 | Apr 26 | May 17 | 31   | 8 (11%)  | 2    | 9     | Aug 18 | Sep 14 | Oct 29 | 73   | 13 (14%) | 2    | 16    |
| 2014     | Apr 10 | Apr 18 | May 8  | 29   | 12 (18%) | 3    | 17    | Sep 7  | Oct 20 | Oct 28 | 52   | 24 (26%) | 12   | 63    |
| Mean     | Apr 12 | Apr 16 | May 11 | 30   | 5 (7%)   | 2    | 4.8   | Sep 1  | Oct 3  | Oct 24 | 54   | 16 (17%) | 4    | 26    |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1   | S2   | S3  | S4  | S5  | S6   | S7 | S8   | S9   | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|------|------|-----|-----|-----|------|----|------|------|-----|--------|
| 2005     |      |     |     |     |     |        |      |      |     |     |     |      |    |      |      |     |        |
| 2006     | 0.07 |     |     |     |     | 0.02   | 0.1  |      | 0.1 | 0.1 | 0.1 |      |    |      | 0.1  |     | 0.07   |
| 2007     | 0.06 |     |     |     |     | 0.02   |      |      |     | 0.1 |     |      |    | 0.1  |      |     | 0.03   |
| 2008     |      |     |     |     |     |        |      |      |     |     |     |      |    |      |      |     |        |
| 2009     |      |     |     |     |     |        | 0.3  |      |     | 0.1 |     |      |    |      |      |     | 0.04   |
| 2010     |      |     |     |     |     |        |      |      |     |     |     | 0.1  |    |      |      |     | 0.01   |
| 2011     |      |     |     |     |     |        |      |      |     | 0.3 | 0.3 | 0.1  |    | 0.1  |      |     | 0.09   |
| 2012     |      |     |     |     |     |        | 0.3  |      |     |     | 0.1 | 0.3  |    |      |      |     | 0.07   |
| 2013     |      |     |     |     |     |        |      |      | 0.1 | 0.3 | 0.7 |      |    | 0.1  |      |     | 0.1    |
| 2014     |      |     |     |     |     |        |      | 0.1  | 0.7 | 1.1 | 0.3 | 0.1  |    |      |      |     | 0.2    |
| Mean     | 0.02 |     |     |     |     | <0.01  | 0.08 | 0.01 | 0.1 | 0.2 | 0.2 | 0.07 |    | 0.04 | 0.01 |     | 0.07   |

| Observed | Jun | Jul | Summer | F1 | F2   | F3   | F4 | F5   | F6   | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|----|------|------|----|------|------|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     |     |     |        |    |      |      |    | 0.1  |      | 0.1 | 0.4 | 0.3 | 1.7 | 0.7 | 0.6 | 0.6 | 0.3  |
| 2006     |     |     |        |    |      |      |    |      | 0.1  | 0.3 | 0.7 | 0.3 | 1.9 | 0.9 | 1.1 | 0.6 | 0.5  |
| 2007     |     |     |        |    |      |      |    |      |      | 0.1 | 0.9 | 0.1 | 1.1 |     | 0.3 | 0.1 | 0.2  |
| 2008     |     |     |        |    |      | 0.1  |    |      |      | 0.1 | 0.3 | 0.4 | 0.4 |     | 0.3 |     | 0.1  |
| 2009     |     |     |        |    |      |      |    |      |      |     | 0.3 | 0.3 | 0.6 | 0.4 |     |     | 0.1  |
| 2010     |     |     |        |    | 0.1  |      |    |      | 0.1  | 0.4 | 0.3 | 1.1 | 0.7 | 1.4 | 0.6 | 0.1 | 0.4  |
| 2011     |     |     |        |    |      |      |    | 0.1  |      |     |     | 0.3 | 0.6 | 0.1 |     | 0.1 | 0.1  |
| 2012     |     |     |        |    |      |      |    |      |      | 0.3 | 0.6 | 0.6 | 0.9 | 1.0 | 0.3 |     | 0.3  |
| 2013     |     |     |        |    |      | 0.1  |    |      |      | 0.4 | 0.1 |     | 0.4 | 0.1 | 0.4 | 0.6 | 0.2  |
| 2014     |     |     |        |    |      |      |    |      | 0.1  | 0.1 | 0.7 | 0.3 | 0.6 | 1.4 | 4.0 | 1.7 | 0.7  |
| Mean     |     |     |        |    | 0.01 | 0.03 |    | 0.03 | 0.04 | 0.2 | 0.4 | 0.4 | 0.9 | 0.6 | 0.8 | 0.4 | 0.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5 | S6  | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|----|-----|----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    | 1   |    | 1   |    |    |    |     | 2      |
| Mean   |     |     |     |     |     |        |    |    |    | 0.1 |    | 0.1 |    |    |    |     | 0.2    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |     | 2   | 1   | 2   | 1   |     |     | 6    |
| 2006   |     |     |        |    |    |    |    |    |    | 2   | 2   |     | 6   |     |     |     | 10   |
| 2007   |     |     |        |    |    |    |    |    |    | 1   | 1   |     | 2   |     |     |     | 4    |
| 2008   |     |     |        |    |    |    |    |    |    | 1   |     |     | 1   |     |     |     | 2    |
| 2009   |     |     |        |    |    |    |    |    |    |     | 1   |     | 1   |     |     |     | 2    |
| 2010   |     |     |        |    |    |    |    |    |    | 2   |     | 2   |     | 1   |     |     | 5    |
| 2011   |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1   |     |     | 2    |
| 2012   |     |     |        |    |    |    |    |    |    |     |     |     | 1   | 2   | 2   |     | 5    |
| 2013   |     |     |        |    |    |    |    |    |    |     |     |     | 2   |     | 1   |     | 3    |
| 2014   |     |     |        |    |    |    |    |    |    | 1   |     |     |     | 4   | 9   | 1   | 15   |
| Mean   |     |     |        |    |    |    |    |    |    | 0.7 | 0.6 | 0.4 | 1.5 | 0.9 | 1.2 | 0.1 | 5.4  |

Winter Wren is a regular but uncommon spring and fall migrant, and twice has trickled over into early winter. Spring migrants have arrived as early as the first week of the season three times, and in four years single individuals have been observed beyond mid-May, but the majority of records are from weeks 4 to 6. In fall, there have been scattered observations over the first six weeks of the season, but regular sightings are limited to the second half, with a quite distinct overall peak in week 10. Numbers have been relatively similar across years, although mean daily counts and numbers banded were distinctly higher in 2014 for both spring and fall.

**SEWR: Sedge Wren / Troglodyte à bec court (*Cistothorus platensis*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak  | Last  | Span | # days | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|-------|-------|------|--------|------|-------|
| 2005     |        |        |       |      |          |      |       |       |       |       |      |        |      |       |
| 2006     |        |        |       |      |          |      |       | Aug 9 | Aug 9 | Sep 5 | 28   | 3 (3%) | 1    | 3     |
| 2007     |        |        |       |      |          |      |       |       |       |       |      |        |      |       |
| 2008     | May 16 | May 27 | Jun 5 | 21   | 13 (19%) | 2    | 16    |       |       |       |      |        |      |       |
| 2009     |        |        |       |      |          |      |       |       |       |       |      |        |      |       |
| 2010     |        |        |       |      |          |      |       |       |       |       |      |        |      |       |
| 2011     |        |        |       |      |          |      |       |       |       |       |      |        |      |       |
| 2012     |        |        |       |      |          |      |       |       |       |       |      |        |      |       |
| 2013     |        |        |       |      |          |      |       |       |       |       |      |        |      |       |
| 2014     |        |        |       |      |          |      |       |       |       |       |      |        |      |       |
| Mean     | May 16 | May 27 | Jun 5 | 21   | 13 (19%) | 2    | 1.6   | Aug 9 | Aug 9 | Sep 5 | 28   | 3 (3%) | 1    | 0.3   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8   | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|------|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.3  | 0.9  | 1.1 | 0.2    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.03 | 0.09 | 0.1 | 0.02   |

| Observed | Jun  | Jul | Summer | F1 | F2   | F3   | F4 | F5 | F6   | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|------|-----|--------|----|------|------|----|----|------|----|----|----|-----|-----|-----|-----|-------|
| 2005     |      |     |        |    |      |      |    |    |      |    |    |    |     |     |     |     |       |
| 2006     |      |     |        |    | 0.1  | 0.1  |    |    | 0.1  |    |    |    |     |     |     |     | 0.03  |
| 2007     |      |     |        |    |      |      |    |    |      |    |    |    |     |     |     |     |       |
| 2008     | 0.6  |     | 0.3    |    |      |      |    |    |      |    |    |    |     |     |     |     |       |
| 2009     |      |     |        |    |      |      |    |    |      |    |    |    |     |     |     |     |       |
| 2010     |      |     |        |    |      |      |    |    |      |    |    |    |     |     |     |     |       |
| 2011     |      |     |        |    |      |      |    |    |      |    |    |    |     |     |     |     |       |
| 2012     |      |     |        |    |      |      |    |    |      |    |    |    |     |     |     |     |       |
| 2013     |      |     |        |    |      |      |    |    |      |    |    |    |     |     |     |     |       |
| 2014     |      |     |        |    |      |      |    |    |      |    |    |    |     |     |     |     |       |
| Mean     | 0.05 |     | 0.02   |    | 0.01 | 0.01 |    |    | 0.01 |    |    |    |     |     |     |     | <0.01 |

Sedge Wren is a very rare species at MBO, with observations limited to three sightings in fall 2006 (possibly a single lingering individual), and a pair that was present over the final three weeks of spring 2008, continuing into the first part of summer.



**MAWR: Marsh Wren / Troglodyte des marais (*Cistothorus palustris*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | May 28 | May 28 | May 28 | 1    | 1 (2%) | 2    | 2     | Aug 5  | Aug 23 | Oct 6  | 63   | 5 (6%) | 2    | 6     |
| 2006     |        |        |        |      |        |      |       | Aug 7  | Aug 7  | Aug 7  | 1    | 1 (1%) | 1    | 1     |
| 2007     |        |        |        |      |        |      |       | Aug 9  | Aug 9  | Aug 9  | 1    | 1 (1%) | 1    | 1     |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |        |      |       | Aug 11 | Aug 11 | Aug 11 | 1    | 1 (1%) | 1    | 1     |
| 2010     | May 21 | May 21 | May 21 | 1    | 1 (1%) | 1    | 1     | Sep 11 | Sep 11 | Sep 11 | 1    | 1 (1%) | 1    | 1     |
| 2011     | May 1  | May 1  | May 1  | 1    | 1 (1%) | 1    | 1     | Sep 30 | Sep 30 | Oct 5  | 6    | 5 (5%) | 1    | 5     |
| 2012     | May 28 | May 28 | May 28 | 1    | 1 (1%) | 1    | 1     | Sep 11 | Sep 11 | Sep 28 | 18   | 3 (3%) | 1    | 3     |
| 2013     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | May 19 | May 19 | May 19 | 1    | 1 (1%) | 1    | 0.5   | Aug 25 | Aug 27 | Sep 6  | 13   | 2 (3%) | 1    | 1.8   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6 | S7 | S8   | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|------|----|----|------|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |      |    |    |      | 0.3  |     | 0.03   |
| 2006     |     |     |     |     |     |        |    |    |    |    |      |    |    |      |      |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |      |    |    |      |      |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |      |    |    |      |      |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |      |    |    |      |      |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |      |    |    | 0.1  |      |     | 0.01   |
| 2011     |     |     |     |     |     |        |    |    |    |    | 0.1  |    |    |      |      |     | 0.01   |
| 2012     |     |     |     |     |     |        |    |    |    |    |      |    |    |      | 0.1  |     | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |    |      |    |    |      |      |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |      |    |    |      |      |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.01 |    |    | 0.01 | 0.04 |     | 0.01   |

| Observed | Jun | Jul  | Summer | F1   | F2   | F3 | F4   | F5 | F6   | F7   | F8 | F9   | F10  | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|------|------|----|------|----|------|------|----|------|------|-----|-----|-----|------|
| 2005     |     |      |        | 0.1  |      |    | 0.3  |    |      |      |    | 0.3  | 0.2  |     |     |     | 0.07 |
| 2006     |     | 0.08 | 0.05   | 0.1  |      |    |      |    |      |      |    |      |      |     |     |     | 0.01 |
| 2007     |     |      |        |      | 0.1  |    |      |    |      |      |    |      |      |     |     |     | 0.01 |
| 2008     |     |      |        |      |      |    |      |    |      |      |    |      |      |     |     |     |      |
| 2009     |     |      |        |      | 0.1  |    |      |    |      |      |    |      |      |     |     |     | 0.01 |
| 2010     |     |      |        |      |      |    |      |    | 0.1  |      |    |      |      |     |     |     | 0.01 |
| 2011     |     | 0.5  | 0.3    |      |      |    |      |    |      |      |    | 0.3  | 0.4  |     |     |     | 0.05 |
| 2012     |     | 0.3  | 0.1    |      |      |    |      |    | 0.1  | 0.1  |    | 0.1  |      |     |     |     | 0.03 |
| 2013     |     | 0.3  | 0.1    |      |      |    |      |    |      |      |    |      |      |     |     |     |      |
| 2014     |     |      |        |      |      |    |      |    |      |      |    |      |      |     |     |     |      |
| Mean     |     | 0.08 | 0.04   | 0.03 | 0.03 |    | 0.03 |    | 0.03 | 0.01 |    | 0.07 | 0.06 |     |     |     | 0.02 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 1   |     | 1      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 0.1 |     | 0.1    |

| Banded | Jun | Jul | Summer | F1 | F2  | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|-----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    | 1   |    |    |    |    |    |    |    |     |     |     |     | 1    |
| 2008   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2013   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |     |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        |    | 0.1 |    |    |    |    |    |    |    |     |     |     |     | 0.1  |

Marsh Wren is an irregular species at MBO, with sightings in four spring, four summer, and seven fall seasons, but only two individuals banded, five years apart. Marsh Wrens were missed entirely only in 2008 and 2014. In both spring and fall, observations have been scattered over multiple weeks, without any clear pattern of occurrence.

**CARW: Carolina Wren / Troglodyte de Caroline (*Thryothorus ludovicianus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak  | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|-------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |       |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |       |       |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |       |       |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |       |        |      |        |      |       |
| 2009     | Jun 2  | Jun 2  | Jun 2  | 1    | 1 (1%) | 1    | 1     |       |       |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |       |        |      |        |      |       |
| 2011     | May 29 | May 29 | May 29 | 1    | 1 (1%) | 1    | 1     |       |       |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |       |       |        |      |        |      |       |
| 2013     | May 4  | May 4  | May 4  | 1    | 1 (1%) | 1    | 1     | Aug 3 | Aug 3 | Oct 21 | 80   | 2 (2%) | 1    | 2     |
| 2014     |        |        |        |      |        |      |       |       |       |        |      |        |      |       |
| Mean     | May 22 | May 22 | May 22 | 1    | 1 (1%) | 1    | 0.3   | Aug 3 | Aug 3 | Oct 21 | 80   | 2 (2%) | 1    | 0.2   |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7 | S8 | S9   | S10  | Spring |
|----------|------|-----|-----|-----|-----|--------|----|----|----|----|----|------|----|----|------|------|--------|
| 2005     |      |     |     |     |     |        |    |    |    |    |    |      |    |    |      |      |        |
| 2006     |      |     |     |     |     |        |    |    |    |    |    |      |    |    |      |      |        |
| 2007     |      |     |     |     |     |        |    |    |    |    |    |      |    |    |      |      |        |
| 2008     |      |     |     |     |     |        |    |    |    |    |    |      |    |    |      |      |        |
| 2009     |      |     |     |     |     |        |    |    |    |    |    |      |    |    |      | 0.1  | 0.01   |
| 2010     | 0.05 |     |     |     |     | 0.02   |    |    |    |    |    |      |    |    |      |      |        |
| 2011     |      |     |     |     |     |        |    |    |    |    |    |      |    |    | 0.1  |      | 0.01   |
| 2012     |      |     |     |     |     |        |    |    |    |    |    |      |    |    |      |      |        |
| 2013     |      |     |     |     |     |        |    |    |    |    |    | 0.1  |    |    |      |      | 0.01   |
| 2014     |      |     |     |     |     |        |    |    |    |    |    |      |    |    |      |      |        |
| Mean     | 0.01 |     |     |     |     | <0.01  |    |    |    |    |    | 0.01 |    |    | 0.01 | 0.01 | <0.01  |

| Observed | Jun | Jul | Summer | F1   | F2  | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12  | F13 | Fall  |
|----------|-----|-----|--------|------|-----|----|----|----|----|----|----|----|-----|-----|------|-----|-------|
| 2005     |     |     |        |      |     |    |    |    |    |    |    |    |     |     |      |     |       |
| 2006     |     |     |        |      |     |    |    |    |    |    |    |    |     |     |      |     |       |
| 2007     |     |     |        |      |     |    |    |    |    |    |    |    |     |     |      |     |       |
| 2008     |     |     |        |      |     |    |    |    |    |    |    |    |     |     |      |     |       |
| 2009     |     |     |        |      |     |    |    |    |    |    |    |    |     |     |      |     |       |
| 2010     |     |     |        |      |     |    |    |    |    |    |    |    |     |     |      |     |       |
| 2011     |     |     |        |      |     |    |    |    |    |    |    |    |     |     |      |     |       |
| 2012     |     |     |        |      |     |    |    |    |    |    |    |    |     |     |      |     |       |
| 2013     |     |     |        |      | 0.1 |    |    |    |    |    |    |    |     |     | 0.1  |     | 0.02  |
| 2014     |     |     |        |      |     |    |    |    |    |    |    |    |     |     |      |     |       |
| Mean     |     |     |        | 0.01 |     |    |    |    |    |    |    |    |     |     | 0.01 |     | <0.01 |

| Banded | Jun | Jul | Summer | F1  | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2013   |     |     |        | 1   |    |    |    |    |    |    |    |    |     |     |     |     | 1    |
| 2014   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        | 0.1 |    |    |    |    |    |    |    |    |     |     |     |     | 0.1  |

Carolina Wren has only been observed at MBO six times – three in spring, two in fall, and one in winter. All sightings have been since 2009, and reflect the northward expansion of this species into southern Quebec. Only one has been banded, a juvenile on the third day of the fall season in 2013.

**BGGN: Blue-gray Gnatcatcher / Gobemoucheron gris-bleu (*Poliophtila caerulea*)**

| Observed | First | Peak  | Last  | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|-------|-------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2008     | Jun 1 | Jun 1 | Jun 1 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2009     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |       |       |      |        |      |       | Aug 18 | Aug 18 | Aug 18 | 1    | 1 (1%) | 1    | 1     |
| 2013     |       |       |       |      |        |      |       | Sep 18 | Sep 18 | Sep 18 | 1    | 1 (1%) | 1    | 1     |
| 2014     |       |       |       |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | Jun 1 | Jun 1 | Jun 1 | 1    | 1 (1%) | 1    | 0.1   | Sep 2  | Sep 2  | Sep 2  | 1    | 1 (1%) | 1    | 0.2   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    | 0.1  | 0.01   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |      |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    | 0.01 | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2 | F3   | F4 | F5 | F6 | F7   | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|------|----|----|----|------|----|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |    |      |    |    |    |      |    |    |     |     |     |     |       |
| 2006     |     |     |        |    |    |      |    |    |    |      |    |    |     |     |     |     |       |
| 2007     |     |     |        |    |    |      |    |    |    |      |    |    |     |     |     |     |       |
| 2008     |     |     |        |    |    |      |    |    |    |      |    |    |     |     |     |     |       |
| 2009     |     |     |        |    |    |      |    |    |    |      |    |    |     |     |     |     |       |
| 2010     |     |     |        |    |    |      |    |    |    |      |    |    |     |     |     |     |       |
| 2011     |     |     |        |    |    |      |    |    |    |      |    |    |     |     |     |     |       |
| 2012     |     |     |        |    |    | 0.1  |    |    |    |      |    |    |     |     |     |     | 0.01  |
| 2013     |     |     |        |    |    |      |    |    |    | 0.1  |    |    |     |     |     |     | 0.01  |
| 2014     |     |     |        |    |    |      |    |    |    |      |    |    |     |     |     |     |       |
| Mean     |     |     |        |    |    | 0.01 |    |    |    | 0.01 |    |    |     |     |     |     | <0.01 |

Blue-gray Gnatcatcher is a very rare species at MBO, with only one spring observation in 2008, and two in fall, in 2012 and 2013.

**GCKI: Golden-crowned Kinglet / Roitelet à couronne dorée (*Regulus satrapa*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 7  | Apr 7  | Apr 27 | 21   | 11 (19%) | 30   | 60    | Sep 10 | Oct 9  | Oct 30 | 51   | 34 (39%) | 130  | 482   |
| 2006     | Mar 31 | Apr 2  | Apr 29 | 30   | 24 (35%) | 22   | 93    | Sep 20 | Oct 10 | Oct 30 | 41   | 35 (38%) | 35   | 362   |
| 2007     | Apr 3  | Apr 6  | Apr 27 | 25   | 11 (16%) | 11   | 36    | Sep 25 | Oct 6  | Oct 30 | 36   | 26 (29%) | 30   | 127   |
| 2008     | Apr 8  | Apr 9  | Apr 27 | 20   | 10 (14%) | 4    | 17    | Aug 1  | Sep 23 | Oct 30 | 91   | 22 (24%) | 12   | 65    |
| 2009     | Apr 2  | Apr 9  | May 3  | 32   | 14 (20%) | 8    | 42    | Aug 19 | Oct 23 | Oct 30 | 73   | 27 (30%) | 13   | 94    |
| 2010     | Apr 6  | Apr 17 | May 1  | 26   | 5 (7%)   | 3    | 9     | Sep 15 | Oct 6  | Oct 27 | 43   | 38 (42%) | 85   | 353   |
| 2011     | Apr 7  | Apr 16 | May 13 | 37   | 7 (10%)  | 3    | 10    | Sep 17 | Oct 4  | Oct 28 | 42   | 30 (33%) | 25   | 176   |
| 2012     | Apr 5  | Apr 17 | May 17 | 43   | 7 (10%)  | 3    | 13    | Sep 5  | Oct 18 | Oct 30 | 56   | 49 (54%) | 35   | 389   |
| 2013     | Apr 9  | Apr 18 | May 10 | 32   | 13 (19%) | 11   | 55    | Aug 16 | Oct 5  | Oct 30 | 76   | 44 (48%) | 42   | 444   |
| 2014     | Apr 2  | Apr 18 | May 2  | 31   | 15 (22%) | 26   | 115   | Aug 24 | Sep 24 | Oct 30 | 68   | 36 (40%) | 22   | 260   |
| Mean     | Apr 4  | Apr 11 | May 3  | 30   | 12 (17%) | 12   | 45    | Sep 2  | Oct 6  | Oct 29 | 58   | 34 (38%) | 43   | 275   |

| Observed | Nov | Dec | Jan  | Feb | Mar  | Winter | S1  | S2  | S3  | S4   | S5  | S6   | S7   | S8   | S9 | S10 | Spring |
|----------|-----|-----|------|-----|------|--------|-----|-----|-----|------|-----|------|------|------|----|-----|--------|
| 2005     | 0.5 |     |      |     |      | 0.1    |     | 5.8 | 2.0 | 1.2  | 0.6 |      |      |      |    |     | 1.0    |
| 2006     | 0.1 |     |      |     |      | 0.03   | 4.1 | 4.0 | 3.4 | 1.0  | 1.3 |      |      |      |    |     | 1.3    |
| 2007     | 1.0 |     |      |     |      | 0.4    | 0.1 | 2.6 | 1.4 | 0.4  | 0.6 |      |      |      |    |     | 0.5    |
| 2008     |     |     |      |     |      |        |     | 1.0 | 0.7 | 0.4  | 0.3 |      |      |      |    |     | 0.2    |
| 2009     | 0.4 |     |      |     |      | 0.08   | 0.6 | 2.8 | 0.7 | 2.0  | 0.1 | 0.1  |      |      |    |     | 0.6    |
| 2010     |     |     |      |     |      |        |     | 0.1 | 0.4 | 0.3  | 0.3 |      |      |      |    |     | 0.1    |
| 2011     |     |     | 0.08 |     |      | 0.03   |     | 0.1 | 0.6 | 0.3  | 0.1 | 0.1  | 0.1  |      |    |     | 0.1    |
| 2012     |     |     |      |     | 0.2  | 0.04   |     | 0.3 | 0.6 | 0.9  |     |      |      | 0.1  |    |     | 0.2    |
| 2013     |     |     |      |     |      |        |     | 0.6 | 1.9 | 4.6  | 0.6 | 0.1  | 0.1  |      |    |     | 0.8    |
| 2014     |     |     |      |     |      |        | 0.2 |     | 5.6 | 10.4 | 0.1 | 0.1  |      |      |    |     | 1.7    |
| Mean     | 0.2 |     | 0.01 |     | 0.01 | 0.07   | 0.6 | 1.6 | 1.7 | 2.2  | 0.4 | 0.06 | 0.03 | 0.01 |    |     | 0.7    |

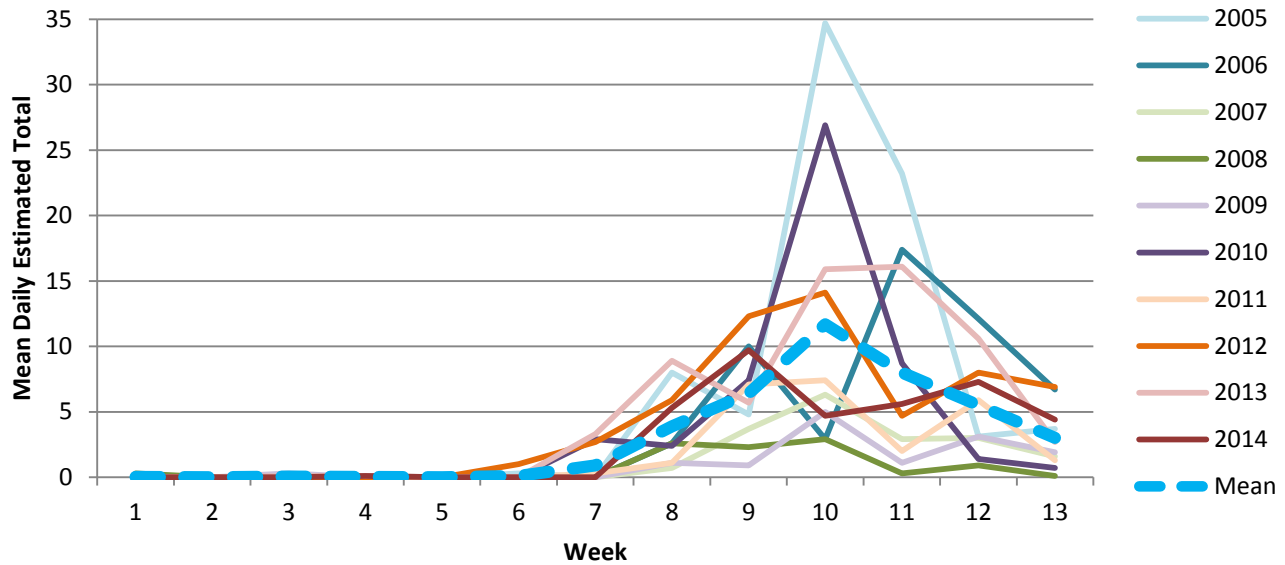
| Observed | Jun | Jul | Summer | F1   | F2 | F3   | F4   | F5 | F6  | F7  | F8  | F9   | F10  | F11  | F12  | F13 | Fall |
|----------|-----|-----|--------|------|----|------|------|----|-----|-----|-----|------|------|------|------|-----|------|
| 2005     |     |     |        |      |    |      |      |    | 0.3 |     | 8.0 | 4.8  | 34.7 | 23.2 | 3.1  | 3.7 | 5.5  |
| 2006     |     |     |        |      |    |      |      |    |     |     | 2.6 | 10.0 | 2.9  | 17.4 | 12.1 | 6.7 | 4.0  |
| 2007     |     |     |        |      |    |      |      |    |     |     | 0.7 | 3.7  | 6.3  | 2.9  | 3.0  | 1.6 | 1.4  |
| 2008     |     |     |        | 0.3  |    |      |      |    |     |     | 2.6 | 2.3  | 2.9  | 0.3  | 0.9  | 0.1 | 0.7  |
| 2009     |     |     |        |      |    | 0.3  |      |    |     |     | 1.1 | 0.9  | 5.0  | 1.1  | 3.1  | 1.9 | 1.0  |
| 2010     |     |     |        |      |    |      |      |    |     | 2.9 | 2.4 | 7.4  | 26.9 | 8.7  | 1.4  | 0.7 | 3.9  |
| 2011     |     |     |        |      |    |      |      |    |     | 0.3 | 1.1 | 7.1  | 7.4  | 2.0  | 5.9  | 1.3 | 1.9  |
| 2012     |     |     |        |      |    |      |      |    | 1.0 | 2.7 | 5.9 | 12.3 | 14.1 | 4.7  | 8.0  | 6.9 | 4.3  |
| 2013     |     |     |        |      |    | 0.1  | 0.1  |    |     | 3.3 | 8.9 | 5.7  | 15.9 | 16.1 | 10.6 | 2.7 | 4.9  |
| 2014     |     |     |        |      |    |      | 0.1  |    |     |     | 5.3 | 9.7  | 4.7  | 5.6  | 7.3  | 4.4 | 2.9  |
| Mean     |     |     |        | 0.03 |    | 0.04 | 0.03 |    | 0.1 | 0.9 | 3.9 | 6.4  | 11.7 | 8.0  | 5.5  | 3.0 | 3.0  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3  | S4  | S5  | S6  | S7 | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|-----|-----|-----|-----|-----|----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |     |     | 1   |     |     |    |     |    |     | 1      |
| 2006   |     |     |     |     |     |        |    | 2   | 5   |     |     |     |    |     |    |     | 7      |
| 2007   |     |     |     |     |     |        |    |     |     | 2   |     |     |    |     |    |     | 2      |
| 2008   |     |     |     |     |     |        |    |     |     | 1   |     |     |    |     |    |     | 1      |
| 2009   |     |     |     |     |     |        |    |     |     | 2   | 1   |     |    |     |    |     | 3      |
| 2010   |     |     |     |     |     |        |    |     |     |     |     |     |    |     |    |     |        |
| 2011   |     |     |     |     |     |        |    |     |     | 1   |     | 1   |    |     |    |     | 2      |
| 2012   |     |     |     |     |     |        |    |     |     | 1   |     |     |    | 1   |    |     | 2      |
| 2013   |     |     |     |     |     |        |    |     |     | 1   | 1   |     |    |     |    |     | 2      |
| 2014   |     |     |     |     |     |        |    |     |     | 13  |     |     |    |     |    |     | 13     |
| Mean   |     |     |     |     |     |        |    | 1.0 | 2.5 | 2.2 | 0.2 | 0.1 |    | 0.1 |    |     | 3.3    |

| Banded | Jun | Jul | Summer | F1  | F2 | F3 | F4  | F5 | F6  | F7  | F8  | F9   | F10  | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|----|----|-----|----|-----|-----|-----|------|------|-----|-----|-----|------|
| 2005   |     |     |        |     |    |    |     |    | 2   |     | 12  | 11   | 14   | 7   | 2   | 6   | 54   |
| 2006   |     |     |        |     |    |    |     |    |     |     | 4   | 17   | 7    | 15  | 28  | 2   | 73   |
| 2007   |     |     |        |     |    |    |     |    |     |     | 3   | 3    | 6    | 3   | 5   | 2   | 22   |
| 2008   |     |     |        | 2   |    |    |     |    |     |     | 8   | 8    | 14   | 2   | 1   | 1   | 36   |
| 2009   |     |     |        |     |    |    |     |    |     |     | 3   | 3    | 10   |     | 6   | 3   | 25   |
| 2010   |     |     |        |     |    |    |     |    |     | 5   | 15  | 10   | 33   | 23  | 2   | 2   | 90   |
| 2011   |     |     |        |     |    |    |     |    |     | 2   | 4   | 20   | 24   | 1   | 15  | 4   | 70   |
| 2012   |     |     |        |     |    |    |     |    | 2   | 7   | 5   | 14   | 21   | 8   | 15  | 19  | 91   |
| 2013   |     |     |        |     |    |    | 1   |    |     | 7   | 14  | 9    | 25   | 30  | 12  | 3   | 101  |
| 2014   |     |     |        |     |    |    |     |    |     |     | 14  | 32   | 6    | 10  | 12  | 8   | 82   |
| Mean   |     |     |        | 0.2 |    |    | 0.1 |    | 0.4 | 2.1 | 8.2 | 12.7 | 16.0 | 9.9 | 9.8 | 5.0 | 64.4 |

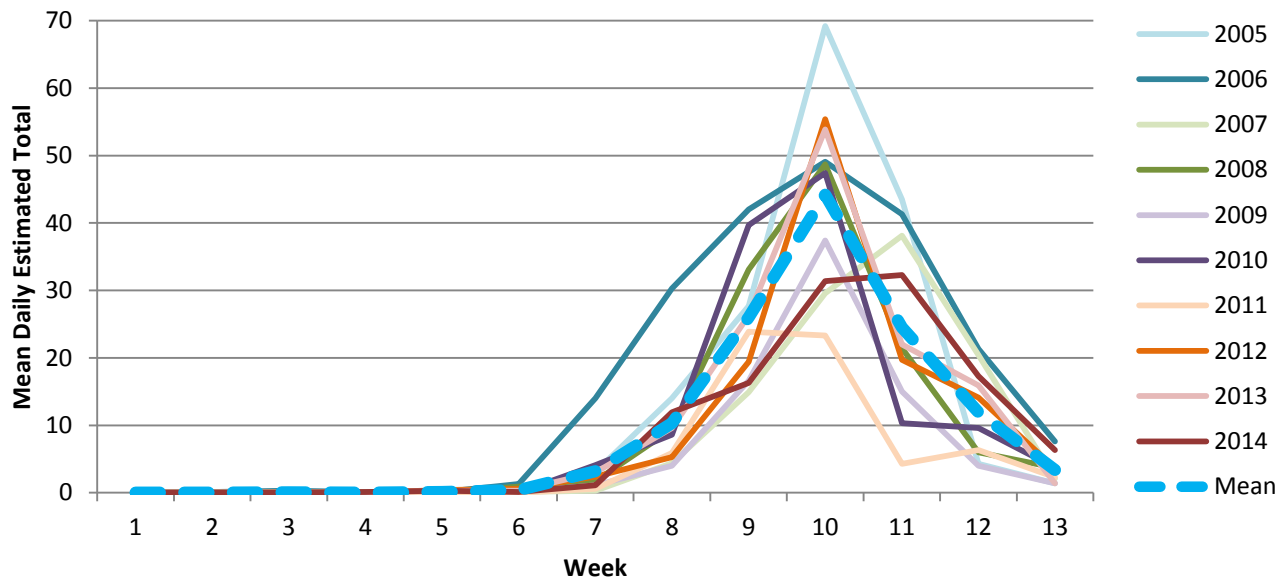
Golden-crowned Kinglet is the hardier of the two kinglets, with fall records extending into November in four years, an early arrival in late March in another year, and even a mid-winter record in January 2011. However, the peak of spring migration has steadily shifted later, from week 1 or 2 in 2005-09 to week 3 in 2010-11 and week 4 in 2012-14. Spring numbers in 2005-06 and 2013-14 were on average roughly four times higher than from 2007-2012. The fall peak has been more consistent, in week 10 except for one year in week 9 and two in week 11; there have been only occasional sightings in the first six weeks of the season. Fall counts were also low from 2007-09 and 2011, and at their highest in 2005 and 2013, preceding the best spring totals in 2006 and 2014.

**Mean daily estimated total of Golden-crowned Kinglets in fall, by week**



The pattern of fall migration is largely similar for Golden-crowned Kinglets (above) and Ruby-crowned Kinglets (below). The biggest difference is with respect to abundance, with the overall peak more than three times higher for Ruby-crowned Kinglet. The peak of migration is also sharper for Ruby-crowned Kinglet, with the number of individuals observed in week 10 often far greater than the preceding or subsequent week, whereas Golden-crowned Kinglet numbers in most years are similarly high for two to three weeks. Of note for Ruby-crowned Kinglet is that the year with the highest peak count was 2005, but the year with the greatest overall count was 2006, with a considerably more modest peak, but record high numbers from week 7 through 9.

**Mean daily estimated total of Ruby-crowned Kinglets in fall, by week**



**RCKI: Ruby-crowned Kinglet / Roitelet à couronne rubis (*Regulus calendula*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 17 | Apr 28 | May 21 | 35   | 30 (51%) | 10   | 105   | Aug 17 | Oct 9  | Oct 30 | 75   | 44 (50%) | 200  | 1006  |
| 2006     | Apr 12 | May 2  | May 30 | 49   | 33 (48%) | 45   | 277   | Aug 11 | Oct 4  | Oct 30 | 81   | 59 (65%) | 120  | 1453  |
| 2007     | Apr 23 | May 6  | May 21 | 29   | 25 (36%) | 30   | 266   | Sep 10 | Oct 10 | Oct 30 | 51   | 42 (46%) | 116  | 770   |
| 2008     | Apr 17 | Apr 21 | May 31 | 45   | 29 (41%) | 51   | 376   | Aug 19 | Oct 10 | Oct 30 | 73   | 49 (54%) | 70   | 876   |
| 2009     | Apr 20 | Apr 27 | May 16 | 27   | 21 (30%) | 28   | 165   | Sep 5  | Oct 8  | Oct 29 | 55   | 43 (47%) | 100  | 558   |
| 2010     | Apr 17 | May 2  | May 18 | 32   | 29 (41%) | 22   | 141   | Sep 12 | Oct 1  | Oct 30 | 49   | 48 (53%) | 89   | 864   |
| 2011     | Apr 22 | May 3  | May 26 | 35   | 25 (36%) | 78   | 298   | Sep 16 | Oct 4  | Oct 30 | 45   | 40 (44%) | 50   | 465   |
| 2012     | Apr 18 | Apr 21 | May 13 | 26   | 25 (36%) | 30   | 298   | Aug 29 | Oct 5  | Oct 30 | 63   | 54 (59%) | 97   | 847   |
| 2013     | Apr 16 | Apr 23 | May 28 | 43   | 28 (40%) | 24   | 194   | Sep 1  | Oct 3  | Oct 26 | 56   | 47 (52%) | 95   | 928   |
| 2014     | Apr 14 | Apr 22 | May 18 | 35   | 31 (46%) | 24   | 312   | Aug 24 | Oct 10 | Oct 30 | 68   | 49 (54%) | 79   | 820   |
| Mean     | Apr 17 | Apr 27 | May 22 | 36   | 28 (40%) | 34   | 243   | Aug 29 | Oct 6  | Oct 29 | 62   | 48 (52%) | 102  | 859   |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3  | S4   | S5   | S6   | S7  | S8  | S9   | S10  | Spring |
|----------|------|-----|-----|-----|-----|--------|----|----|-----|------|------|------|-----|-----|------|------|--------|
| 2005     |      |     |     |     |     |        |    |    | 0.1 | 3.2  | 4.6  | 4.0  | 2.9 | 0.7 |      |      | 1.8    |
| 2006     |      |     |     |     |     |        |    |    | 1.1 | 6.3  | 13.6 | 16.3 | 0.3 | 1.9 |      | 0.1  | 4.0    |
| 2007     | 0.4  |     |     |     |     | 0.1    |    |    |     | 3.1  | 11.6 | 17.7 | 4.1 | 1.4 |      |      | 3.8    |
| 2008     |      |     |     |     |     |        |    |    | 0.3 | 28.0 | 10.7 | 6.7  | 7.9 |     |      | 0.1  | 5.4    |
| 2009     |      |     |     |     |     |        |    |    |     | 2.1  | 17.4 | 2.0  | 1.9 | 0.1 |      |      | 2.4    |
| 2010     |      |     |     |     |     |        |    |    | 0.3 | 4.9  | 5.3  | 5.3  | 3.9 | 0.6 |      |      | 2.0    |
| 2011     | 0.1  |     |     |     |     | 0.03   |    |    |     | 0.1  | 7.9  | 27.4 | 6.4 | 0.3 | 0.4  |      | 4.3    |
| 2012     |      |     |     |     |     |        |    |    |     | 12.4 | 13.1 | 13.7 | 3.3 |     |      |      | 4.3    |
| 2013     |      |     |     |     |     |        |    |    | 0.1 | 10.7 | 10.1 | 4.9  | 0.7 | 1.0 | 0.1  |      | 2.8    |
| 2014     |      |     |     |     |     |        |    |    | 1.3 | 12.3 | 11.6 | 11.0 | 8.3 | 0.1 |      |      | 4.6    |
| Mean     | 0.07 |     |     |     |     | 0.02   |    |    | 0.3 | 8.4  | 10.6 | 10.9 | 4.0 | 0.6 | 0.06 | 0.03 | 3.6    |

| Observed | Jun | Jul | Summer | F1 | F2   | F3   | F4   | F5  | F6  | F7   | F8   | F9   | F10  | F11  | F12  | F13 | Fall |
|----------|-----|-----|--------|----|------|------|------|-----|-----|------|------|------|------|------|------|-----|------|
| 2005     |     |     |        |    |      | 0.1  |      |     | 0.4 | 3.1  | 14.0 | 27.7 | 69.2 | 43.5 | 4.3  | 1.4 | 11.4 |
| 2006     |     |     |        |    | 0.1  | 0.3  | 0.1  | 0.1 | 1.3 | 14.0 | 30.3 | 42.0 | 49.1 | 41.3 | 21.3 | 7.6 | 16.0 |
| 2007     |     |     |        |    |      |      |      |     | 0.1 | 0.3  | 4.4  | 14.9 | 29.6 | 38.1 | 20.4 | 2.1 | 8.5  |
| 2008     |     |     |        |    |      | 0.1  |      |     | 0.9 | 1.7  | 9.4  | 33.1 | 48.7 | 21.4 | 6.0  | 3.7 | 9.6  |
| 2009     |     |     |        |    |      |      |      |     | 0.1 | 1.1  | 4.0  | 16.6 | 37.4 | 15.0 | 4.0  | 1.4 | 6.1  |
| 2010     |     |     |        |    |      |      |      |     |     | 4.1  | 8.6  | 39.7 | 47.4 | 10.3 | 9.6  | 3.7 | 9.5  |
| 2011     |     |     |        |    |      |      |      |     |     | 0.6  | 5.9  | 23.9 | 23.3 | 4.3  | 6.3  | 2.3 | 5.1  |
| 2012     |     |     |        |    |      |      |      | 0.4 | 0.6 | 2.4  | 5.3  | 19.4 | 55.4 | 19.7 | 14.1 | 3.6 | 9.3  |
| 2013     |     |     |        |    |      |      |      | 0.3 | 0.3 | 3.0  | 9.6  | 26.3 | 53.9 | 22.0 | 15.9 | 1.4 | 10.2 |
| 2014     |     |     |        |    |      |      | 0.1  | 0.3 | 0.1 | 1.1  | 11.9 | 16.3 | 31.4 | 32.3 | 17.3 | 6.3 | 9.0  |
| Mean     |     |     |        |    | 0.01 | 0.06 | 0.03 | 0.1 | 0.4 | 3.2  | 10.3 | 26.0 | 44.2 | 24.5 | 11.9 | 3.4 | 9.5  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3  | S4   | S5   | S6   | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|-----|------|------|------|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |     | 6    | 8    |      | 2   | 4   |     |     | 20     |
| 2006   |     |     |     |     |     |        |    |    | 4   | 15   | 3    | 32   | 1   | 3   |     |     | 58     |
| 2007   |     |     |     |     |     |        |    |    |     | 6    |      | 31   | 10  | 5   |     |     | 52     |
| 2008   |     |     |     |     |     |        |    |    |     | 56   | 6    | 10   | 20  |     |     |     | 92     |
| 2009   |     |     |     |     |     |        |    |    |     | 5    | 53   | 7    | 7   | 1   |     |     | 73     |
| 2010   |     |     |     |     |     |        |    |    |     | 6    | 8    | 14   | 6   | 2   |     |     | 36     |
| 2011   | 1   |     |     |     |     | 1      |    |    |     | 1    | 6    | 30   | 5   |     | 1   |     | 43     |
| 2012   |     |     |     |     |     |        |    |    |     | 20   | 4    | 20   | 10  |     |     |     | 54     |
| 2013   |     |     |     |     |     |        |    |    |     | 13   | 10   | 12   | 2   | 2   |     |     | 39     |
| 2014   |     |     |     |     |     |        |    |    |     | 28   | 5    | 14   | 24  |     |     |     | 71     |
| Mean   | 0.1 |     |     |     |     | 0.1    |    |    | 2.0 | 15.6 | 10.3 | 17.0 | 8.7 | 1.7 | 0.1 |     | 53.8   |

| Banded | Jun | Jul | Summer | F1 | F2  | F3 | F4 | F5  | F6  | F7  | F8   | F9   | F10   | F11  | F12  | F13 | Fall  |
|--------|-----|-----|--------|----|-----|----|----|-----|-----|-----|------|------|-------|------|------|-----|-------|
| 2005   |     |     |        |    |     |    |    |     |     | 12  | 46   | 89   | 66    | 26   | 4    | 2   | 245   |
| 2006   |     |     |        |    | 1   |    |    |     | 2   | 19  | 42   | 114  | 115   | 71   | 66   | 14  | 444   |
| 2007   |     |     |        |    |     |    |    |     | 1   |     | 13   | 45   | 98    | 145  | 73   | 1   | 376   |
| 2008   |     |     |        |    |     |    |    |     | 2   | 8   | 24   | 111  | 126   | 34   | 5    | 9   | 319   |
| 2009   |     |     |        |    |     |    |    |     |     | 2   | 6    | 45   | 159   | 33   | 8    | 4   | 257   |
| 2010   |     |     |        |    |     |    |    |     |     | 7   | 20   | 82   | 96    | 32   | 25   | 9   | 271   |
| 2011   |     |     |        |    |     |    |    |     |     |     | 18   | 67   | 59    | 11   | 18   | 7   | 180   |
| 2012   |     |     |        |    |     |    |    | 1   | 1   | 3   | 15   | 67   | 165   | 56   | 41   | 4   | 353   |
| 2013   |     |     |        |    |     |    |    | 2   |     | 3   | 12   | 54   | 185   | 61   | 28   | 2   | 347   |
| 2014   |     |     |        |    |     |    |    | 1   |     | 2   | 21   | 45   | 81    | 95   | 65   | 17  | 327   |
| Mean   |     |     |        |    | 0.1 |    |    | 0.4 | 0.6 | 5.6 | 21.7 | 71.9 | 115.0 | 56.4 | 33.3 | 6.9 | 311.9 |

Ruby-crowned Kinglets arrive at MBO slightly later in spring than Golden-crowned Kinglets, typically just after mid-April, and peak in week 5 or 6; only four times have late individuals lingered into the final two weeks of the season. Although in most years there are a few sightings over the first six weeks of fall, migration generally begins in week 7, and most commonly peaks in week 10. Numbers have fluctuated to some degree in both spring and fall, but not to the same extent as Golden-crowned Kinglet. Even though 2006 represents the highest total banded in any fall, it is an underestimate of the total, as the unexpected influx exceeded the bands available. Winter records are limited to two late fall migrants lingering into early November.

**EABL: Eastern Bluebird / Merlebleu de l'Est (*Sialia sialis*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 19 | Apr 19 | Apr 19 | 1    | 1 (2%)   | 1    | 1     | Sep 25 | Oct 24 | Oct 24 | 30   | 4 (5%)   | 3    | 6     |
| 2006     | Apr 5  | Apr 5  | Apr 5  | 1    | 1 (1%)   | 1    | 1     | Oct 6  | Oct 21 | Oct 30 | 25   | 6 (7%)   | 6    | 16    |
| 2007     |        |        |        |      |          |      |       | Sep 18 | Sep 29 | Oct 30 | 43   | 18 (20%) | 8    | 45    |
| 2008     | Apr 24 | Apr 25 | May 22 | 29   | 13 (19%) | 3    | 24    | Oct 17 | Oct 19 | Oct 19 | 3    | 2 (2%)   | 3    | 4     |
| 2009     | Apr 8  | Apr 8  | May 9  | 32   | 3 (4%)   | 1    | 3     |        |        |        |      |          |      |       |
| 2010     | May 13 | May 13 | May 13 | 1    | 1 (1%)   | 1    | 1     | Oct 5  | Oct 10 | Oct 20 | 16   | 4 (4%)   | 7    | 18    |
| 2011     | May 8  | Jun 4  | Jun 5  | 29   | 17 (24%) | 3    | 31    | Oct 27 | Oct 27 | Oct 30 | 4    | 2 (2%)   | 1    | 2     |
| 2012     | May 12 | May 12 | May 21 | 10   | 2 (3%)   | 2    | 3     | Sep 28 | Oct 20 | Oct 23 | 26   | 11 (12%) | 11   | 33    |
| 2013     | May 7  | May 7  | Jun 1  | 26   | 6 (9%)   | 3    | 12    | Aug 1  | Oct 23 | Oct 30 | 91   | 12 (13%) | 14   | 33    |
| 2014     | May 12 | May 12 | May 12 | 1    | 1 (1%)   | 1    | 1     | Sep 30 | Oct 24 | Oct 29 | 30   | 18 (20%) | 20   | 133   |
| Mean     | Apr 28 | May 1  | May 12 | 14   | 5 (7%)   | 2    | 7.7   | Sep 27 | Oct 18 | Oct 26 | 30   | 9 (9%)   | 8    | 29    |

| Observed | Nov | Dec | Jan | Feb | Mar  | Winter | S1 | S2   | S3 | S4   | S5  | S6  | S7   | S8   | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|------|--------|----|------|----|------|-----|-----|------|------|-----|-----|--------|
| 2005     | 3.5 |     |     |     |      | 1.0    |    |      |    | 0.2  |     |     |      |      |     |     | 0.02   |
| 2006     |     |     |     |     |      |        |    | 0.2  |    |      |     |     |      |      |     |     | 0.01   |
| 2007     |     |     |     |     |      |        |    |      |    |      |     |     |      |      |     |     |        |
| 2008     | 0.1 |     |     |     |      | 0.04   |    |      |    | 0.1  | 2.0 | 1.1 |      | 0.1  |     |     | 0.3    |
| 2009     |     |     |     |     | 0.2  | 0.08   |    | 0.2  |    | 0.1  |     |     | 0.1  |      |     |     | 0.04   |
| 2010     |     |     |     |     |      |        |    |      |    |      |     |     | 0.1  |      |     |     | 0.01   |
| 2011     |     |     |     |     |      |        |    |      |    |      |     | 0.1 |      | 0.4  | 1.9 | 2.0 | 0.4    |
| 2012     |     |     |     |     |      |        |    |      |    |      |     |     | 0.3  | 0.1  |     |     | 0.04   |
| 2013     | 0.4 |     |     |     |      | 0.06   |    |      |    |      |     | 0.7 |      |      | 0.6 | 0.4 | 0.2    |
| 2014     |     |     |     |     |      |        |    |      |    |      |     |     | 0.1  |      |     |     | 0.01   |
| Mean     | 0.2 |     |     |     | 0.04 | 0.05   |    | 0.03 |    | 0.04 | 0.2 | 0.2 | 0.07 | 0.07 | 0.2 | 0.3 | 0.1    |

| Observed | Jun  | Jul  | Summer | F1   | F2   | F3   | F4 | F5 | F6 | F7   | F8   | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|------|------|--------|------|------|------|----|----|----|------|------|-----|-----|-----|-----|-----|------|
| 2005     |      |      |        |      |      |      |    |    |    |      | 0.1  |     | 0.2 |     | 0.1 | 0.4 | 0.07 |
| 2006     |      |      |        |      |      |      |    |    |    |      |      |     | 0.1 |     | 1.3 | 0.9 | 0.2  |
| 2007     |      |      |        |      |      |      |    |    |    | 0.1  |      | 2.4 | 0.9 | 0.7 | 0.3 | 2.0 | 0.5  |
| 2008     |      |      |        |      |      |      |    |    |    |      |      |     |     |     | 0.6 |     | 0.04 |
| 2009     |      |      |        |      |      |      |    |    |    |      |      |     |     |     |     |     |      |
| 2010     |      |      |        |      |      |      |    |    |    |      |      |     | 0.4 | 2.0 | 0.1 |     | 0.2  |
| 2011     | 1.3  | 0.3  | 0.7    |      |      |      |    |    |    |      |      |     |     |     |     | 0.3 | 0.02 |
| 2012     |      | 0.3  | 0.1    |      |      |      |    |    |    |      |      | 0.3 | 0.4 | 0.7 | 3.3 |     | 0.4  |
| 2013     |      |      |        | 0.4  | 0.1  | 0.1  |    |    |    |      |      |     |     | 0.6 | 2.4 | 1.0 | 0.4  |
| 2014     |      |      |        |      |      |      |    |    |    |      |      | 0.7 |     | 3.9 | 6.4 | 8.0 | 1.5  |
| Mean     | 0.07 | 0.03 | 0.05   | 0.04 | 0.01 | 0.01 |    |    |    | 0.01 | 0.01 | 0.3 | 0.2 | 0.8 | 1.5 | 1.3 | 0.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |     |    |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |     |    |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |     |    |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    | 1   |    |    |    |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |     |    |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |     |    |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |     |    |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |     |    |    |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |     |    |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |     |    |    |    |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    | 0.1 |    |    |    |     | 0.1    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |     | 2   |     |     |     | 2    |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2011   |     | 4   | 4      |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| Mean   |     | 0.4 | 0.4    |    |    |    |    |    |    |    |    | 0.2 |     |     |     |     | 0.2  |

Eastern Bluebird is a fairly regular spring and migrant, missed in only one of ten years in each season. From 2005-2006 and 2008-2009, the first sighting of spring was in April, but from 2010-2014 it has been between May 7 and 13 each year. Overall there is little pattern to spring timing. Numbers were highest in 2011, due to presence of a breeding pair that stayed through summer. Except for August sightings in 2013, fall observations have been limited to the second half of the season, most notably mid-late October, with sightings carrying over into November in three years. Fall numbers have shown an increasing trend over time, yet the only bluebirds banded since 2008 were four nestlings in a nest box in July 2011.



**TOSO: Townsend's Solitaire / Solitaire de Townsend (*Myadestes townsendi*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |      |      |      |        |      |       | Oct 30 | Oct 30 | Oct 30 | 1    | 1 (1%) | 1    | 1     |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| Mean     |       |      |      |      |        |      |       | Oct 30 | Oct 30 | Oct 30 | 1    | 1 (1%) | 1    | 0.1   |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2006     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2007     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2008     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2010     | 0.1  |     |     |     |     | 0.03   |    |    |    |    |    |    |    |    |    |     |        |
| 2011     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2012     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2013     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2014     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| Mean     | 0.02 |     |     |     |     | <0.01  |    |    |    |    |    |    |    |    |    |     |        |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13  | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|------|-------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.1  | 0.01  |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.01 | <0.01 |

One of just eight species with only a single individual observed at MBO, and the only one which was observed on more than one day. The solitaire arrived at MBO on the final day of the fall season in 2009, and lingered into early November.

**VEER: Veery / Grive fauve (*Catharus fuscescens*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 14 | Jun 1  | Jun 3  | 21   | 11 (19%) | 4    | 16    | Aug 3 | Aug 6  | Sep 23 | 52   | 20 (23%) | 2    | 27    |
| 2006     | May 18 | May 29 | Jun 5  | 19   | 15 (22%) | 4    | 34    | Aug 1 | Aug 27 | Sep 18 | 49   | 35 (38%) | 5    | 69    |
| 2007     | May 18 | May 27 | Jun 1  | 15   | 9 (13%)  | 4    | 18    | Aug 3 | Aug 8  | Sep 7  | 36   | 15 (16%) | 3    | 23    |
| 2008     | May 11 | May 30 | Jun 4  | 25   | 12 (17%) | 2    | 13    | Aug 1 | Aug 1  | Sep 22 | 53   | 27 (30%) | 3    | 38    |
| 2009     | May 8  | May 12 | May 31 | 24   | 17 (25%) | 4    | 31    | Aug 1 | Aug 1  | Oct 9  | 70   | 22 (24%) | 6    | 37    |
| 2010     | May 7  | May 18 | Jun 5  | 30   | 23 (33%) | 3    | 40    | Aug 2 | Aug 12 | Sep 11 | 41   | 18 (20%) | 4    | 25    |
| 2011     | May 9  | May 12 | May 22 | 14   | 7 (10%)  | 2    | 10    | Aug 3 | Aug 20 | Oct 5  | 64   | 20 (22%) | 2    | 21    |
| 2012     | May 9  | May 21 | May 31 | 23   | 9 (13%)  | 2    | 10    | Aug 1 | Aug 12 | Oct 20 | 81   | 36 (40%) | 5    | 67    |
| 2013     | May 11 | May 25 | May 27 | 17   | 5 (7%)   | 2    | 6     | Aug 1 | Aug 24 | Sep 21 | 52   | 29 (32%) | 5    | 55    |
| 2014     | May 10 | May 24 | Jun 2  | 24   | 18 (26%) | 5    | 35    | Aug 3 | Aug 16 | Sep 18 | 47   | 25 (27%) | 4    | 44    |
| Mean     | May 11 | May 23 | May 31 | 21   | 13 (18%) | 3    | 21    | Aug 1 | Aug 12 | Sep 24 | 54   | 25 (27%) | 4    | 41    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 0.3 | 0.4 | 2.0 | 0.3    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.3 | 2.1 | 2.4 | 0.5    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.1 | 1.7 | 0.7 | 0.3    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      | 0.3 | 0.4 | 0.4 | 0.7 | 0.2    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 1.3 | 1.9 | 0.9 | 0.3 | 0.4    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.3 | 1.6 | 2.3 | 1.4 | 0.6    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      | 0.9 | 0.6 |     |     | 0.1    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 0.9 | 0.3 | 0.1 | 0.1    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 |     | 0.7 |     | 0.09   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.6 | 1.3 | 2.6 | 0.7 | 0.5    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.03 | 0.4 | 0.7 | 1.1 | 0.8 | 0.3    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9   | F10  | F11 | F12  | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|------|-----|------|
| 2005     | 1.1 | 1.2 | 1.1    | 0.6 | 0.3 | 0.6 | 1.0 | 0.6 | 0.1 | 0.4 | 0.3 |      |      |     |      |     | 0.3  |
| 2006     | 1.9 | 2.9 | 2.5    | 2.1 | 1.4 | 1.4 | 2.7 | 1.4 | 0.6 | 0.1 |     |      |      |     |      |     | 0.8  |
| 2007     | 0.6 | 1.5 | 1.0    | 0.9 | 0.7 | 0.6 | 0.4 | 0.6 | 0.1 |     |     |      |      |     |      |     | 0.3  |
| 2008     | 0.8 | 0.6 | 0.7    | 1.3 | 1.1 | 0.9 | 0.7 | 0.4 | 0.4 | 0.3 | 0.3 |      |      |     |      |     | 0.4  |
| 2009     | 0.7 | 1.3 | 1.0    | 2.4 | 0.6 | 0.7 | 1.0 | 0.4 |     |     |     |      | 0.1  |     |      |     | 0.4  |
| 2010     | 1.3 | 0.7 | 0.9    | 0.7 | 1.0 | 0.1 | 0.1 | 0.6 | 1.0 |     |     |      |      |     |      |     | 0.3  |
| 2011     | 0.7 | 1.0 | 0.9    | 0.4 | 0.6 | 0.6 | 0.4 | 0.3 | 0.3 |     | 0.1 | 0.1  | 0.1  |     |      |     | 0.2  |
| 2012     | 0.3 | 1.0 | 0.6    | 1.7 | 2.7 | 1.7 | 1.9 | 0.3 | 0.3 | 0.4 | 0.1 | 0.3  |      |     | 0.1  |     | 0.7  |
| 2013     | 0.3 | 2.8 | 1.7    | 2.0 | 1.0 | 1.4 | 1.6 | 1.0 |     | 0.6 | 0.3 |      |      |     |      |     | 0.6  |
| 2014     | 1.0 | 2.3 | 1.7    | 0.6 | 1.3 | 1.3 | 0.6 | 1.6 | 0.9 | 0.1 |     |      |      |     |      |     | 0.5  |
| Mean     | 1.0 | 1.6 | 1.3    | 1.3 | 1.1 | 0.9 | 1.0 | 0.7 | 0.4 | 0.2 | 0.1 | 0.04 | 0.03 |     | 0.01 |     | 0.4  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |     |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     | 2   | 2   |     | 4      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     | 3   |     |     | 3      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |     | 1   | 2      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |     |     | 2      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |     | 3   | 2   |     | 5      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.3 | 0.8 | 0.8 | 0.1 | 2.0    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     | 4   | 4      | 1   | 1   | 2   | 3   | 3   |     | 2   |     |     |     |     |     |     | 12   |
| 2006   |     |     |        | 2   | 2   | 1   | 1   |     |     |     |     |     |     |     |     |     | 6    |
| 2007   |     |     |        | 1   |     |     | 2   |     |     |     |     |     |     |     |     |     | 3    |
| 2008   |     |     |        | 3   | 3   | 1   | 5   | 1   | 2   | 2   |     |     |     |     |     |     | 17   |
| 2009   |     | 4   | 4      | 8   | 1   | 3   | 5   | 2   |     |     |     |     |     |     |     |     | 19   |
| 2010   | 3   | 1   | 4      | 1   | 5   |     | 1   | 2   | 4   |     |     |     |     |     |     |     | 13   |
| 2011   |     |     |        | 2   | 1   | 1   | 1   | 2   | 1   |     | 1   |     |     |     |     |     | 9    |
| 2012   | 1   | 1   | 2      | 3   | 7   | 4   | 5   | 1   | 1   | 1   |     | 1   |     |     |     |     | 23   |
| 2013   |     | 8   | 8      | 5   | 1   | 2   | 3   | 3   |     | 2   | 1   |     |     |     |     |     | 17   |
| 2014   |     | 4   | 4      | 1   | 5   | 4   | 4   | 7   | 3   | 1   |     |     |     |     |     |     | 25   |
| Mean   | 0.7 | 2.4 | 2.9    | 2.7 | 2.6 | 1.8 | 3.0 | 2.1 | 1.1 | 0.8 | 0.2 | 0.1 |     |     |     |     | 14.4 |

Veery is a regular breeder at MBO, present annually from around mid-May to early September, and exceptionally into October in three years. Spring arrival has become somewhat earlier over time, ranging from May 14 to 18 over the first three years to May 7 to 11 since 2008; the spring peak has also advanced from week 9 or 10 in the first four years to week 7 to 9 since 2009. Summer numbers have not shown a trend over time. Fall numbers generally peak at the start of the season and steadily decline, although in some years a small wave of migrants in late August is apparent. Mean daily counts in fall have not shown a clear pattern over time, although the number banded has been increasing.

**GCTH: Gray-cheeked Thrush / Grive à joues grises (*Catharus minimus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 30 | May 30 | May 30 | 1    | 1 (2%) | 1    | 1     | Sep 16 | Sep 21 | Oct 3  | 18   | 10 (11%) | 3    | 18    |
| 2006     | May 28 | May 28 | May 28 | 1    | 1 (1%) | 1    | 1     | Sep 18 | Sep 25 | Sep 30 | 13   | 4 (4%)   | 2    | 5     |
| 2007     |        |        |        |      |        |      |       | Sep 23 | Sep 24 | Oct 6  | 14   | 7 (8%)   | 2    | 8     |
| 2008     |        |        |        |      |        |      |       | Sep 30 | Sep 30 | Sep 30 | 1    | 1 (1%)   | 1    | 1     |
| 2009     | May 18 | May 18 | May 24 | 7    | 2 (3%) | 1    | 2     | Sep 20 | Sep 21 | Oct 2  | 13   | 5 (5%)   | 2    | 6     |
| 2010     | May 22 | May 22 | May 22 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |          |      |       |
| 2011     |        |        |        |      |        |      |       | Sep 21 | Sep 21 | Sep 27 | 7    | 3 (3%)   | 1    | 3     |
| 2012     | May 29 | May 29 | May 29 | 1    | 1 (1%) | 1    | 1     | Sep 14 | Sep 19 | Oct 5  | 22   | 15 (16%) | 3    | 23    |
| 2013     | May 27 | May 27 | May 27 | 1    | 1 (1%) | 1    | 1     | Sep 8  | Sep 8  | Oct 10 | 33   | 4 (4%)   | 1    | 4     |
| 2014     |        |        |        |      |        |      |       | Sep 16 | Sep 16 | Sep 29 | 14   | 3 (3%)   | 2    | 4     |
| Mean     | May 25 | May 25 | May 26 | 2    | 1 (2%) | 1    | 0.7   | Sep 18 | Sep 20 | Oct 2  | 15   | 6 (6%)   | 2    | 7.2   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8   | S9   | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|------|------|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      | 0.2  | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.1  |      | 0.01   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |      |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |      |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1  | 0.1  |      | 0.03   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1  |      |      | 0.01   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |      |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.1  |      | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |      | 0.1  |      | 0.01   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |      |      |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.03 | 0.06 | 0.01 | 0.01   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6   | F7   | F8  | F9  | F10 | F11  | F12 | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|------|------|-----|-----|-----|------|-----|-----|------|
| 2005     |     |     |        |    |    |    |    |    |      | 0.1  | 1.3 | 0.8 | 0.5 |      |     |     | 0.2  |
| 2006     |     |     |        |    |    |    |    |    |      | 0.1  | 0.4 | 0.1 |     |      |     |     | 0.05 |
| 2007     |     |     |        |    |    |    |    |    |      |      | 0.4 | 0.4 | 0.3 |      |     |     | 0.09 |
| 2008     |     |     |        |    |    |    |    |    |      |      |     | 0.1 |     |      |     |     | 0.01 |
| 2009     |     |     |        |    |    |    |    |    |      |      | 0.4 | 0.4 |     |      |     |     | 0.07 |
| 2010     |     |     |        |    |    |    |    |    |      |      |     |     |     |      |     |     |      |
| 2011     |     |     |        |    |    |    |    |    |      |      | 0.3 | 0.1 |     |      |     |     | 0.03 |
| 2012     |     |     |        |    |    |    |    |    |      | 0.3  | 1.9 | 0.9 | 0.3 |      |     |     | 0.3  |
| 2013     |     |     |        |    |    |    |    |    | 0.1  |      |     | 0.3 |     | 0.1  |     |     | 0.04 |
| 2014     |     |     |        |    |    |    |    |    |      | 0.3  |     | 0.3 |     |      |     |     | 0.04 |
| Mean     |     |     |        |    |    |    |    |    | 0.01 | 0.09 | 0.5 | 0.3 | 0.1 | 0.01 |     |     | 0.08 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     | 1   | 1      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   |     | 1      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |     |     | 1      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   |     | 1      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1 | 0.4 | 0.1 | 0.6    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |     | 1   | 6   | 4   |     |     |     |     | 11   |
| 2006   |     |     |        |    |    |    |    |    |     | 1   | 1   | 1   |     |     |     |     | 3    |
| 2007   |     |     |        |    |    |    |    |    |     |     | 3   | 1   | 2   |     |     |     | 6    |
| 2008   |     |     |        |    |    |    |    |    |     |     |     | 1   |     |     |     |     | 1    |
| 2009   |     |     |        |    |    |    |    |    |     |     | 3   | 3   |     |     |     |     | 6    |
| 2010   |     |     |        |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |     |     | 2   | 1   |     |     |     |     | 3    |
| 2012   |     |     |        |    |    |    |    |    |     | 2   | 10  | 4   | 1   |     |     |     | 17   |
| 2013   |     |     |        |    |    |    |    |    | 1   |     |     | 2   |     | 1   |     |     | 4    |
| 2014   |     |     |        |    |    |    |    |    |     | 2   |     | 2   |     |     |     |     | 4    |
| Mean   |     |     |        |    |    |    |    |    | 0.1 | 0.6 | 2.5 | 1.9 | 0.3 | 0.1 |     |     | 5.5  |

Gray-cheeked Thrush is the least common of the four annually occurring *Catharus* thrushes at MBO. It is particularly scarce in spring, with only eight records over seven years, 75% of them involving birds that were banded. All spring records have been within a 13-day span between May 18 and 30. Except for record early and late sightings in 2013, all fall observations have all been in a narrow time window, a 23-day span from September 14 to October 6. Fall numbers have been consistently low, except for 2005 and 2012 when they were more than double the long-term average; in both those years there was a distinct peak in week 8.

**BITH: Bicknell's Thrush / Grive de Bicknell (*Catharus bicknelli*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | May 27 | May 27 | May 27 | 1    | 1 (2%) | 1    | 1     |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       | Oct 6  | Oct 6  | Oct 6  | 1    | 1 (1%) | 1    | 1     |
| 2009     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |        |      |       | Sep 26 | Sep 26 | Sep 26 | 1    | 1 (1%) | 1    | 1     |
| 2012     |        |        |        |      |        |      |       | Sep 29 | Sep 29 | Oct 2  | 4    | 2 (2%) | 1    | 2     |
| 2013     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | May 27 | May 27 | May 27 | 1    | 1 (2%) | 1    | 0.1   | Sep 30 | Sep 30 | Oct 1  | 2    | 1 (1%) | 1    | 0.4   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 0.1  |     | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |    |      |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 0.01 |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9   | F10  | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|------|------|-----|-----|-----|-------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |     |     |       |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |     |     |       |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |     |     |       |
| 2008     |     |     |        |    |    |    |    |    |    |    |    | 0.1  |      |     |     |     | 0.01  |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |     |     |       |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |     |     |       |
| 2011     |     |     |        |    |    |    |    |    |    |    |    | 0.1  |      |     |     |     | 0.01  |
| 2012     |     |     |        |    |    |    |    |    |    |    |    | 0.3  |      |     |     |     | 0.02  |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |     |     |       |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |     |     |       |
| Mean     |     |     |        |    |    |    |    |    |    |    |    | 0.04 | 0.01 |     |     |     | <0.01 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 1   |     | 1      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |     |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    |    | 0.1 |     | 0.1    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |    |    |    | 1   |     |     |     |     | 1    |
| 2012   |     |     |        |    |    |    |    |    |    |    |    | 2   |     |     |     |     | 2    |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| Mean   |     |     |        |    |    |    |    |    |    |    |    | 0.3 | 0.1 |     |     |     | 0.4  |

Bicknell's Thrush is the rarest of the five *Catharus* thrushes at MBO, with just one spring and four fall observations, all involving birds banded. All four fall sightings have been within an 11-day period from September 26 to October 6.

**SWTH: Swainson's Thrush / Grive à dos olive (*Catharus ustulatus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 30 | May 30 | May 30 | 1    | 1 (2%) | 1    | 1     | Aug 19 | Sep 18 | Oct 9  | 52   | 23 (26%) | 7    | 45    |
| 2006     | May 19 | May 19 | May 25 | 7    | 3 (4%) | 1    | 3     | Sep 4  | Sep 4  | Oct 12 | 39   | 10 (11%) | 1    | 10    |
| 2007     | May 23 | May 23 | Jun 1  | 10   | 3 (4%) | 1    | 3     | Aug 15 | Sep 18 | Oct 21 | 68   | 19 (21%) | 2    | 23    |
| 2008     | May 16 | May 27 | May 28 | 13   | 3 (4%) | 3    | 5     | Aug 7  | Oct 3  | Oct 6  | 61   | 11 (12%) | 5    | 19    |
| 2009     | May 24 | May 24 | May 24 | 1    | 1 (1%) | 1    | 1     | Aug 6  | Oct 3  | Oct 12 | 68   | 13 (14%) | 2    | 16    |
| 2010     | May 23 | May 23 | May 23 | 1    | 1 (1%) | 1    | 1     | Aug 1  | Sep 16 | Oct 16 | 77   | 25 (27%) | 4    | 35    |
| 2011     | May 15 | May 15 | May 15 | 1    | 1 (1%) | 1    | 1     | Aug 2  | Sep 25 | Oct 6  | 66   | 20 (22%) | 4    | 30    |
| 2012     | May 31 | May 31 | May 31 | 1    | 1 (1%) | 1    | 1     | Aug 2  | Sep 13 | Oct 22 | 82   | 59 (65%) | 28   | 288   |
| 2013     | May 23 | May 26 | May 26 | 4    | 2 (3%) | 2    | 3     | Aug 1  | Sep 14 | Oct 10 | 71   | 33 (36%) | 11   | 82    |
| 2014     | May 11 | May 14 | Jun 1  | 22   | 5 (7%) | 3    | 9     | Aug 2  | Sep 24 | Oct 22 | 82   | 33 (36%) | 11   | 63    |
| Mean     | May 21 | May 23 | May 26 | 6    | 2 (3%) | 2    | 2.8   | Aug 9  | Sep 19 | Oct 13 | 67   | 25 (27%) | 8    | 61    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8   | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|------|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |     |      |     | 0.2  | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |     | 0.3  | 0.1 |      | 0.04   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |     |      | 0.3 | 0.1  | 0.04   |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |     | 0.1  | 0.6 |      | 0.07   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |     |      | 0.1 |      | 0.01   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |     |      | 0.1 |      | 0.01   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 |      |     |      | 0.01   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |     |      |     | 0.1  | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |     |      | 0.4 |      | 0.04   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    | 0.9 | 0.3  |     | 0.2  | 0.1    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 | 0.07 | 0.2 | 0.06 | 0.04   |

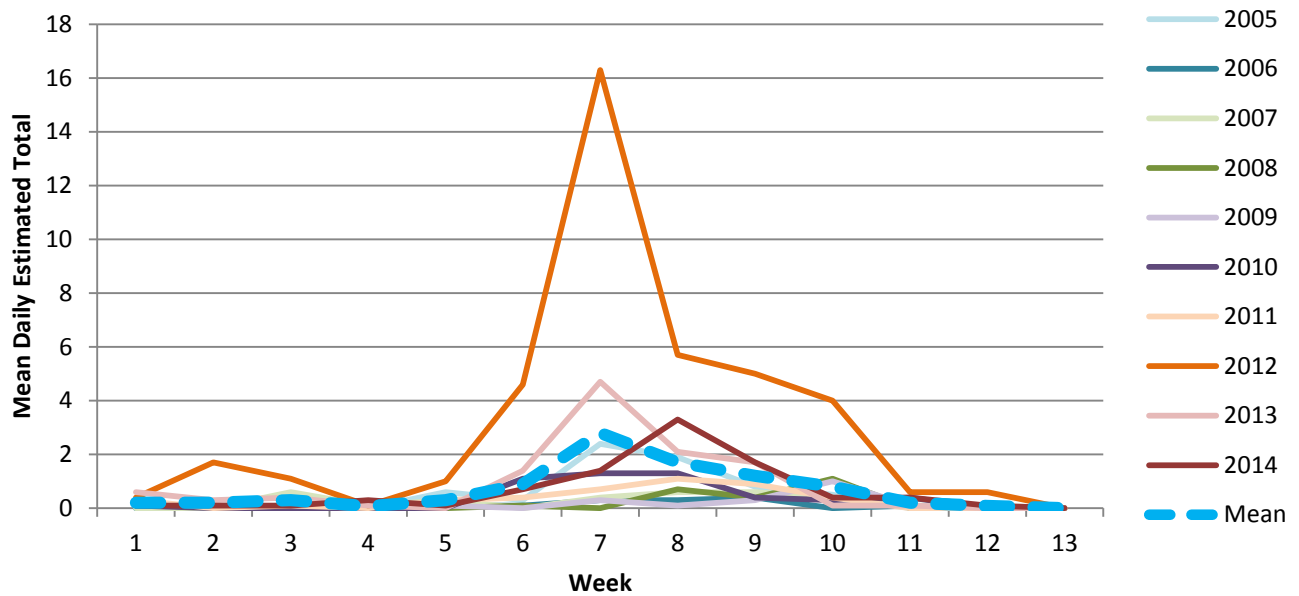
| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4   | F5  | F6  | F7   | F8  | F9  | F10 | F11 | F12  | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|------|-----|-----|------|-----|-----|-----|-----|------|-----|------|
| 2005     |     |     |        |     |     | 0.1 |      | 0.6 | 0.3 | 2.4  | 1.9 | 0.8 | 0.5 |     |      |     | 0.5  |
| 2006     |     |     |        |     |     |     |      | 0.1 | 0.1 | 0.3  | 0.3 | 0.4 |     | 0.1 |      |     | 0.1  |
| 2007     |     |     |        |     |     | 0.6 | 0.1  | 0.3 |     | 0.4  | 0.6 | 0.6 | 0.4 | 0.1 | 0.1  |     | 0.3  |
| 2008     |     |     |        | 0.1 | 0.1 |     |      |     | 0.1 |      | 0.7 | 0.4 | 1.1 |     |      |     | 0.2  |
| 2009     |     |     |        | 0.1 | 0.1 |     |      | 0.1 |     | 0.3  | 0.1 | 0.3 | 1.0 | 0.1 |      |     | 0.2  |
| 2010     |     |     |        | 0.1 |     |     |      |     | 1.1 | 1.3  | 0.4 | 0.3 | 0.4 |     |      |     | 0.4  |
| 2011     |     |     |        | 0.3 |     | 0.1 |      | 0.3 | 0.4 | 0.7  | 1.1 | 0.9 | 0.4 |     |      |     | 0.3  |
| 2012     |     |     |        | 0.4 | 1.7 | 1.1 | 0.1  | 1.0 | 4.6 | 16.3 | 5.7 | 5.0 | 4.0 | 0.6 | 0.6  |     | 3.2  |
| 2013     |     |     |        | 0.6 | 0.3 | 0.4 | 0.1  |     | 1.4 | 4.7  | 2.1 | 1.7 | 0.1 | 0.1 |      |     | 0.9  |
| 2014     |     |     |        | 0.1 | 0.1 | 0.1 | 0.3  | 0.1 | 0.7 | 1.4  | 3.3 | 1.7 | 0.4 | 0.4 | 0.1  |     | 0.7  |
| Mean     |     |     |        | 0.2 | 0.2 | 0.3 | 0.07 | 0.3 | 0.9 | 2.8  | 1.7 | 1.2 | 0.8 | 0.2 | 0.09 |     | 0.7  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     | 1   | 1      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |     |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 2   |     | 2      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     | 1   | 1      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    | 2   | 1   |     | 1   | 4      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.2 | 0.2 | 0.6 | 0.3 | 1.3    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7   | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     | 1   |     | 3   | 2   | 13   | 10  | 5   | 2   |     |     |     | 36   |
| 2006   |     |     |        |     |     |     |     | 1   |     | 2    | 2   | 2   |     |     |     |     | 7    |
| 2007   |     |     |        |     |     | 4   |     | 2   |     | 2    | 1   | 3   | 2   | 1   |     |     | 15   |
| 2008   |     |     |        | 1   | 1   |     |     |     | 1   |      | 4   | 3   | 5   |     |     |     | 15   |
| 2009   |     |     |        | 1   | 1   |     |     | 1   |     | 2    |     | 2   | 7   |     |     |     | 14   |
| 2010   |     |     |        | 1   |     |     |     |     | 7   | 9    | 7   | 1   | 1   | 1   |     |     | 27   |
| 2011   |     |     |        | 2   |     | 1   |     | 2   | 3   | 1    | 6   | 5   | 1   |     |     |     | 21   |
| 2012   |     |     |        | 3   | 9   | 5   | 1   | 7   | 24  | 66   | 20  | 21  | 17  | 1   | 2   |     | 176  |
| 2013   |     |     |        | 2   |     |     | 1   |     | 2   | 12   | 4   | 4   |     |     |     |     | 25   |
| 2014   |     |     |        | 1   |     | 1   | 2   | 1   | 5   | 6    | 16  | 9   | 2   | 2   | 1   |     | 46   |
| Mean   |     |     |        | 1.1 | 1.1 | 1.2 | 0.4 | 1.7 | 4.4 | 11.3 | 7.0 | 5.5 | 3.7 | 0.5 | 0.3 |     | 38.2 |

Swainson's Thrush is a rare spring but common fall migrant at MBO. Although observed every spring, in five years out of ten only a single individual was recorded; nearly half of spring sightings are birds banded. All spring sightings are over a period of 22 days from May 11 to June 1. Fall sightings have started within the first two days of the season for the past five years, and overall, August records (all adults arriving as molt migrants) have become more numerous over time. Migration usually ends by mid-October, but in three years there has been a late migrant on October 21 or 22. The fall peak is regularly in week 7 or 8. Fall numbers have been above average for the past three years, but significantly higher in 2012 than any other year.

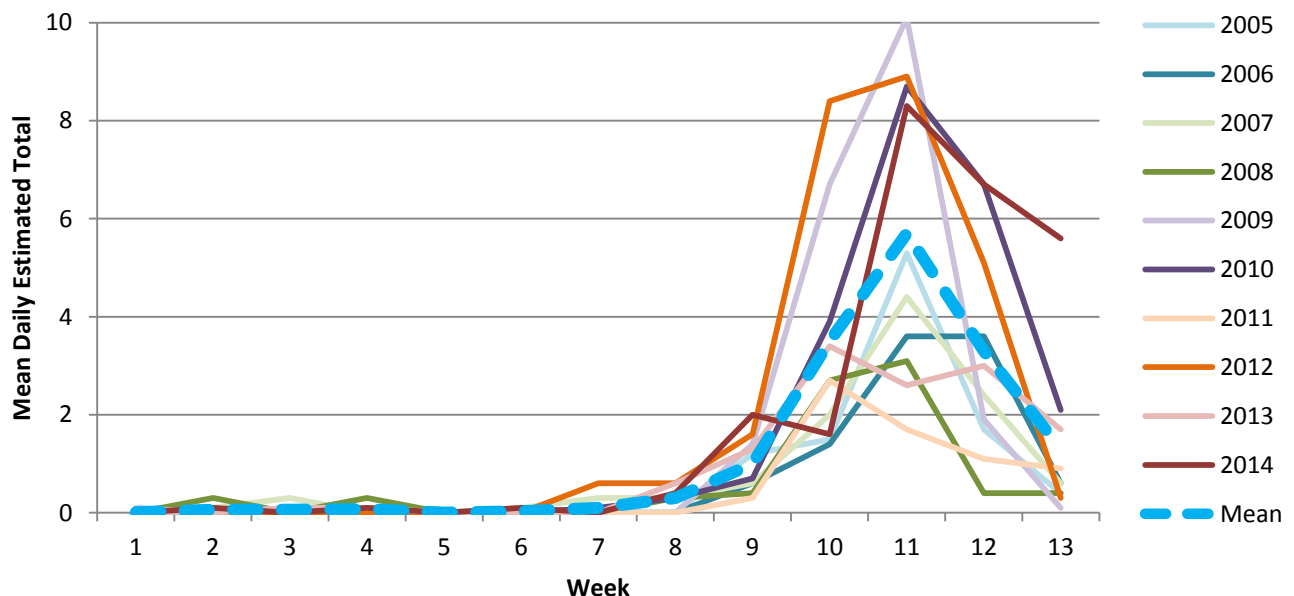
**Mean daily estimated total of Swainson's Thrushes in fall, by week**



The pattern of Swainson's Thrush fall migration (above) illustrates how exceptional 2012 was, with record counts throughout the season, often exceeding the ten-year mean by close to an order of magnitude. However, the basic pattern held true that year as well, with relatively small numbers over the first 5-6 weeks (mostly adults arriving as molt migrants), a sharp spike in week 7, and numbers tapering off over the following four weeks. Although the record high in 2012 was driven almost entirely by juveniles, there were also more adults as molt migrants that August than in any other year.

Hermit Thrush (below) is similar in that records in the early part of the season are scarce compared to the peak of migration, and primarily comprise adults stopping over at MBO as molt migrants. Otherwise though, the pattern of migration is quite different, with numbers not starting to build until week 9, well after the peak of Swainson's Thrush migration, and typically peaking around week 11. Also, while 2012 as a particularly good year for both species, Hermit Thrush was similarly high in 2009, 2010, and 2014.

**Mean daily estimated total of Hermit Thrushes in fall, by week**



# HETH: Hermit Thrush / Grive solitaire (*Catharus guttatus*)

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 27 | Apr 27 | May 6  | 10   | 2 (3%)   | 1    | 2     | Sep 25 | Oct 11 | Oct 28 | 34   | 22 (25%) | 7    | 64    |
| 2006     | Apr 28 | Apr 28 | May 17 | 20   | 2 (3%)   | 1    | 2     | Sep 30 | Oct 16 | Oct 26 | 27   | 22 (24%) | 12   | 68    |
| 2007     | Apr 29 | Apr 29 | May 24 | 26   | 5 (7%)   | 1    | 5     | Aug 9  | Oct 14 | Oct 25 | 78   | 26 (29%) | 8    | 78    |
| 2008     | Apr 18 | Apr 18 | May 14 | 27   | 3 (4%)   | 1    | 3     | Aug 9  | Oct 8  | Oct 30 | 83   | 25 (27%) | 6    | 56    |
| 2009     | Apr 27 | Apr 27 | May 18 | 22   | 2 (3%)   | 1    | 2     | Aug 7  | Oct 10 | Oct 29 | 84   | 22 (24%) | 22   | 144   |
| 2010     | May 13 | May 13 | May 13 | 1    | 1 (1%)   | 1    | 1     | Sep 16 | Oct 9  | Oct 30 | 45   | 29 (32%) | 14   | 158   |
| 2011     | Apr 27 | Apr 30 | May 30 | 34   | 4 (6%)   | 2    | 6     | Aug 26 | Oct 6  | Oct 29 | 65   | 23 (25%) | 10   | 48    |
| 2012     | Apr 18 | Apr 27 | Jun 1  | 45   | 13 (19%) | 5    | 28    | Sep 16 | Oct 7  | Oct 25 | 40   | 35 (38%) | 17   | 178   |
| 2013     | Apr 17 | Apr 17 | Apr 17 | 1    | 1 (1%)   | 1    | 1     | Aug 16 | Oct 19 | Oct 30 | 76   | 33 (36%) | 12   | 90    |
| 2014     | Apr 16 | May 20 | May 24 | 39   | 11 (16%) | 6    | 22    | Aug 14 | Oct 11 | Oct 30 | 78   | 38 (42%) | 19   | 175   |
| Mean     | Apr 25 | Apr 29 | May 16 | 22   | 4 (6%)   | 2    | 7.2   | Aug 29 | Oct 11 | Oct 28 | 61   | 28 (30%) | 13   | 106   |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3   | S4  | S5  | S6   | S7   | S8  | S9   | S10  | Spring |
|----------|------|-----|-----|-----|-----|--------|----|----|------|-----|-----|------|------|-----|------|------|--------|
| 2005     |      |     |     |     |     |        |    |    |      |     | 0.1 | 0.1  |      |     |      |      | 0.03   |
| 2006     |      |     |     |     |     |        |    |    |      |     | 0.1 |      |      | 0.1 |      |      | 0.03   |
| 2007     | 0.2  |     |     |     |     | 0.07   |    |    |      |     | 0.1 |      |      | 0.4 | 0.1  |      | 0.07   |
| 2008     |      |     |     |     |     |        |    |    |      | 0.1 |     | 0.1  | 0.1  |     |      |      | 0.04   |
| 2009     |      |     |     |     |     |        |    |    |      |     | 0.1 |      |      | 0.1 |      |      | 0.03   |
| 2010     |      |     |     |     |     |        |    |    |      |     |     |      | 0.1  |     |      |      | 0.01   |
| 2011     |      |     |     |     |     |        |    |    |      |     | 0.4 | 0.3  |      |     |      | 0.1  | 0.09   |
| 2012     |      |     |     |     |     |        |    |    |      | 0.9 | 3.0 |      |      |     |      | 0.1  | 0.4    |
| 2013     |      |     |     |     |     |        |    |    | 0.1  |     |     |      |      |     |      |      | 0.01   |
| 2014     |      |     |     |     |     |        |    |    | 0.7  | 0.7 | 0.4 | 0.1  |      | 0.9 | 0.3  |      | 0.3    |
| Mean     | 0.03 |     |     |     |     | 0.01   |    |    | 0.09 | 0.2 | 0.4 | 0.07 | 0.03 | 0.2 | 0.04 | 0.03 | 0.1    |

| Observed | Jun | Jul | Summer | F1   | F2   | F3   | F4   | F5 | F6   | F7  | F8  | F9  | F10 | F11  | F12 | F13 | Fall |
|----------|-----|-----|--------|------|------|------|------|----|------|-----|-----|-----|-----|------|-----|-----|------|
| 2005     |     |     |        |      |      |      |      |    |      |     | 0.1 | 1.2 | 1.5 | 5.3  | 1.7 | 0.4 | 0.7  |
| 2006     |     |     |        |      |      |      |      |    |      |     |     | 0.6 | 1.4 | 3.6  | 3.6 | 0.6 | 0.7  |
| 2007     |     |     |        |      | 0.1  | 0.3  |      |    | 0.1  | 0.3 | 0.3 | 0.6 | 2.0 | 4.4  | 2.4 | 0.6 | 0.9  |
| 2008     |     |     |        |      | 0.3  |      | 0.3  |    |      |     | 0.3 | 0.4 | 2.7 | 3.1  | 0.4 | 0.4 | 0.6  |
| 2009     |     |     |        | 0.1  |      | 0.1  |      |    |      |     |     | 1.4 | 6.7 | 10.1 | 1.9 | 0.1 | 1.6  |
| 2010     |     |     |        |      |      |      |      |    |      | 0.1 | 0.3 | 0.7 | 3.9 | 8.7  | 6.7 | 2.1 | 1.7  |
| 2011     |     |     |        |      |      |      | 0.1  |    |      |     |     | 0.3 | 2.7 | 1.7  | 1.1 | 0.9 | 0.5  |
| 2012     |     |     |        |      |      |      |      |    |      | 0.6 | 0.6 | 1.6 | 8.4 | 8.9  | 5.1 | 0.3 | 2.0  |
| 2013     |     |     |        |      |      | 0.1  | 0.1  |    |      |     | 0.6 | 1.3 | 3.4 | 2.6  | 3.0 | 1.7 | 1.0  |
| 2014     |     |     |        |      | 0.1  |      | 0.1  |    | 0.1  |     | 0.4 | 2.0 | 1.6 | 8.3  | 6.7 | 5.6 | 1.9  |
| Mean     |     |     |        | 0.01 | 0.06 | 0.06 | 0.07 |    | 0.03 | 0.1 | 0.3 | 1.0 | 3.5 | 5.7  | 3.3 | 1.3 | 1.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6 | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|----|----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     |     |    |    |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |     |     |    |    |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |     |     |    |    |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |     |     |    |    |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |     | 1   |    |    |    |    |     | 1      |
| 2010   |     |     |     |     |     |        |    |    |    |     |     |    |    |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |     |     |    |    |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    | 2   |     |    |    |    |    |     | 2      |
| 2013   |     |     |     |     |     |        |    |    |    |     |     |    |    |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |     | 1   |    |    |    |    |     | 1      |
| Mean   |     |     |     |     |     |        |    |    |    | 0.2 | 0.2 |    |    |    |    |     | 0.4    |

| Banded | Jun | Jul | Summer | F1 | F2  | F3  | F4  | F5 | F6  | F7  | F8  | F9  | F10  | F11  | F12 | F13 | Fall |
|--------|-----|-----|--------|----|-----|-----|-----|----|-----|-----|-----|-----|------|------|-----|-----|------|
| 2005   |     |     |        |    |     |     |     |    |     |     |     | 2   | 4    | 11   | 4   | 1   | 22   |
| 2006   |     |     |        |    |     |     |     |    |     |     |     | 4   | 10   | 14   | 8   | 1   | 37   |
| 2007   |     |     |        |    |     |     |     |    |     |     | 1   | 4   | 7    | 21   | 3   |     | 36   |
| 2008   |     |     |        |    | 2   |     | 1   |    |     |     | 2   | 1   | 12   | 13   | 1   | 2   | 34   |
| 2009   |     |     |        |    |     | 1   |     |    |     |     |     | 8   | 37   | 34   | 5   | 1   | 86   |
| 2010   |     |     |        |    |     |     |     |    |     | 1   | 2   | 2   | 18   | 43   | 21  | 3   | 90   |
| 2011   |     |     |        |    |     |     | 1   |    |     |     |     | 1   | 14   | 8    | 3   | 2   | 29   |
| 2012   |     |     |        |    |     |     |     |    |     | 2   | 1   | 7   | 39   | 32   | 14  |     | 95   |
| 2013   |     |     |        |    |     | 1   |     |    |     |     | 4   | 5   | 16   | 9    | 11  | 3   | 49   |
| 2014   |     |     |        |    |     |     | 1   |    | 1   |     | 2   | 10  | 5    | 38   | 25  | 12  | 94   |
| Mean   |     |     |        |    | 0.2 | 0.2 | 0.3 |    | 0.1 | 0.3 | 1.2 | 4.4 | 16.2 | 22.3 | 9.5 | 2.5 | 57.2 |

Hermit Thrush is the most common of the *Catharus* thrushes at MBO in both spring and fall, with a few early winter records in November 2006. Spring arrivals are earlier than for related species, beginning in April every year except 2010. The spring peak is typically in week 5, and only twice have individuals been observed as late as week 10. August observations scattered across six years were likely all molt migrants; otherwise arrivals usually begin in week 7 or 8, and build to a peak that has been remarkably consistent, in week 11 eight years out of ten, although the banding peak is often one week earlier. Spring numbers have remained low except for spikes in 2012 and 2014; fall numbers reached remarkably similar peaks in 2009, 2010, 2012, and 2014.



**WOTH: Wood Thrush / Grive des bois (*Hylocichla mustelina*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | May 11 | May 11 | May 27 | 17   | 3 (5%)   | 1    | 3     | Sep 5  | Sep 5  | Oct 13 | 39   | 3 (3%) | 1    | 3     |
| 2006     | May 8  | May 8  | May 21 | 14   | 5 (7%)   | 1    | 5     |        |        |        |      |        |      |       |
| 2007     | May 20 | May 20 | May 20 | 1    | 1 (1%)   | 1    | 1     | Aug 9  | Aug 9  | Aug 9  | 1    | 1 (1%) | 1    | 1     |
| 2008     | May 5  | Jun 5  | Jun 5  | 32   | 2 (3%)   | 3    | 4     | Oct 2  | Oct 2  | Oct 2  | 1    | 1 (1%) | 1    | 1     |
| 2009     | May 19 | May 19 | May 22 | 4    | 3 (4%)   | 1    | 3     | Aug 2  | Aug 2  | Sep 11 | 41   | 3 (3%) | 1    | 3     |
| 2010     | May 7  | May 16 | May 26 | 20   | 4 (6%)   | 2    | 5     | Sep 13 | Sep 13 | Sep 13 | 1    | 1 (1%) | 1    | 1     |
| 2011     | May 14 | May 14 | May 31 | 18   | 3 (4%)   | 1    | 3     |        |        |        |      |        |      |       |
| 2012     | May 9  | May 9  | May 15 | 7    | 3 (4%)   | 2    | 4     | Sep 25 | Sep 25 | Sep 28 | 4    | 2 (2%) | 1    | 2     |
| 2013     | May 20 | May 20 | May 23 | 4    | 3 (4%)   | 3    | 6     |        |        |        |      |        |      |       |
| 2014     | May 10 | May 20 | May 28 | 19   | 10 (15%) | 6    | 22    | Aug 1  | Sep 13 | Sep 20 | 51   | 7 (8%) | 4    | 13    |
| Mean     | May 12 | May 17 | May 24 | 14   | 4 (5%)   | 2    | 5.6   | Aug 30 | Sep 5  | Sep 17 | 20   | 3 (3%) | 1    | 2.4   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7  | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|-----|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 0.1 | 0.1 |      | 0.05   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.1 | 0.4 |     |      | 0.07   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.1 |     |      | 0.01   |
| 2008     |     |     |     |     |     |        |    |    |    |    |    | 0.1  |     |     |     | 0.4  | 0.06   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.4 |     |      | 0.04   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.1 | 0.3 | 0.1 |      | 0.07   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 |     |     | 0.3  | 0.04   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      | 0.6 |     |     |      | 0.06   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.6 | 0.3 |      | 0.09   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.3 | 1.3 | 1.6 |      | 0.3    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.04 | 0.1 | 0.3 | 0.2 | 0.07 | 0.08   |

| Observed | Jun  | Jul | Summer | F1  | F2   | F3 | F4 | F5 | F6   | F7   | F8   | F9   | F10 | F11  | F12 | F13 | Fall |
|----------|------|-----|--------|-----|------|----|----|----|------|------|------|------|-----|------|-----|-----|------|
| 2005     | 0.06 |     | 0.03   |     |      |    |    |    | 0.1  |      |      |      |     | 0.3  |     |     | 0.03 |
| 2006     |      |     |        |     |      |    |    |    |      |      |      |      |     |      |     |     |      |
| 2007     |      |     |        |     | 0.1  |    |    |    |      |      |      |      |     |      |     |     | 0.01 |
| 2008     |      |     |        |     |      |    |    |    |      |      |      | 0.1  |     |      |     |     | 0.01 |
| 2009     |      |     |        | 0.3 |      |    |    |    | 0.1  |      |      |      |     |      |     |     | 0.03 |
| 2010     |      |     |        |     |      |    |    |    |      | 0.1  |      |      |     |      |     |     | 0.01 |
| 2011     |      |     |        |     |      |    |    |    |      |      |      |      |     |      |     |     |      |
| 2012     |      |     |        |     |      |    |    |    |      |      | 0.1  | 0.1  |     |      |     |     | 0.02 |
| 2013     | 0.3  |     | 0.1    |     |      |    |    |    |      |      |      |      |     |      |     |     |      |
| 2014     | 1.0  | 2.5 | 1.9    | 0.7 | 0.4  |    |    |    |      | 0.6  | 0.1  |      |     |      |     |     | 0.1  |
| Mean     | 0.09 | 0.2 | 0.1    | 0.1 | 0.06 |    |    |    | 0.03 | 0.07 | 0.03 | 0.03 |     | 0.03 |     |     | 0.03 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |     |     | 1      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |     |     | 1      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 1   |     | 2      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.2 | 0.1 | 0.1 |     | 0.4    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3 | F4 | F5 | F6 | F7 | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     |    |    |    |    |    |     |     |     |     |     |     |      |
| 2006   |     |     |        |     |     |    |    |    |    |    |     |     |     |     |     |     |      |
| 2007   |     |     |        |     | 1   |    |    |    |    |    |     |     |     |     |     |     | 1    |
| 2008   |     |     |        |     |     |    |    |    |    |    |     | 1   |     |     |     |     | 1    |
| 2009   |     |     |        | 1   |     |    |    |    |    |    |     |     |     |     |     |     | 1    |
| 2010   |     |     |        |     |     |    |    |    |    |    |     |     |     |     |     |     |      |
| 2011   |     |     |        |     |     |    |    |    |    |    |     |     |     |     |     |     |      |
| 2012   |     |     |        |     |     |    |    |    |    |    | 1   |     |     |     |     |     | 1    |
| 2013   |     |     |        |     |     |    |    |    |    |    |     |     |     |     |     |     |      |
| 2014   |     | 6   | 6      | 1   | 1   |    |    |    |    |    |     |     |     |     |     |     | 2    |
| Mean   |     | 0.7 | 0.7    | 0.2 | 0.2 |    |    |    |    |    | 0.1 | 0.1 |     |     |     |     | 0.6  |

Wood Thrush has generally been a rare species at MBO, with sightings each spring and in seven of ten fall seasons, as well as three summers. All spring observations have been in the second half of the season, typically showing a slight peek around week 8. In three years, there have been early August sightings, and there was one unusually late record near mid-October, but otherwise fall observations have been between early September and early October. Overall, counts have been consistently low, outside of a spike in all seasons in 2014, highlighted by the presence of at least two breeding pairs, an increase from the one pair the previous year, which was a first.

# AMRO: American Robin / Merle d'Amérique (*Turdus migratorius*)

| Observed | First  | Peak   | Last  | Span | # days    | High | Total | First | Peak   | Last   | Span | # days    | High | Total |
|----------|--------|--------|-------|------|-----------|------|-------|-------|--------|--------|------|-----------|------|-------|
| 2005     | Apr 5  | Apr 11 | Jun 3 | 60   | 58 (98%)  | 43   | 469   | Aug 1 | Oct 14 | Oct 30 | 91   | 87 (99%)  | 500  | 5588  |
| 2006     | Mar 28 | Apr 15 | Jun 5 | 70   | 69 (100%) | 57   | 883   | Aug 1 | Oct 15 | Oct 30 | 91   | 91 (100%) | 1508 | 7870  |
| 2007     | Mar 28 | Apr 20 | Jun 5 | 70   | 70 (100%) | 50   | 689   | Aug 1 | Oct 23 | Oct 30 | 91   | 91 (100%) | 1150 | 8131  |
| 2008     | Mar 28 | Apr 16 | Jun 5 | 70   | 69 (99%)  | 49   | 568   | Aug 1 | Oct 13 | Oct 30 | 91   | 89 (98%)  | 519  | 7195  |
| 2009     | Mar 28 | Apr 26 | Jun 5 | 70   | 69 (100%) | 49   | 781   | Aug 1 | Oct 13 | Oct 30 | 91   | 90 (99%)  | 700  | 8671  |
| 2010     | Mar 28 | Apr 7  | Jun 5 | 70   | 70 (100%) | 35   | 542   | Aug 1 | Oct 30 | Oct 30 | 91   | 89 (98%)  | 1094 | 12377 |
| 2011     | Mar 28 | Apr 19 | Jun 5 | 70   | 69 (99%)  | 36   | 684   | Aug 1 | Oct 18 | Oct 30 | 91   | 87 (96%)  | 485  | 5576  |
| 2012     | Mar 28 | Apr 22 | Jun 5 | 70   | 70 (100%) | 205  | 1009  | Aug 1 | Oct 25 | Oct 30 | 91   | 90 (99%)  | 404  | 6914  |
| 2013     | Mar 28 | Apr 18 | Jun 5 | 70   | 67 (96%)  | 24   | 471   | Aug 1 | Oct 19 | Oct 30 | 91   | 90 (99%)  | 613  | 7350  |
| 2014     | Mar 29 | Apr 17 | Jun 4 | 68   | 67 (99%)  | 77   | 1041  | Aug 1 | Oct 30 | Oct 30 | 91   | 91 (100%) | 3033 | 9616  |
| Mean     | Mar 28 | Apr 17 | Jun 4 | 69   | 68 (99%)  | 62   | 714   | Aug 1 | Oct 20 | Oct 30 | 91   | 90 (99%)  | 1001 | 7929  |

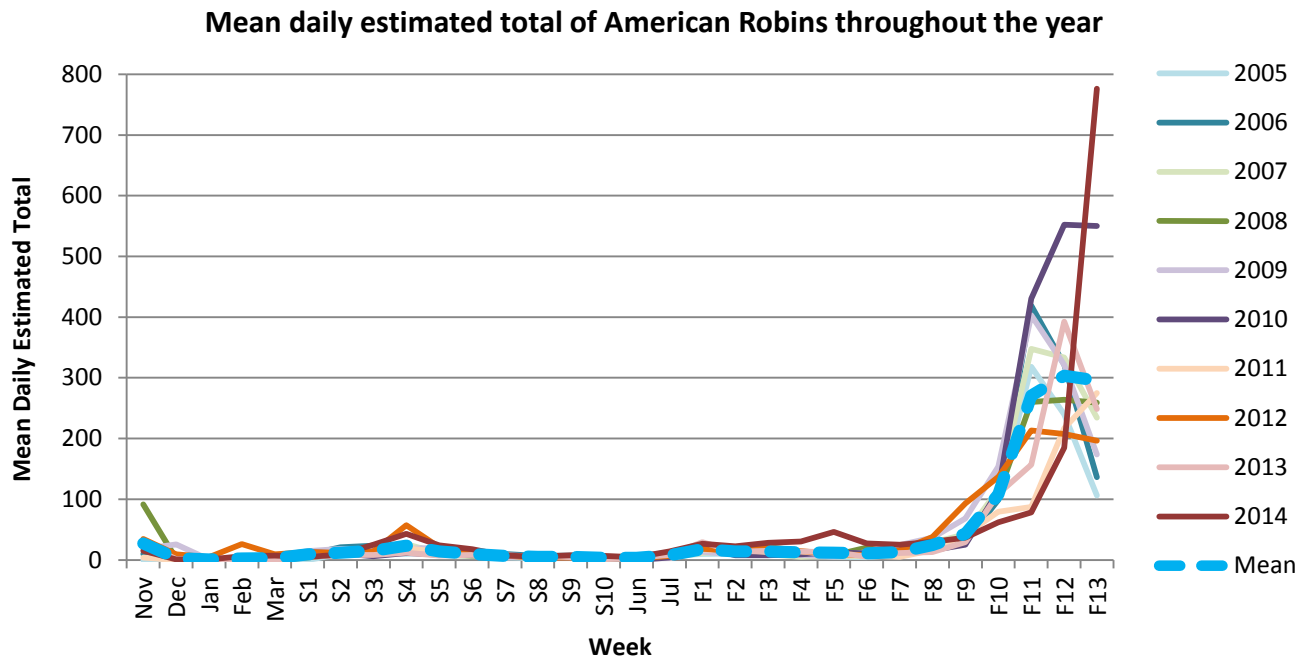
| Observed | Nov  | Dec  | Jan  | Feb  | Mar | Winter | S1   | S2   | S3   | S4   | S5   | S6   | S7  | S8  | S9  | S10 | Spring |
|----------|------|------|------|------|-----|--------|------|------|------|------|------|------|-----|-----|-----|-----|--------|
| 2005     | 1.5  |      |      | 1.0  |     | 0.7    |      | 10.0 | 15.7 | 9.7  | 15.1 | 6.9  | 3.9 | 2.9 | 3.9 | 2.6 | 7.9    |
| 2006     | 9.6  | 0.07 |      |      | 0.5 | 2.2    | 8.6  | 21.0 | 23.4 | 22.4 | 14.1 | 12.3 | 9.6 | 6.4 | 7.1 | 4.1 | 12.8   |
| 2007     | 28.9 | 6.3  | 0.5  |      | 0.7 | 12.1   | 13.3 | 10.0 | 12.6 | 26.0 | 10.6 | 7.3  | 5.6 | 4.1 | 5.6 | 3.4 | 9.8    |
| 2008     | 91.5 | 2.0  | 0.2  | 2.6  |     | 31.6   | 4.0  | 9.6  | 16.3 | 14.9 | 8.0  | 7.0  | 6.4 | 5.4 | 4.3 | 5.3 | 8.1    |
| 2009     | 18.0 | 25.5 | 0.8  | 2.6  | 5.7 | 7.8    | 14.7 | 18.0 | 17.1 | 18.4 | 20.4 | 7.4  | 4.0 | 6.6 | 5.6 | 1.9 | 11.3   |
| 2010     | 30.8 | 0.8  | 0.09 | 0.4  | 3.0 | 10.1   | 12.7 | 11.0 | 6.3  | 11.6 | 8.6  | 8.0  | 8.7 | 4.6 | 3.6 | 2.4 | 7.7    |
| 2011     | 4.0  |      | 2.1  | 1.7  | 0.9 | 2.2    | 7.7  | 12.1 | 12.4 | 19.4 | 13.3 | 13.7 | 7.4 | 5.6 | 4.0 | 2.0 | 9.8    |
| 2012     | 34.4 | 9.0  | 4.7  | 26.0 | 9.4 | 20.8   | 13.1 | 11.9 | 14.0 | 57.3 | 20.7 | 9.4  | 7.0 | 3.3 | 4.1 | 3.3 | 14.4   |
| 2013     | 27.5 | 1.4  | 1.3  | 0.2  | 0.6 | 5.4    | 4.4  | 8.1  | 8.3  | 11.9 | 7.0  | 8.4  | 6.4 | 6.7 | 4.3 | 1.7 | 6.7    |
| 2014     | 14.8 | 1.0  | 1.0  | 6.0  | 7.0 | 5.8    | 5.0  | 8.6  | 25.3 | 43.0 | 24.1 | 17.6 | 7.3 | 5.3 | 7.6 | 6.7 | 15.3   |
| Mean     | 27.0 | 3.0  | 1.0  | 2.6  | 2.8 | 8.8    | 9.4  | 11.8 | 15.1 | 23.7 | 14.2 | 9.8  | 6.6 | 5.1 | 5.0 | 3.3 | 10.4   |

| Observed | Jun | Jul  | Summer | F1   | F2   | F3   | F4   | F5   | F6   | F7   | F8   | F9   | F10   | F11   | F12   | F13   | Fall  |
|----------|-----|------|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| 2005     | 3.1 | 6.8  | 5.0    | 9.7  | 10.1 | 8.9  | 6.7  | 5.0  | 4.4  | 8.0  | 17.6 | 27.7 | 99.8  | 318.3 | 239.7 | 106.0 | 63.5  |
| 2006     | 4.8 | 12.4 | 9.0    | 13.4 | 18.0 | 13.4 | 9.6  | 6.7  | 8.3  | 15.9 | 31.7 | 31.1 | 99.1  | 419.0 | 321.7 | 136.3 | 86.5  |
| 2007     | 3.9 | 3.7  | 3.8    | 11.3 | 15.4 | 9.0  | 4.9  | 6.4  | 6.0  | 7.0  | 28.1 | 42.4 | 115.9 | 347.4 | 333.4 | 234.3 | 89.4  |
| 2008     | 3.8 | 5.0  | 4.4    | 16.1 | 10.9 | 13.3 | 11.1 | 7.9  | 20.4 | 6.9  | 16.7 | 33.9 | 107.9 | 260.0 | 263.9 | 259.0 | 79.1  |
| 2009     | 2.3 | 3.0  | 2.7    | 13.7 | 8.6  | 8.1  | 8.0  | 5.4  | 12.7 | 24.7 | 36.9 | 68.4 | 153.9 | 403.0 | 321.4 | 173.9 | 95.3  |
| 2010     |     | 4.0  | 2.7    | 21.7 | 7.9  | 7.4  | 9.3  | 12.3 | 11.0 | 10.9 | 15.9 | 25.3 | 113.9 | 430.6 | 552.1 | 550.0 | 136.0 |
| 2011     | 1.7 | 12.0 | 7.6    | 16.9 | 16.0 | 13.0 | 14.1 | 8.1  | 6.9  | 5.1  | 16.3 | 41.3 | 79.3  | 87.4  | 217.0 | 275.1 | 61.3  |
| 2012     | 2.5 | 6.5  | 4.5    | 18.4 | 15.4 | 21.3 | 14.6 | 9.9  | 7.4  | 16.1 | 37.6 | 93.1 | 136.9 | 213.3 | 207.4 | 196.3 | 76.0  |
| 2013     | 3.3 | 8.0  | 6.0    | 29.4 | 13.7 | 15.0 | 14.1 | 12.3 | 5.3  | 11.4 | 12.9 | 29.3 | 108.9 | 157.0 | 392.4 | 248.3 | 80.8  |
| 2014     | 4.7 | 14.0 | 10.0   | 26.7 | 22.3 | 28.1 | 30.4 | 46.1 | 27.4 | 25.1 | 29.7 | 36.7 | 62.0  | 78.3  | 184.7 | 776.0 | 105.7 |
| Mean     | 3.3 | 7.7  | 5.7    | 17.7 | 13.8 | 13.8 | 12.3 | 12.0 | 11.0 | 13.1 | 24.3 | 43.1 | 107.9 | 270.8 | 303.4 | 295.5 | 87.4  |

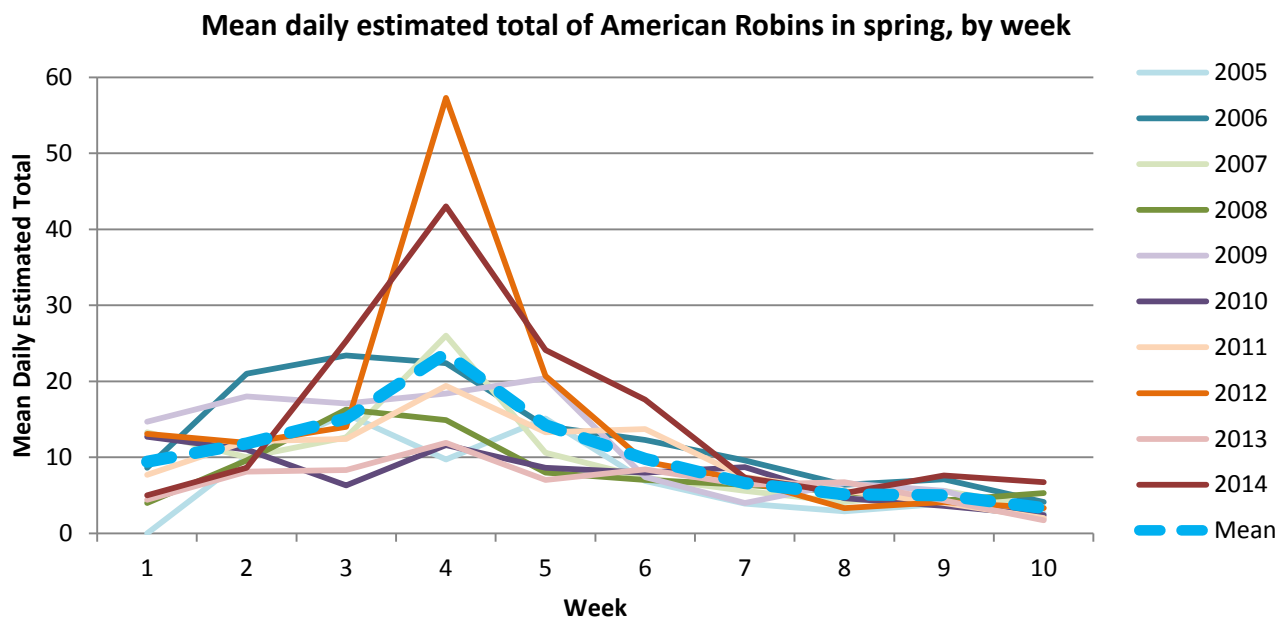
| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   | 4   |     |     |     |     | 4      |    | 2   | 2   | 1   | 3   | 2   |     |     | 6   |     | 16     |
| 2006   |     |     |     |     |     |        |    | 2   | 6   | 3   | 2   | 3   | 1   |     |     | 1   | 18     |
| 2007   |     |     |     |     |     |        |    |     |     | 8   |     | 1   | 1   | 1   |     | 1   | 12     |
| 2008   |     |     |     |     |     |        |    |     |     | 2   |     |     | 2   | 2   |     | 2   | 8      |
| 2009   |     |     |     |     |     |        |    |     |     | 1   | 2   | 2   |     |     |     |     | 5      |
| 2010   | 5   |     |     |     |     | 5      |    |     |     | 1   | 2   | 2   | 6   | 4   | 1   | 1   | 17     |
| 2011   |     |     |     |     |     |        |    |     |     | 14  | 6   | 6   | 1   | 1   | 2   |     | 30     |
| 2012   | 1   |     |     |     |     | 1      |    |     |     | 4   | 13  | 1   | 1   |     | 1   | 1   | 21     |
| 2013   | 2   |     |     |     |     | 2      |    |     |     | 2   |     |     |     | 4   |     | 1   | 7      |
| 2014   | 1   |     |     |     |     | 1      |    |     |     | 21  | 8   | 6   | 3   | 4   | 1   | 1   | 44     |
| Mean   | 1.6 |     |     |     |     | 1.4    |    | 2.0 | 4.0 | 5.7 | 3.6 | 2.3 | 1.5 | 1.6 | 1.1 | 0.8 | 17.8   |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10  | F11  | F12  | F13  | Fall  |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|-------|
| 2005   |     |     |        | 4   | 4   | 2   | 2   |     |     | 2   | 2   | 2   | 2    | 34   | 47   | 18   | 119   |
| 2006   |     |     |        | 4   | 3   | 1   |     |     |     | 3   |     | 1   | 28   | 82   | 146  | 34   | 302   |
| 2007   |     |     |        | 2   | 2   |     |     |     | 1   | 1   |     | 6   | 54   | 80   | 68   | 99   | 318   |
| 2008   |     |     |        | 1   | 6   | 1   | 4   |     | 2   |     | 3   | 2   | 28   | 103  | 101  | 95   | 346   |
| 2009   | 1   | 12  | 13     | 11  | 2   |     |     |     | 2   | 2   | 2   | 3   | 22   | 51   | 96   | 9    | 200   |
| 2010   |     | 13  | 13     | 17  | 3   | 1   | 1   |     |     | 1   |     | 2   | 2    | 51   | 191  | 125  | 394   |
| 2011   | 1   | 13  | 14     | 9   | 2   | 1   |     |     |     |     | 1   | 4   |      | 1    | 8    | 53   | 79    |
| 2012   |     | 18  | 18     | 5   | 2   | 3   | 1   |     | 3   |     |     | 4   | 19   | 29   | 45   | 19   | 130   |
| 2013   | 3   | 8   | 11     | 6   | 1   | 2   | 1   | 1   |     |     |     | 34  | 32   | 68   | 91   |      | 236   |
| 2014   | 1   | 19  | 20     | 8   | 8   | 7   | 7   | 1   | 2   | 2   |     | 1   | 2    | 3    | 32   | 71   | 144   |
| Mean   | 1.0 | 9.2 | 9.9    | 6.7 | 3.3 | 1.8 | 1.6 | 0.2 | 1.0 | 1.1 | 1.3 | 2.5 | 19.1 | 46.6 | 80.2 | 61.4 | 226.8 |

American Robin is among the most abundant species at MBO, observed nearly daily across all spring and fall seasons, and with sightings in almost all summer and winter periods as well. Spring migration almost always peaks in mid-late April, including week 4 for the past four consecutive years. Fall numbers build rapidly beginning in mid-late September, to a dramatic peak in the second half of October, then taper off rapidly in November, although small numbers usually overwinter. Numbers vary more from year to year in spring than fall, but there is no long-term trend evident.



The figure above illustrates how the number of American Robins throughout most of the year is dwarfed by the influx of migrants over the final 3-4 weeks of fall. The figure below shows that in spring there is also a distinct peak to migration, emphasized by unusually big flights in 2012 and 2014, but also generally holding true in other years. The high spring years do not show any correlation with results from the previous fall.



**GRCA: Gray Catbird / Moqueur chat (*Dumetella carolinensis*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 11 | May 29 | Jun 3 | 24   | 21 (36%) | 7    | 60    | Aug 1 | Sep 18 | Oct 24 | 85   | 75 (85%) | 14   | 372   |
| 2006     | May 9  | May 19 | Jun 5 | 28   | 27 (39%) | 6    | 65    | Aug 1 | Aug 26 | Oct 17 | 78   | 77 (85%) | 13   | 414   |
| 2007     | May 3  | May 26 | Jun 5 | 34   | 26 (37%) | 15   | 99    | Aug 1 | Sep 21 | Oct 14 | 75   | 70 (77%) | 11   | 371   |
| 2008     | May 6  | May 21 | Jun 5 | 31   | 29 (41%) | 9    | 85    | Aug 1 | Aug 1  | Oct 13 | 74   | 72 (79%) | 12   | 376   |
| 2009     | May 8  | May 21 | Jun 5 | 29   | 25 (36%) | 12   | 77    | Aug 1 | Sep 28 | Oct 14 | 75   | 74 (81%) | 17   | 515   |
| 2010     | Apr 24 | May 19 | Jun 5 | 43   | 29 (41%) | 8    | 99    | Aug 1 | Aug 4  | Oct 14 | 75   | 69 (76%) | 11   | 337   |
| 2011     | May 1  | May 21 | Jun 5 | 36   | 25 (36%) | 8    | 84    | Aug 1 | Sep 22 | Oct 10 | 71   | 68 (75%) | 11   | 317   |
| 2012     | May 6  | May 21 | Jun 3 | 29   | 27 (39%) | 8    | 109   | Aug 1 | Sep 13 | Oct 24 | 85   | 85 (93%) | 18   | 480   |
| 2013     | May 9  | May 23 | Jun 5 | 28   | 21 (30%) | 12   | 79    | Aug 1 | Sep 15 | Oct 30 | 91   | 73 (80%) | 15   | 422   |
| 2014     | May 8  | May 25 | Jun 2 | 26   | 25 (37%) | 9    | 85    | Aug 1 | Sep 16 | Oct 13 | 74   | 72 (79%) | 15   | 457   |
| Mean     | May 5  | May 22 | Jun 4 | 31   | 26 (37%) | 9    | 84    | Aug 1 | Sep 7  | Oct 17 | 78   | 74 (81%) | 14   | 406   |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5   | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|----|----|----|------|------|-----|-----|-----|-----|-----|--------|
| 2005     |      |     |     |     |     |        |    |    |    |      |      |     | 1.0 | 1.4 | 3.6 | 3.6 | 1.0    |
| 2006     |      |     |     |     |     |        |    |    |    |      |      |     | 0.9 | 3.3 | 3.4 | 1.7 | 0.9    |
| 2007     |      |     |     |     |     |        |    |    |    |      |      | 0.7 | 1.7 | 4.4 | 5.9 | 1.4 | 1.4    |
| 2008     |      |     |     |     |     |        |    |    |    |      |      | 0.9 | 1.0 | 4.1 | 3.3 | 2.9 | 1.2    |
| 2009     |      |     |     |     |     |        |    |    |    |      |      | 0.1 | 1.1 | 4.0 | 3.3 | 2.4 | 1.1    |
| 2010     | 0.05 |     |     |     |     | 0.02   |    |    |    | 0.1  |      | 0.1 | 1.4 | 5.0 | 4.7 | 2.7 | 1.4    |
| 2011     |      |     |     |     |     |        |    |    |    |      | 0.1  | 0.1 | 1.0 | 3.1 | 5.4 | 2.1 | 1.2    |
| 2012     |      |     |     |     |     |        |    |    |    |      |      | 0.6 | 3.4 | 4.9 | 4.7 | 2.0 | 1.6    |
| 2013     |      |     |     |     |     |        |    |    |    |      |      |     | 0.3 | 4.6 | 4.6 | 1.9 | 1.1    |
| 2014     |      |     |     |     |     |        |    |    |    |      |      | 0.1 | 2.4 | 3.7 | 4.0 | 2.2 | 1.2    |
| Mean     | 0.01 |     |     |     |     | <0.01  |    |    |    | 0.01 | 0.01 | 0.3 | 1.4 | 3.9 | 4.3 | 2.3 | 1.2    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7   | F8  | F9  | F10 | F11 | F12 | F13  | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|------|------|
| 2005     | 2.9 | 2.7 | 2.8    | 2.7 | 4.7 | 5.1 | 5.0 | 5.9 | 7.4 | 6.4  | 6.3 | 5.2 | 3.8 | 1.2 | 0.7 | 0.1  | 4.2  |
| 2006     | 1.7 | 2.1 | 1.9    | 5.1 | 4.6 | 7.0 | 7.1 | 5.0 | 7.6 | 6.7  | 5.4 | 6.3 | 2.9 | 1.3 | 0.1 |      | 4.5  |
| 2007     | 1.0 | 1.0 | 1.0    | 3.9 | 6.1 | 7.7 | 4.9 | 4.9 | 5.9 | 6.4  | 7.0 | 4.3 | 1.9 | 0.1 |     |      | 4.1  |
| 2008     | 2.4 | 2.2 | 2.3    | 7.3 | 6.3 | 5.9 | 5.1 | 5.4 | 5.7 | 5.3  | 5.6 | 3.3 | 3.1 | 0.7 |     |      | 4.1  |
| 2009     | 1.3 | 1.5 | 1.4    | 5.9 | 8.4 | 6.3 | 8.4 | 7.4 | 7.9 | 6.3  | 9.7 | 9.1 | 3.0 | 1.1 |     |      | 5.7  |
| 2010     | 2.0 | 1.2 | 1.4    | 5.0 | 6.1 | 5.3 | 6.1 | 6.3 | 6.1 | 4.1  | 4.3 | 2.9 | 1.6 | 0.3 |     |      | 3.7  |
| 2011     | 1.0 | 4.5 | 3.0    | 4.4 | 4.3 | 5.1 | 4.1 | 2.9 | 4.0 | 5.4  | 6.7 | 5.7 | 2.4 | 0.1 |     |      | 3.5  |
| 2012     | 0.8 | 1.8 | 1.2    | 6.1 | 5.6 | 6.4 | 7.0 | 6.0 | 8.1 | 11.0 | 6.6 | 5.3 | 3.0 | 1.9 | 1.4 | 0.1  | 5.3  |
| 2013     | 1.0 | 5.5 | 3.6    | 7.3 | 5.4 | 5.4 | 7.9 | 5.3 | 5.7 | 8.3  | 5.1 | 6.7 | 2.6 | 0.3 | 0.1 | 0.1  | 4.6  |
| 2014     | 1.0 | 6.5 | 4.1    | 6.6 | 7.1 | 5.6 | 6.1 | 7.7 | 7.6 | 9.1  | 8.4 | 4.0 | 2.1 | 0.9 |     |      | 5.0  |
| Mean     | 1.8 | 2.6 | 2.3    | 5.4 | 5.9 | 6.0 | 6.2 | 5.7 | 6.6 | 6.9  | 6.5 | 5.3 | 2.6 | 0.8 | 0.2 | 0.04 | 4.5  |

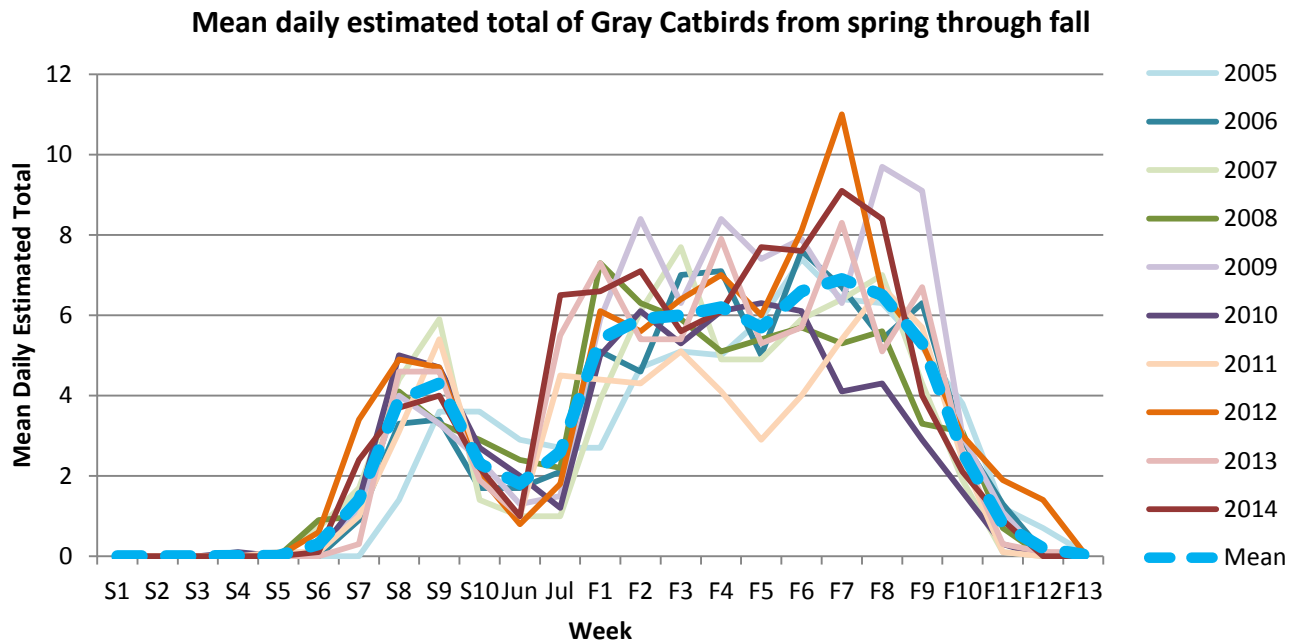
  

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |     | 2   | 2   | 3   | 2   | 9      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |     |     | 7   | 2   |     | 9      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |     | 1   | 5   | 8   |     | 14     |
| 2008   |     |     |     |     |     |        |    |    |    |    |    | 1   | 2   | 6   | 3   |     | 12     |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |     | 3   | 6   | 2   | 1   | 12     |
| 2010   |     |     |     |     |     |        |    |    |    |    |    | 1   | 4   | 5   | 4   | 1   | 15     |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |     | 2   | 5   | 3   | 2   | 12     |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |     | 6   | 7   | 6   | 2   | 21     |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |     |     | 10  | 6   | 2   | 18     |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |     | 5   | 6   | 8   |     | 19     |
| Mean   |     |     |     |     |     |        |    |    |    |    |    | 0.2 | 2.5 | 5.9 | 4.5 | 1.0 | 14.1   |

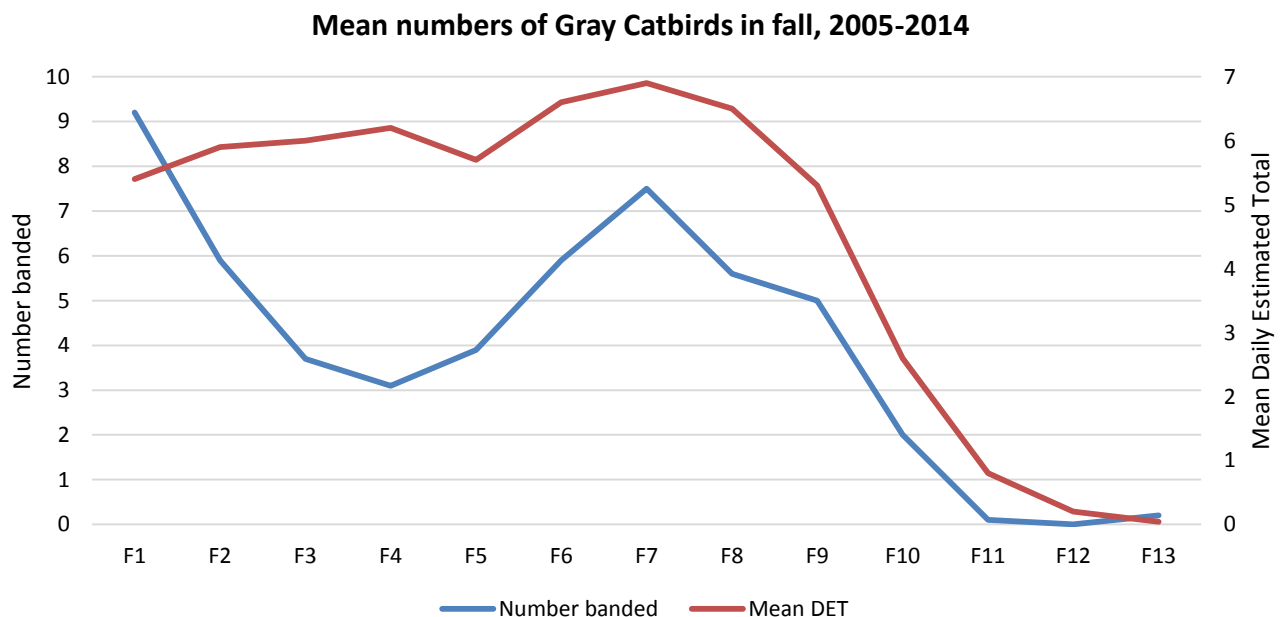
  

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     | 2   | 2      | 4   | 6   | 4   | 6   | 6   | 8   | 9   | 7   | 2   | 5   |     |     | 1   | 58   |
| 2006   |     |     |        | 8   | 2   | 4   |     | 2   | 8   | 6   | 3   | 8   |     |     |     |     | 41   |
| 2007   |     |     |        | 4   | 7   | 2   |     | 2   | 5   | 10  | 6   | 3   |     |     |     |     | 39   |
| 2008   |     |     |        | 12  | 3   | 3   | 1   | 3   | 4   | 3   | 4   | 7   | 5   |     |     |     | 45   |
| 2009   |     | 4   | 4      | 10  | 11  | 9   | 4   | 4   | 2   | 5   | 10  | 2   | 5   | 1   |     |     | 63   |
| 2010   |     | 3   | 3      | 7   | 2   |     | 4   | 5   | 4   | 3   | 3   | 3   | 1   |     |     |     | 32   |
| 2011   | 1   | 6   | 7      | 6   | 3   | 3   | 2   |     | 3   | 8   | 6   | 7   |     |     |     |     | 38   |
| 2012   |     | 3   | 3      | 10  | 8   | 4   | 6   | 6   | 11  | 12  | 2   | 3   | 2   |     |     |     | 64   |
| 2013   | 1   | 13  | 14     | 13  | 2   | 1   | 5   | 4   | 3   | 6   | 6   | 5   | 1   |     |     | 1   | 47   |
| 2014   | 1   | 17  | 18     | 18  | 15  | 7   | 3   | 7   | 11  | 13  | 9   | 10  | 1   |     |     |     | 94   |
| Mean   | 0.5 | 5.3 | 5.7    | 9.2 | 5.9 | 3.7 | 3.1 | 3.9 | 5.9 | 7.5 | 5.6 | 5.0 | 2.0 | 0.1 |     | 0.2 | 52.1 |

Gray Catbird is observed almost daily at MBO from early May to mid-October, with only exceptional records slightly earlier or later. Spring migration peaks in week 8 or 9, after which residents and their offspring account for most observations until at least early fall. Fall numbers remain relatively consistent across August and September overall, with peaks for individual years ranging from week 1 to 8. Although numbers observed have varied relatively little over the years in both spring and fall, the number banded has increased over time in both seasons; the number banded during MAPS has also jumped greatly in just the past two years.



The figure above shows an unusual pattern of annual occurrence, with a sustained peak spanning roughly two-thirds of the fall season. Notably, mean numbers actually increase slightly from week 1 of fall to week 7. While recapture data indicate that this pattern is at least partly a function of some local juveniles staying around until mid-September or beyond, the gradual increase is indicative of more northern migrants supplementing their numbers. This pattern is clearer when comparing against the number of new birds banded by week, as in the figure below. Over the first four weeks of fall, the mean daily estimated total remains relatively unchanged, but the number of individuals banded per week drops at a sharp rate, suggesting that most of the birds are local juveniles, and over time most of them are already banded. From week 5 through 7, numbers observed increase only modestly, but there is a sharp uptake in the number banded, suggesting that new migrants are arriving, and some local residents are beginning to disperse. Although the number banded declines beginning in week 8, it is likely that the vast majority of individuals from this point onward are also northern migrants, and by week 9, the pattern of numbers banded and observed is highly correlated until the end of the season.



**BRTH: Brown Thrasher / Moqueur roux (*Toxostoma rufum*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 11 | May 17 | Jun 3  | 54   | 29 (49%) | 4    | 50    | Aug 9  | Sep 18 | Oct 9  | 62   | 22 (25%) | 4    | 34    |
| 2006     | Apr 25 | May 24 | Jun 5  | 42   | 19 (28%) | 3    | 25    | Aug 5  | Sep 22 | Oct 1  | 58   | 24 (26%) | 3    | 31    |
| 2007     | May 1  | May 1  | May 31 | 31   | 12 (17%) | 3    | 16    | Aug 1  | Sep 6  | Sep 26 | 57   | 10 (11%) | 2    | 12    |
| 2008     | Apr 27 | May 9  | Jun 2  | 37   | 18 (26%) | 4    | 25    | Aug 8  | Sep 11 | Oct 3  | 57   | 12 (13%) | 2    | 14    |
| 2009     | Apr 27 | May 9  | Jun 3  | 38   | 18 (26%) | 2    | 21    | Aug 1  | Aug 5  | Oct 11 | 72   | 32 (35%) | 3    | 48    |
| 2010     | Apr 24 | Apr 24 | May 24 | 31   | 15 (21%) | 2    | 16    | Aug 9  | Sep 7  | Oct 5  | 58   | 21 (23%) | 2    | 25    |
| 2011     | Apr 29 | May 2  | Jun 4  | 37   | 18 (26%) | 4    | 25    | Aug 23 | Sep 20 | Oct 3  | 42   | 5 (5%)   | 2    | 6     |
| 2012     | Apr 26 | Jun 1  | Jun 1  | 37   | 19 (27%) | 2    | 20    | Aug 1  | Aug 1  | Sep 18 | 49   | 23 (25%) | 2    | 34    |
| 2013     | Apr 21 | May 4  | May 23 | 33   | 13 (19%) | 3    | 19    | Aug 1  | Sep 18 | Oct 1  | 62   | 40 (44%) | 5    | 70    |
| 2014     | Apr 15 | Apr 17 | May 28 | 44   | 17 (25%) | 2    | 23    | Aug 1  | Sep 26 | Oct 8  | 69   | 46 (51%) | 4    | 75    |
| Mean     | Apr 23 | May 7  | May 31 | 38   | 18 (26%) | 3    | 24    | Aug 5  | Sep 7  | Oct 2  | 59   | 24 (26%) | 3    | 35    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3   | S4   | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|------|------|-----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    | 0.1  |      | 0.4 | 0.3 | 1.1 | 2.0 | 2.3 | 1.2 | 0.8    |
| 2006     |     |     |     |     |     |        |    |    |      |      | 1.0 |     | 0.3 | 0.7 | 1.0 | 0.6 | 0.4    |
| 2007     |     |     |     |     |     |        |    |    |      |      | 0.4 | 0.3 | 0.9 | 0.4 | 0.1 | 0.1 | 0.2    |
| 2008     |     |     |     |     |     |        |    |    |      |      | 0.9 | 0.4 | 1.0 | 0.6 | 0.6 | 0.1 | 0.4    |
| 2009     |     |     |     |     |     |        |    |    |      |      | 0.3 | 0.3 | 0.7 | 0.4 | 0.6 | 0.7 | 0.3    |
| 2010     |     |     |     |     |     |        |    |    |      | 0.3  | 0.7 | 0.4 | 0.3 | 0.4 | 0.1 |     | 0.2    |
| 2011     |     |     |     |     |     |        |    |    |      |      | 0.7 | 1.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.4    |
| 2012     |     |     |     |     |     |        |    |    |      |      | 0.9 | 0.4 | 0.4 | 0.1 | 0.7 | 0.3 | 0.3    |
| 2013     |     |     |     |     |     |        |    |    |      | 0.1  |     | 1.3 | 0.3 | 0.9 | 0.1 |     | 0.3    |
| 2014     |     |     |     |     |     |        |    |    | 0.4  | 0.3  | 0.3 | 0.4 | 0.6 | 0.1 | 1.1 |     | 0.3    |
| Mean     |     |     |     |     |     |        |    |    | 0.06 | 0.07 | 0.6 | 0.5 | 0.6 | 0.6 | 0.7 | 0.3 | 0.4    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11  | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|------|
| 2005     | 0.3 | 0.2 | 0.2    |     | 0.9 | 0.1 |     | 0.3 | 0.4 | 1.1 | 1.1 | 0.7 | 0.3 |      |     |     | 0.4  |
| 2006     | 0.2 | 0.2 | 0.2    | 0.1 | 0.3 | 0.1 | 0.1 | 0.6 | 0.9 | 0.7 | 0.9 | 0.7 |     |      |     |     | 0.3  |
| 2007     | 0.1 |     | 0.08   | 0.1 | 0.1 | 0.1 |     |     | 0.4 | 0.4 | 0.3 | 0.1 |     |      |     |     | 0.1  |
| 2008     |     | 0.2 | 0.1    |     | 0.3 | 0.1 |     | 0.1 | 0.7 | 0.3 |     | 0.3 | 0.1 |      |     |     | 0.2  |
| 2009     | 0.3 |     | 0.1    | 1.1 | 1.3 | 0.1 | 0.3 |     | 0.3 | 0.4 | 1.7 | 0.9 | 0.6 | 0.1  |     |     | 0.5  |
| 2010     |     |     |        |     | 0.4 | 0.1 | 0.3 | 0.3 | 0.7 | 0.9 | 0.6 | 0.1 | 0.1 |      |     |     | 0.3  |
| 2011     | 0.3 |     | 0.1    |     |     |     | 0.1 |     |     | 0.1 | 0.3 | 0.1 | 0.1 |      |     |     | 0.07 |
| 2012     |     | 0.3 | 0.1    | 1.0 | 1.1 |     | 0.6 | 0.3 | 0.6 | 1.3 |     |     |     |      |     |     | 0.4  |
| 2013     |     | 0.5 | 0.3    | 0.9 | 1.4 | 0.3 | 0.6 | 1.3 | 1.0 | 2.4 | 1.6 | 0.6 |     |      |     |     | 0.8  |
| 2014     | 0.3 | 0.8 | 0.6    | 0.9 | 1.0 | 0.6 | 0.6 | 0.6 | 1.4 | 1.6 | 2.1 | 1.6 | 0.4 |      |     |     | 0.8  |
| Mean     | 0.2 | 0.2 | 0.2    | 0.4 | 0.7 | 0.2 | 0.3 | 0.3 | 0.6 | 0.9 | 0.9 | 0.5 | 0.2 | 0.01 |     |     | 0.4  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     |     |     |     | 3   | 1   |     | 4      |
| 2006   |     |     |     |     |     |        |    |    |    |     | 1   |     | 1   |     | 1   | 1   | 4      |
| 2007   |     |     |     |     |     |        |    |    |    |     | 1   |     | 2   |     |     |     | 3      |
| 2008   |     |     |     |     |     |        |    |    |    |     | 1   |     | 1   |     |     |     | 2      |
| 2009   |     |     |     |     |     |        |    |    |    |     |     |     |     |     | 1   |     | 1      |
| 2010   |     |     |     |     |     |        |    |    |    |     | 1   |     | 1   |     |     |     | 2      |
| 2011   |     |     |     |     |     |        |    |    |    |     | 1   | 1   |     |     |     |     | 2      |
| 2012   |     |     |     |     |     |        |    |    |    |     |     |     | 1   | 1   |     |     | 2      |
| 2013   |     |     |     |     |     |        |    |    |    |     |     |     |     |     | 1   |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    | 1   |     | 1   |     |     | 1   |     | 3      |
| Mean   |     |     |     |     |     |        |    |    |    | 0.1 | 0.5 | 0.2 | 0.6 | 0.4 | 0.5 | 0.1 | 2.4    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     | 1   |     |     |     |     |     |     | 1   |     |     |     |     | 2    |
| 2006   |     |     |        |     |     |     | 1   |     | 1   | 4   | 1   |     |     |     |     |     | 7    |
| 2007   |     |     |        |     |     | 1   |     |     | 1   | 1   |     |     |     |     |     |     | 3    |
| 2008   |     |     |        |     | 1   |     |     |     | 1   | 1   |     | 1   | 1   |     |     |     | 5    |
| 2009   |     |     |        | 2   |     |     | 1   |     | 1   |     | 2   | 1   | 1   |     |     |     | 8    |
| 2010   |     |     |        |     | 1   |     |     |     |     |     |     |     |     |     |     |     | 1    |
| 2011   |     |     |        |     |     |     |     |     |     |     |     |     | 1   |     |     |     | 1    |
| 2012   |     | 1   | 1      | 2   | 1   |     |     |     |     |     |     |     |     |     |     |     | 3    |
| 2013   |     | 2   | 2      |     |     |     |     | 1   |     |     |     |     |     |     |     |     | 1    |
| 2014   |     | 2   | 2      | 1   | 1   | 1   | 1   |     | 1   | 1   | 3   | 1   |     |     |     |     | 10   |
| Mean   |     | 0.6 | 0.6    | 0.5 | 0.5 | 0.2 | 0.3 | 0.1 | 0.5 | 0.7 | 0.6 | 0.4 | 0.3 |     |     |     | 4.1  |

Brown Thrasher is present at MBO over a similar length of time annually as Gray Catbird, but shifted roughly two weeks earlier. The first Brown Thrasher of the year has arrived in April every year but one (and then only delayed to May 1), but only trickles into October in small numbers, and has not been recorded past week 11. Like Gray Catbird, there is relatively little variation in abundance within each season, although for Brown Thrasher there is a surprisingly consistent peak in fall between weeks 6 and 8. Numbers have also not shown any clear pattern over time, but in fall, 2011 was unusually low, while 2014 was unusually high.

**NOMO: Northern Mockingbird / Moqueur polyglotte (*Mimus polyglottos*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 30 | Apr 30 | Apr 30 | 1    | 1 (2%) | 1    | 1     |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     | May 12 | May 12 | May 18 | 7    | 2 (3%) | 1    | 2     |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2012     | May 7  | May 7  | May 7  | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       | Oct 12 | Oct 12 | Oct 12 | 1    | 1 (1%) | 1    | 1     |
| Mean     | May 6  | May 6  | May 8  | 3    | 1 (2%) | 1    | 0.4   | Oct 12 | Oct 12 | Oct 12 | 1    | 1 (1%) | 1    | 0.1   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6   | S7   | S8   | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|------|------|------|------|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    | 0.1  |      |      |      |    |     | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    |    |      |      |      |      |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |      |      | 0.1  | 0.1  |    |     | 0.03   |
| 2008     |     |     |     |     |     |        |    |    |    |    |      |      |      |      |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |      |      |      |      |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |      |      |      |      |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |      |      |      |      |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    | 0.1  |      |      |      |    |     | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |    |      |      |      |      |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |      |      |      |      |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.01 | 0.01 | 0.01 | 0.01 |    |     | 0.01   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11  | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|------|-----|-----|-------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |     |     |       |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |     |     |       |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |     |     |       |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |     |     |       |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |     |     |       |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |     |     |       |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |     |     |       |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |     |     |       |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |      |     |     |       |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     | 0.1  |     |     | 0.01  |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    |     | 0.01 |     |     | <0.01 |

There have been only five Northern Mockingbird sightings at MBO in ten years, two of which were within one week in mid-May 2007 and likely involved the same individual. All four spring observations have been within a span of just 19 days from April 30 to May 18; the lone fall sighting was on October 12.



# EUST: European Starling / Étourneau sansonnet (*Sturnus vulgaris*)

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 6  | Jun 3  | Jun 3  | 59   | 32 (54%) | 6    | 68    | Aug 1 | Oct 19 | Oct 30 | 91   | 36 (41%) | 200  | 1178  |
| 2006     | Mar 28 | Apr 6  | Jun 5  | 70   | 51 (74%) | 18   | 171   | Aug 3 | Oct 21 | Oct 30 | 89   | 51 (56%) | 700  | 2480  |
| 2007     | Mar 28 | May 6  | Jun 4  | 69   | 33 (47%) | 40   | 168   | Aug 2 | Oct 24 | Oct 30 | 90   | 45 (49%) | 275  | 1560  |
| 2008     | Apr 1  | Jun 3  | Jun 5  | 66   | 33 (47%) | 30   | 150   | Aug 1 | Oct 26 | Oct 30 | 91   | 51 (56%) | 405  | 1694  |
| 2009     | Mar 28 | Apr 3  | Jun 1  | 66   | 34 (49%) | 30   | 197   | Aug 4 | Oct 8  | Oct 30 | 88   | 52 (57%) | 212  | 1683  |
| 2010     | Mar 29 | Apr 8  | May 31 | 64   | 24 (34%) | 22   | 98    | Aug 2 | Oct 22 | Oct 30 | 90   | 44 (48%) | 345  | 2880  |
| 2011     | Mar 28 | Apr 21 | Jun 5  | 70   | 50 (71%) | 32   | 270   | Aug 1 | Oct 27 | Oct 30 | 91   | 49 (54%) | 109  | 939   |
| 2012     | Mar 31 | Mar 31 | Jun 3  | 65   | 22 (31%) | 42   | 91    | Aug 3 | Oct 3  | Oct 30 | 89   | 52 (57%) | 561  | 5463  |
| 2013     | Mar 28 | Apr 6  | Jun 4  | 69   | 41 (59%) | 60   | 261   | Aug 5 | Oct 22 | Oct 30 | 87   | 53 (58%) | 510  | 4849  |
| 2014     | Mar 29 | Mar 30 | Jun 1  | 65   | 35 (51%) | 30   | 185   | Aug 4 | Sep 23 | Oct 30 | 88   | 55 (60%) | 800  | 4541  |
| Mean     | Mar 29 | Apr 20 | Jun 3  | 66   | 36 (52%) | 31   | 166   | Aug 2 | Oct 16 | Oct 30 | 89   | 49 (54%) | 412  | 2727  |

| Observed | Nov  | Dec   | Jan  | Feb  | Mar  | Winter | S1  | S2   | S3  | S4   | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|------|-------|------|------|------|--------|-----|------|-----|------|-----|-----|-----|-----|-----|-----|--------|
| 2005     | 2.0  |       |      | 10.3 | 3.5  | 4.5    |     | 2.5  | 1.0 | 0.3  | 0.9 | 0.1 | 1.3 | 2.0 | 0.6 | 2.0 | 1.2    |
| 2006     | 0.07 | 12.8  | 10.3 | 11.8 | 2.1  | 7.3    | 2.1 | 8.3  | 1.3 | 2.1  | 2.9 | 1.6 | 0.9 | 1.1 | 1.7 | 3.6 | 2.5    |
| 2007     | 4.3  | 3.7   | 17.5 | 5.2  | 12.9 | 7.8    | 5.0 | 4.7  | 1.7 | 2.3  | 0.7 | 6.1 | 1.3 | 0.6 | 1.3 | 0.3 | 2.4    |
| 2008     | 30.3 | 1.5   | 0.8  | 5.0  |      | 12.0   | 0.4 | 3.9  | 3.0 | 0.7  | 1.3 | 1.6 | 1.4 | 1.1 | 0.1 | 7.9 | 2.1    |
| 2009     | 7.1  | 22.0  | 44.0 | 33.4 | 28.7 | 27.1   | 6.0 | 6.7  | 2.4 | 6.4  | 4.4 | 1.1 | 0.7 |     |     | 1.3 | 2.9    |
| 2010     | 5.3  | 4.8   | 72.3 | 0.8  | 0.8  | 15.1   | 3.3 | 3.7  |     | 0.7  | 0.9 | 1.7 | 0.4 | 0.9 | 1.9 | 0.6 | 1.4    |
| 2011     | 13.7 |       | 5.3  | 10.2 | 13.0 | 9.9    | 2.6 | 0.9  | 7.1 | 11.0 | 7.4 | 2.3 | 1.1 | 1.9 | 0.1 | 4.1 | 3.9    |
| 2012     | 52.5 | 153.0 | 16.7 | 6.7  | 5.8  | 49.4   | 6.3 | 0.4  | 0.6 | 0.4  | 1.3 | 0.6 | 0.6 | 0.4 | 1.1 | 1.3 | 1.3    |
| 2013     | 42.8 | 20.0  | 12.6 | 0.8  | 6.1  | 15.6   | 5.1 | 13.6 | 5.0 | 1.7  | 3.7 | 2.7 | 2.0 | 0.9 | 0.4 | 2.1 | 3.7    |
| 2014     |      | 51.3  | 72.0 | 30.3 | 24.0 | 36.9   | 6.3 | 3.4  | 0.6 | 2.6  | 1.9 | 4.0 | 3.4 | 1.6 | 3.0 | 0.7 | 2.7    |
| Mean     | 14.5 | 23.6  | 26.8 | 12.3 | 11.0 | 17.0   | 4.1 | 4.8  | 2.3 | 2.9  | 2.5 | 2.2 | 1.3 | 1.0 | 1.0 | 2.4 | 2.4    |

| Observed | Jun  | Jul  | Summer | F1  | F2   | F3  | F4  | F5   | F6   | F7    | F8    | F9    | F10   | F11  | F12   | F13   | Fall |
|----------|------|------|--------|-----|------|-----|-----|------|------|-------|-------|-------|-------|------|-------|-------|------|
| 2005     | 2.0  | 0.6  | 1.3    | 0.3 |      |     |     | 11.4 |      | 0.1   | 5.7   | 7.7   | 21.8  | 22.8 | 92.4  | 13.4  | 13.4 |
| 2006     | 1.4  | 2.2  | 1.8    | 9.9 | 0.1  | 5.4 | 1.4 | 1.3  | 4.1  | 5.0   | 7.3   | 10.7  | 9.1   | 27.3 | 169.0 | 103.6 | 27.3 |
| 2007     |      | 6.7  | 3.1    | 0.7 |      |     | 0.1 | 0.9  | 6.7  | 3.3   | 9.6   | 12.3  | 31.7  | 56.1 | 38.1  | 63.3  | 17.1 |
| 2008     | 3.6  | 19.0 | 11.3   | 3.3 | 1.4  | 1.7 | 1.0 | 0.4  | 6.9  | 1.1   | 5.7   | 7.6   | 4.0   | 49.1 | 28.3  | 131.4 | 18.6 |
| 2009     |      |      |        | 0.1 | 0.6  | 0.4 | 1.4 |      | 0.7  | 25.1  | 9.0   | 34.7  | 74.7  | 53.1 | 25.7  | 14.7  | 18.5 |
| 2010     |      | 1.3  | 0.9    | 1.7 |      |     |     | 0.1  | 0.4  | 11.1  | 31.0  | 12.1  | 45.1  | 26.1 | 167.0 | 116.6 | 31.6 |
| 2011     | 1.0  | 0.8  | 0.9    | 3.4 | 3.4  | 0.6 | 1.4 | 0.3  | 1.3  | 0.4   | 15.6  | 10.0  | 9.1   | 18.6 | 23.7  | 46.3  | 10.3 |
| 2012     |      | 0.8  | 0.4    | 1.4 | 10.0 | 2.1 | 1.3 | 0.9  | 1.6  | 5.6   | 221.9 | 251.1 | 133.0 | 58.6 | 91.4  | 60.0  |      |
| 2013     | 12.3 | 2.0  | 6.4    | 0.1 | 0.4  | 0.3 | 0.1 | 0.7  | 11.7 | 74.9  | 12.6  | 5.1   | 30.3  | 84.4 | 250.6 | 221.4 | 53.3 |
| 2014     |      |      |        | 2.4 | 2.3  |     | 0.9 | 4.0  | 1.3  | 174.6 | 124.3 | 73.7  | 58.4  | 45.3 | 72.0  | 89.6  | 49.9 |
| Mean     | 1.8  | 2.9  | 2.4    | 2.3 | 1.8  | 1.1 | 0.8 | 2.0  | 3.5  | 29.7  | 22.6  | 40.0  | 54.0  | 52.0 | 92.5  | 89.2  | 30.1 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6 | S7 | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|----|----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     | 1   |    |    | 1   |    |     | 2      |
| 2006   |     |     |     |     |     |        |    |    |    |     |     |    |    |     |    |     |        |
| 2007   |     |     |     |     | 1   | 1      |    |    |    |     |     |    |    |     |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |     |     |    |    |     |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    | 1   |     |    |    |     |    |     | 1      |
| 2010   |     |     |     |     | 1   | 1      |    |    |    |     |     |    |    |     |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    | 2   |     |    |    |     |    |     | 2      |
| 2012   |     |     |     |     |     |        |    |    |    |     |     |    |    |     |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |     |     |    |    |     |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |     |     |    |    |     |    |     |        |
| Mean   |     |     |     |     | 0.3 | 0.2    |    |    |    | 0.3 | 0.1 |    |    | 0.1 |    |     | 0.5    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 1   |     | 1    |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     | 1   | 1      |    |    |    |    |    |    |    |    |    |     |     | 1   |     | 1    |
| 2011   |     | 1   | 1      |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012   |     | 1   | 1      |    |    |    |    |    |    |    |    |    |     |     | 1   |     | 1    |
| 2013   |     | 2   | 2      |    |    |    |    |    |    |    |    |    |     | 1   |     |     | 1    |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     | 0.6 | 0.6    |    |    |    |    |    |    |    |    |    |     | 0.1 | 0.3 |     | 0.4  |

European Starling occurs at MBO throughout the year, often in large numbers, although only 17 individuals have been banded over 10 years. Spring numbers tend to be modest, often peaking the first two weeks of the season. The mean daily count is usually at its lowest in August, then builds sharply around mid-fall, with an overall peak in the second half of October. Numbers drop off in November, but remain higher throughout winter than for most of the rest of the year. Spring counts have fluctuated randomly over the years, but fall numbers have been distinctly higher since 2012 compared to all previous years.

**AMPI: American Pipit / Pipit d'Amérique (*Anthus rubescens*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     |        |        |        |      |        |      |       | Sep 11 | Sep 11 | Oct 12 | 32   | 5 (6%)   | 13   | 22    |
| 2006     | Apr 30 | Apr 30 | May 4  | 5    | 3 (4%) | 10   | 12    | Sep 10 | Oct 27 | Oct 27 | 48   | 4 (4%)   | 18   | 24    |
| 2007     |        |        |        |      |        |      |       | Sep 1  | Sep 1  | Sep 8  | 8    | 2 (2%)   | 1    | 2     |
| 2008     | May 24 | May 24 | May 24 | 1    | 1 (1%) | 1    | 1     | Oct 8  | Oct 8  | Oct 8  | 1    | 1 (1%)   | 2    | 2     |
| 2009     | May 8  | May 8  | May 8  | 1    | 1 (1%) | 1    | 1     | Sep 20 | Sep 26 | Sep 26 | 7    | 2 (2%)   | 3    | 4     |
| 2010     |        |        |        |      |        |      |       | Oct 4  | Oct 6  | Oct 30 | 27   | 4 (4%)   | 6    | 11    |
| 2011     |        |        |        |      |        |      |       | Oct 2  | Oct 4  | Oct 4  | 3    | 2 (2%)   | 3    | 5     |
| 2012     |        |        |        |      |        |      |       | Sep 21 | Oct 4  | Oct 26 | 36   | 18 (20%) | 44   | 134   |
| 2013     | May 4  | May 4  | May 7  | 4    | 2 (3%) | 1    | 2     | Sep 24 | Oct 25 | Oct 29 | 36   | 20 (22%) | 24   | 131   |
| 2014     |        |        |        |      |        |      |       | Sep 27 | Oct 1  | Oct 30 | 34   | 13 (14%) | 22   | 72    |
| Mean     | May 9  | May 9  | May 10 | 3    | 2 (3%) | 3    | 1.6   | Sep 21 | Oct 2  | Oct 14 | 23   | 7 (8%)   | 14   | 41    |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6   | S7 | S8 | S9   | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|----|----|----|----|-----|------|----|----|------|-----|--------|
| 2005     |      |     |     |     |     |        |    |    |    |    |     |      |    |    |      |     |        |
| 2006     |      |     |     |     |     |        |    |    |    |    | 1.4 | 0.3  |    |    |      |     | 0.2    |
| 2007     |      |     |     |     |     |        |    |    |    |    |     |      |    |    |      |     |        |
| 2008     |      |     |     |     |     |        |    |    |    |    |     |      |    |    | 0.1  |     | 0.01   |
| 2009     |      |     |     |     |     |        |    |    |    |    |     | 0.1  |    |    |      |     | 0.01   |
| 2010     |      |     |     |     |     |        |    |    |    |    |     |      |    |    |      |     |        |
| 2011     |      |     |     |     |     |        |    |    |    |    |     |      |    |    |      |     |        |
| 2012     | 0.2  |     |     |     |     | 0.08   |    |    |    |    |     |      |    |    |      |     |        |
| 2013     |      |     |     |     |     |        |    |    |    |    |     | 0.3  |    |    |      |     | 0.03   |
| 2014     |      |     |     |     |     |        |    |    |    |    |     |      |    |    |      |     |        |
| Mean     | 0.02 |     |     |     |     | 0.01   |    |    |    |    | 0.1 | 0.07 |    |    | 0.01 |     | 0.02   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5   | F6  | F7 | F8  | F9  | F10  | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|------|-----|----|-----|-----|------|-----|-----|-----|------|
| 2005     |     |     |        |    |    |    |    |      | 1.9 |    | 0.1 | 0.8 | 0.3  | 0.2 |     |     | 0.2  |
| 2006     |     |     |        |    |    |    |    |      | 0.3 |    |     | 0.1 |      |     |     | 3.0 | 0.3  |
| 2007     |     |     |        |    |    |    |    | 0.1  | 0.1 |    |     |     |      |     |     |     | 0.02 |
| 2008     |     |     |        |    |    |    |    |      |     |    |     | 0.3 |      |     |     |     | 0.02 |
| 2009     |     |     |        |    |    |    |    |      |     |    | 0.1 | 0.4 |      |     |     |     | 0.04 |
| 2010     |     |     |        |    |    |    |    |      |     |    |     | 1.0 | 0.3  |     |     | 0.3 | 0.1  |
| 2011     |     |     |        |    |    |    |    |      |     |    |     | 0.3 | 0.4  |     |     |     | 0.05 |
| 2012     |     |     |        |    |    |    |    |      |     |    | 0.1 | 2.3 | 12.3 | 1.1 | 2.6 | 0.7 | 1.5  |
| 2013     |     |     |        |    |    |    |    |      |     |    | 2.4 | 4.4 | 3.1  | 2.1 | 2.9 | 3.7 | 1.4  |
| 2014     |     |     |        |    |    |    |    |      |     |    |     | 4.7 |      | 4.1 | 0.1 | 1.3 | 0.8  |
| Mean     |     |     |        |    |    |    |    | 0.01 | 0.2 |    | 0.3 | 1.3 | 1.8  | 0.8 | 0.6 | 0.9 | 0.4  |

American Pipit is a rare spring and uncommon fall migrant at MBO, with one late sighting trickling over into November. Aside from an unusually late observation on May 24, all other spring records were between April 30 and May 8. Fall sightings are scattered over a longer period, spanning nine weeks, but most commonly peaking in week 9 or 10. Fall counts have been much higher since 2012 than in any previous years. All sightings have been of individuals or small flocks flying over MBO. As they are often high up, many may pass by undetected, and the higher counts in recent years may in part reflect a greater number of experienced observers on site.

**BOWA: Bohemian Waxwing / Jaseur boréal (*Bombycilla garrulus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 5  | Apr 8  | Apr 18 | 14   | 12 (20%) | 93   | 230   | Oct 23 | Oct 23 | Oct 23 | 1    | 1 (1%) | 1    | 1     |
| 2006     |        |        |        |      |          |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |          |      |       | Oct 29 | Oct 29 | Oct 30 | 2    | 2 (2%) | 6    | 9     |
| 2008     | Apr 1  | Apr 3  | Apr 3  | 3    | 2 (3%)   | 66   | 98    |        |        |        |      |        |      |       |
| 2009     | Mar 29 | Mar 29 | Apr 18 | 21   | 9 (13%)  | 300  | 466   |        |        |        |      |        |      |       |
| 2010     | Mar 28 | Mar 31 | Mar 31 | 4    | 2 (3%)   | 27   | 29    | Oct 28 | Oct 28 | Oct 28 | 1    | 1 (1%) | 1    | 1     |
| 2011     | Mar 31 | Mar 31 | May 5  | 36   | 24 (34%) | 163  | 871   |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |          |      |       | Oct 23 | Oct 27 | Oct 29 | 7    | 7 (8%) | 9    | 19    |
| 2013     | Mar 31 | Mar 31 | Apr 23 | 24   | 3 (4%)   | 7    | 14    |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |          |      |       |        |        |        |      |        |      |       |
| Mean     | Mar 31 | Apr 1  | Apr 16 | 17   | 9 (13%)  | 109  | 171   | Oct 25 | Oct 26 | Oct 27 | 3    | 3 (3%) | 4    | 3.0   |

| Observed | Nov | Dec | Jan  | Feb  | Mar  | Winter | S1   | S2   | S3   | S4   | S5  | S6  | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|------|------|------|--------|------|------|------|------|-----|-----|----|----|----|-----|--------|
| 2005     |     |     |      | 33.3 | 9.3  | 12.1   |      | 35.3 | 2.3  | 0.3  |     |     |    |    |    |     | 3.9    |
| 2006     |     |     | 3.7  | 11.1 | 1.3  | 2.9    |      |      |      |      |     |     |    |    |    |     |        |
| 2007     |     |     |      |      |      |        |      |      |      |      |     |     |    |    |    |     |        |
| 2008     | 0.1 |     |      | 25.0 |      | 7.3    | 14.0 |      |      |      |     |     |    |    |    |     | 1.4    |
| 2009     |     |     | 31.0 | 23.7 | 35.9 | 23.6   | 54.6 | 13.5 | 0.1  | 0.3  |     |     |    |    |    |     | 6.8    |
| 2010     | 0.1 |     |      | 1.6  | 6.7  | 1.7    | 4.1  |      |      |      |     |     |    |    |    |     | 0.4    |
| 2011     |     |     | 13.1 | 5.2  | 0.8  | 5.2    | 26.7 | 31.3 | 10.6 | 42.4 | 9.6 | 3.9 |    |    |    |     | 12.4   |
| 2012     |     | 0.5 | 0.3  |      |      | 0.1    |      |      |      |      |     |     |    |    |    |     |        |
| 2013     | 1.0 | 3.6 | 1.4  | 0.2  | 4.8  | 2.5    | 1.0  |      |      | 1.0  |     |     |    |    |    |     | 0.2    |
| 2014     |     |     |      |      |      |        |      |      |      |      |     |     |    |    |    |     |        |
| Mean     | 0.1 | 0.5 | 4.7  | 9.8  | 8.8  | 4.7    | 11.3 | 7.6  | 1.3  | 4.5  | 1.0 | 0.4 |    |    |    |     | 2.5    |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12  | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|------|-----|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 0.1  |     | 0.01 |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |      |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      | 1.3 | 0.10 |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |      |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |      |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      | 0.1 | 0.01 |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |      |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 0.4  | 2.3 | 0.2  |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |      |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |      |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 0.06 | 0.4 | 0.03 |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 1   | 1    |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.1 | 0.1  |

Bohemian Waxwing is an irregular winter visitor to MBO, occasionally arriving within the final two weeks of fall, and often lingering into spring. Winter numbers typically do not build until January, and overall have peaked in February and March. Spring counts typically taper off quickly, except for 2011 when a late wave of migrants moved through in week 4, and smaller numbers lingered into May for the first time. Only one individual has been banded, in the final week of fall in 2012.

**CEDW: Cedar Waxwing / Jaseur d'Amérique (*Bombicilla cedrorum*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | May 5  | Jun 3 | 60   | 55 (93%) | 95   | 1184  | Aug 1 | Sep 20 | Oct 21 | 82   | 52 (59%) | 40   | 447   |
| 2006     | Apr 5  | May 29 | Jun 5 | 62   | 31 (45%) | 31   | 298   | Aug 1 | Oct 24 | Oct 30 | 91   | 85 (93%) | 94   | 1508  |
| 2007     | Apr 20 | May 30 | Jun 5 | 47   | 17 (24%) | 38   | 167   | Aug 1 | Sep 20 | Oct 29 | 90   | 82 (90%) | 78   | 1046  |
| 2008     | Mar 29 | Mar 31 | Jun 5 | 69   | 32 (46%) | 55   | 289   | Aug 1 | Sep 8  | Oct 26 | 87   | 70 (77%) | 100  | 1163  |
| 2009     | Apr 9  | Apr 17 | Jun 5 | 58   | 29 (42%) | 28   | 259   | Aug 1 | Sep 19 | Oct 30 | 91   | 79 (87%) | 105  | 1559  |
| 2010     | Apr 1  | Apr 23 | Jun 5 | 66   | 55 (79%) | 70   | 1180  | Aug 1 | Aug 6  | Oct 27 | 88   | 62 (68%) | 47   | 736   |
| 2011     | Mar 29 | May 3  | Jun 5 | 69   | 51 (73%) | 128  | 1157  | Aug 1 | Oct 3  | Oct 29 | 90   | 75 (82%) | 63   | 1566  |
| 2012     | Apr 1  | May 21 | Jun 5 | 66   | 46 (66%) | 54   | 678   | Aug 1 | Aug 24 | Oct 24 | 85   | 62 (68%) | 55   | 1046  |
| 2013     | Mar 28 | Jun 1  | Jun 5 | 70   | 25 (36%) | 32   | 276   | Aug 1 | Aug 20 | Oct 30 | 91   | 82 (90%) | 70   | 1805  |
| 2014     | Mar 29 | Apr 25 | Jun 4 | 68   | 59 (87%) | 400  | 2992  | Aug 1 | Aug 11 | Oct 29 | 90   | 76 (84%) | 50   | 1017  |
| Mean     | Apr 3  | May 6  | Jun 4 | 64   | 40 (58%) | 93   | 848   | Aug 1 | Sep 9  | Oct 27 | 88   | 72 (80%) | 70   | 1189  |

| Observed | Nov | Dec | Jan  | Feb | Mar | Winter | S1   | S2   | S3   | S4   | S5    | S6   | S7   | S8   | S9   | S10  | Spring |
|----------|-----|-----|------|-----|-----|--------|------|------|------|------|-------|------|------|------|------|------|--------|
| 2005     |     |     |      |     | 7.3 | 2.1    |      | 18.0 | 36.4 | 32.0 | 18.7  | 44.4 | 5.9  | 4.6  | 7.7  | 12.0 | 20.1   |
| 2006     |     |     |      |     | 1.6 | 0.3    |      | 3.2  | 4.4  | 3.7  | 0.3   |      |      | 3.6  | 14.9 | 13.0 | 4.3    |
| 2007     | 1.0 |     |      |     | 1.4 | 0.7    |      |      |      | 2.3  |       |      | 0.7  | 2.6  | 9.3  | 9.0  | 2.4    |
| 2008     |     |     | 3.2  | 2.4 |     | 1.4    | 16.6 | 0.1  | 0.4  | 0.3  | 0.7   | 0.3  | 0.9  | 1.4  | 9.1  | 11.4 | 4.1    |
| 2009     |     |     |      |     | 0.2 | 0.08   |      | 0.8  | 8.1  | 3.6  | 0.6   | 1.6  | 2.3  | 1.9  | 10.9 | 7.4  | 3.8    |
| 2010     | 0.4 |     |      |     |     | 0.1    | 3.1  | 15.1 | 9.0  | 34.3 | 24.0  | 18.3 | 23.3 | 12.6 | 16.0 | 12.9 | 16.9   |
| 2011     |     |     | 14.6 | 2.3 | 3.8 | 5.9    | 11.0 | 18.1 | 6.4  | 24.1 | 3.0   | 28.4 | 10.0 | 13.0 | 25.0 | 26.1 | 16.5   |
| 2012     | 0.8 | 1.8 | 11.7 |     | 1.4 | 2.3    | 0.1  | 6.4  | 19.4 | 1.7  | 6.4   | 1.1  | 1.7  | 19.7 | 22.7 | 17.4 | 9.7    |
| 2013     |     |     |      |     |     |        | 1.9  |      |      |      |       | 9.0  | 3.1  | 1.0  | 5.7  | 18.7 | 3.9    |
| 2014     | 0.6 |     |      | 0.8 | 7.6 | 1.6    | 5.0  | 35.4 | 26.4 | 69.1 | 153.6 | 53.6 | 17.7 | 9.0  | 34.0 | 28.3 | 44.0   |
| Mean     | 0.4 | 0.1 | 3.0  | 0.5 | 1.6 | 1.2    | 4.2  | 9.8  | 11.1 | 16.9 | 20.7  | 15.7 | 6.6  | 6.9  | 15.5 | 15.6 | 12.4   |

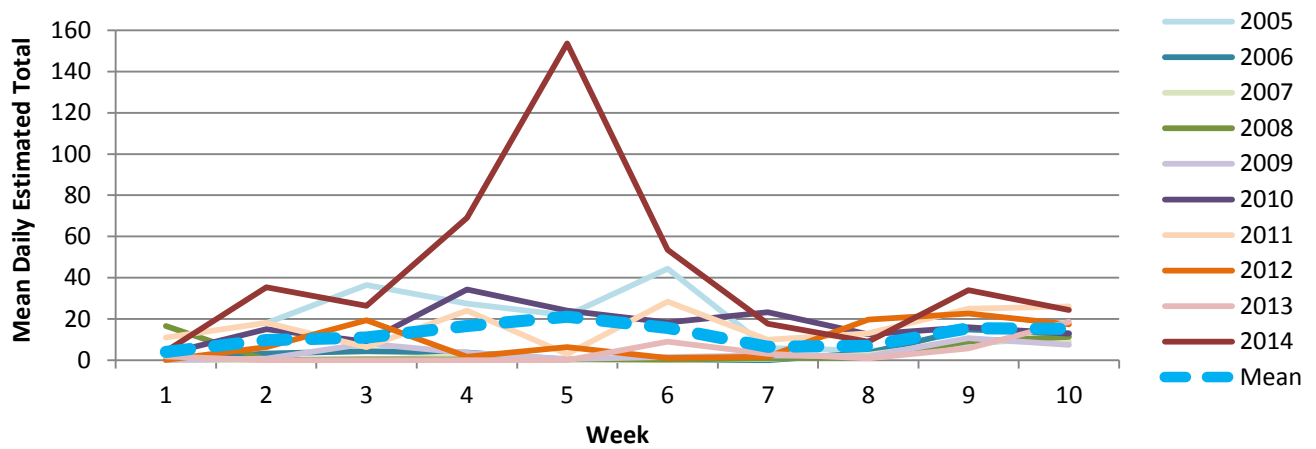
| Observed | Jun  | Jul  | Summer | F1   | F2   | F3   | F4   | F5   | F6   | F7   | F8   | F9   | F10  | F11  | F12  | F13  | Fall |
|----------|------|------|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2005     | 8.8  | 2.5  | 5.6    | 5.7  | 3.0  | 2.1  | 3.9  | 11.4 | 4.7  | 8.6  | 12.7 | 3.7  | 5.0  | 0.8  | 3.6  |      | 5.1  |
| 2006     | 7.0  | 8.2  | 7.6    | 17.7 | 17.4 | 14.6 | 19.4 | 8.1  | 13.9 | 13.7 | 11.4 | 13.9 | 4.3  | 31.0 | 23.4 | 26.6 | 16.6 |
| 2007     | 6.6  | 3.7  | 5.2    | 13.9 | 18.3 | 7.6  | 13.4 | 11.6 | 19.9 | 11.9 | 20.7 | 6.7  | 5.6  | 10.1 | 7.4  | 2.4  | 11.5 |
| 2008     | 4.4  | 5.2  | 4.8    | 8.9  | 13.7 | 11.7 | 6.7  | 9.9  | 32.9 | 28.7 | 22.1 | 17.3 | 6.6  | 3.6  | 2.4  | 1.7  | 12.8 |
| 2009     | 3.0  | 1.8  | 2.3    | 13.3 | 11.0 | 15.9 | 19.6 | 16.4 | 25.4 | 24.0 | 51.0 | 23.9 | 8.7  | 7.9  | 2.6  | 3.1  | 17.1 |
| 2010     | 2.7  | 3.8  | 3.4    | 25.3 | 9.7  | 11.6 | 6.1  | 18.9 | 13.1 | 9.6  | 4.6  | 3.1  | 2.3  | 0.3  |      | 0.6  | 8.1  |
| 2011     | 7.3  | 10.5 | 9.1    | 23.9 | 23.6 | 28.6 | 25.3 | 32.3 | 17.4 | 13.4 | 18.4 | 13.6 | 16.1 | 3.1  | 5.6  | 2.4  | 17.2 |
| 2012     | 3.8  | 3.5  | 3.6    | 19.9 | 22.3 | 25.9 | 31.4 | 13.3 | 7.7  | 10.4 | 8.7  | 8.6  | 0.7  |      | 0.3  | 0.3  | 11.5 |
| 2013     | 19.7 | 12.3 | 15.4   | 36.6 | 29.6 | 41.4 | 40.1 | 33.4 | 19.7 | 19.6 | 11.6 | 10.7 | 4.9  | 2.4  | 3.7  | 4.1  | 19.8 |
| 2014     | 5.0  | 4.8  | 4.9    | 11.0 | 16.4 | 15.1 | 21.1 | 23.1 | 16.1 | 17.1 | 10.6 | 4.9  | 1.6  | 0.9  | 4.1  | 3.1  | 11.2 |
| Mean     | 7.1  | 5.2  | 6.1    | 17.6 | 16.5 | 17.4 | 18.7 | 17.8 | 17.1 | 15.7 | 17.2 | 10.7 | 5.6  | 6.1  | 5.3  | 4.4  | 13.1 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3  | S4  | S5   | S6  | S7  | S8  | S9   | S10  | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|-----|-----|------|-----|-----|-----|------|------|--------|
| 2005   |     |     |     |     |     |        |    |    | 7   | 14  | 5    | 15  |     | 4   |      | 14   | 59     |
| 2006   |     |     |     |     |     |        |    |    | 1   |     |      |     |     | 2   | 8    | 6    | 17     |
| 2007   |     |     |     |     |     |        |    |    |     |     |      |     |     |     | 10   | 7    | 17     |
| 2008   |     |     |     |     |     |        |    |    |     |     |      |     | 1   |     | 11   | 17   | 29     |
| 2009   |     |     |     |     |     |        |    |    |     | 2   |      |     |     |     | 10   | 2    | 14     |
| 2010   |     |     |     |     |     |        |    |    |     | 23  | 6    | 3   |     | 9   | 23   | 8    | 72     |
| 2011   |     |     |     |     |     |        |    |    |     | 5   |      | 3   | 9   | 2   | 24   | 7    | 50     |
| 2012   |     |     |     |     |     |        |    |    |     |     | 1    |     |     | 9   | 38   | 29   | 77     |
| 2013   |     |     |     |     |     |        |    |    |     |     |      |     |     |     | 6    | 1    | 7      |
| 2014   |     |     |     |     |     |        |    |    |     | 33  | 147  | 12  | 3   | 2   | 24   | 11   | 232    |
| Mean   |     |     |     |     |     |        |    |    | 4.0 | 7.7 | 15.9 | 3.3 | 1.3 | 2.8 | 15.4 | 10.2 | 57.4   |

| Banded | Jun | Jul | Summer | F1   | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |      |     |     |     | 2   |     | 1   | 5   |     |     |     |     |     | 8    |
| 2006   |     |     |        | 4    | 6   |     | 1   |     | 3   | 1   |     | 6   |     |     |     | 1   | 22   |
| 2007   |     | 1   | 1      | 6    | 5   |     |     |     | 3   | 1   |     |     |     |     |     |     | 21   |
| 2008   |     |     |        | 2    | 2   |     |     |     | 4   |     | 3   | 5   |     |     |     |     | 16   |
| 2009   | 3   | 5   | 8      | 12   | 2   | 2   | 7   | 4   | 1   | 1   | 4   | 4   |     |     | 1   | 1   | 39   |
| 2010   | 4   | 6   | 10     | 15   | 7   | 1   |     |     |     |     | 2   |     |     |     |     |     | 25   |
| 2011   |     | 2   | 2      | 14   | 7   | 6   | 4   | 6   | 7   | 1   |     |     |     |     |     |     | 45   |
| 2012   |     | 4   | 4      | 13   | 10  | 3   | 3   |     |     |     |     |     |     |     |     |     | 29   |
| 2013   | 1   |     | 1      | 56   | 10  | 7   | 4   |     | 5   | 3   |     | 2   | 4   |     |     |     | 91   |
| 2014   |     |     |        | 3    | 6   | 1   |     | 5   | 1   |     |     |     |     |     |     | 1   | 17   |
| Mean   | 1.3 | 2.0 | 2.9    | 12.5 | 5.5 | 2.0 | 1.9 | 1.7 | 2.4 | 0.8 | 2.0 | 1.7 | 0.4 |     | 0.1 | 0.3 | 31.3 |

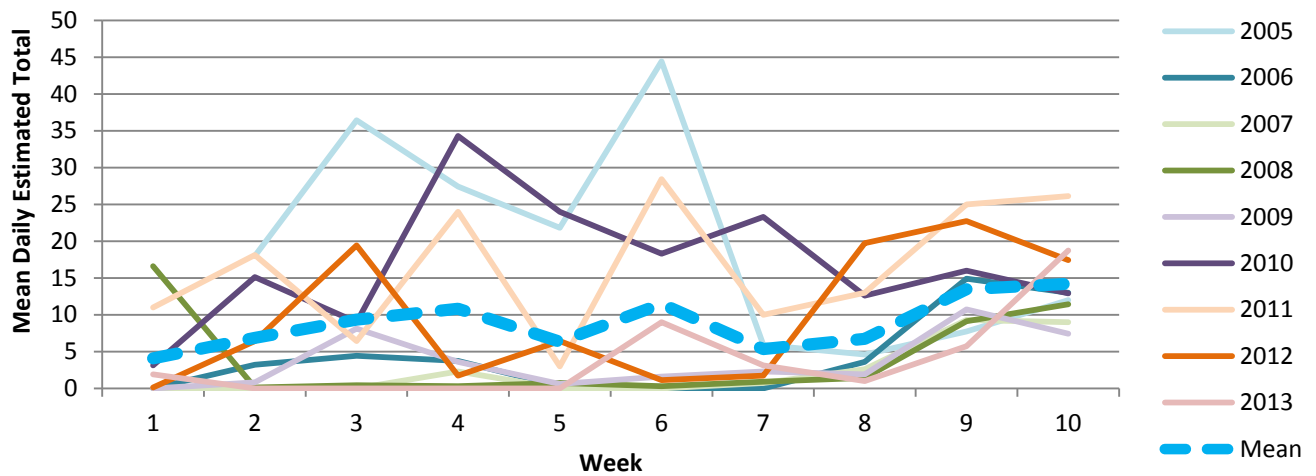
Cedar Waxwing is among the most erratic species at MBO, with the peak of spring migration ranging throughout the season depending on year, and from week 1 to week 11 in fall. Combining results over ten years, there appear to be two waves of spring migration, one in late April, and another in late May. In fall, the number banded is most often highest in week 1, though overall numbers observed are similar throughout August and September before tapering off. The species is common in summer, and also present in part of most winters. Total fall numbers have been fairly consistent except for modest lows in 2005 and 2010, whereas spring counts have fluctuated much more, most notably an extreme high in 2014 more than double any previous spring.

**Mean daily estimated total of Cedar Waxwings in spring, by week (2005-2014)**

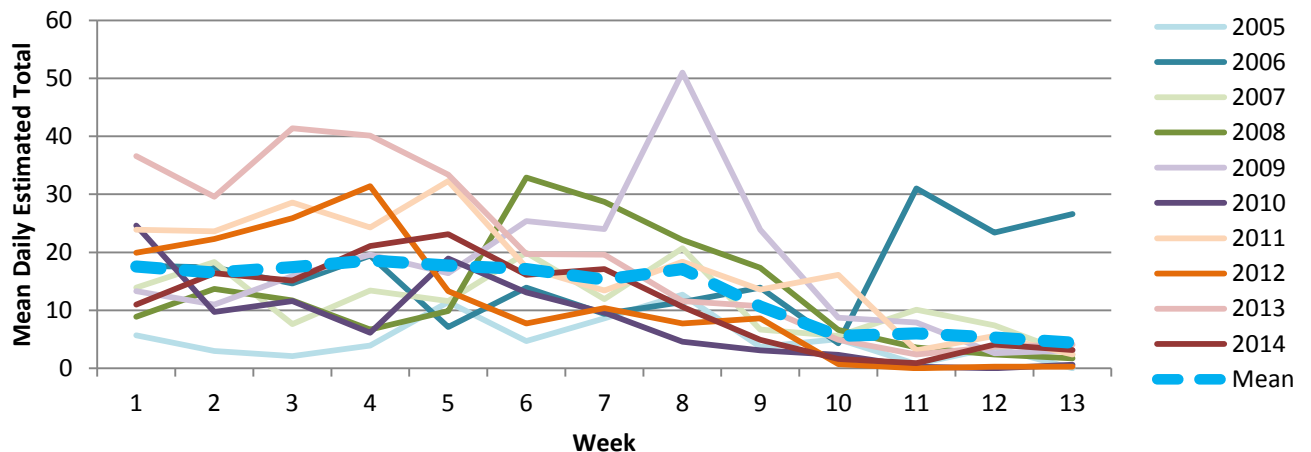


The figure above highlights the exceptionally high abundance of Cedar Waxwings in spring 2014, especially the peak in week 5 (the last week of April). In comparison, the figure below shows that even in other years with lower numbers, the pattern of abundance over the course of spring is highly variable, and often fluctuates up and down during the season. Similarly, the bottom figure reveals that while weekly mean counts are stable for the first two months of fall, there are substantial differences in seasonal occurrence from year to year.

**Mean daily estimated total of Cedar Waxwings in spring, by week (2005-2013)**



**Mean daily estimated total of Cedar Waxwings in fall, by week (2005-2014)**



**SNBU: Snow Bunting / Plectrophenax des neiges (*Plectrophenax nivalis*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       | Oct 30 | Oct 30 | Oct 30 | 1    | 1 (1%) | 34   | 34    |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| Mean     |       |      |      |      |        |      |       | Oct 30 | Oct 30 | Oct 30 | 1    | 1 (1%) | 34   | 3.4   |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005     | 12.5 |     |     |     |     | 3.6    |    |    |    |    |    |    |    |    |    |     |        |
| 2006     | 2.5  |     |     |     |     | 0.5    |    |    |    |    |    |    |    |    |    |     |        |
| 2007     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2008     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2010     |      |     |     | 0.8 |     | 0.2    |    |    |    |    |    |    |    |    |    |     |        |
| 2011     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2012     |      | 8.8 |     |     |     | 1.4    |    |    |    |    |    |    |    |    |    |     |        |
| 2013     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2014     |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| Mean     | 0.8  | 0.7 |     | 0.1 |     | 0.3    |    |    |    |    |    |    |    |    |    |     |        |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 4.9 | 0.4  |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.5 | 0.04 |

Although Snow Bunting is a common winter species in the areas surrounding Montreal, it is rare at MBO, with only one fall sighting on the last day of the season in 2005, plus observations in four winter periods scattered across four years.

**OVEN: Ovenbird / Paruline couronnée (*Seiurus aurocapilla*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 24 | May 28 | Jun 3  | 11   | 8 (14%)  | 2    | 9     | Aug 6 | Sep 5  | Sep 25 | 51   | 27 (31%) | 6    | 47    |
| 2006     | May 9  | May 18 | Jun 5  | 28   | 19 (28%) | 2    | 26    | Aug 2 | Aug 23 | Sep 22 | 52   | 34 (37%) | 6    | 59    |
| 2007     | May 8  | May 21 | May 31 | 24   | 10 (14%) | 4    | 19    | Aug 3 | Aug 3  | Sep 16 | 45   | 18 (20%) | 2    | 20    |
| 2008     | May 7  | May 13 | May 29 | 23   | 12 (17%) | 4    | 22    | Aug 2 | Aug 14 | Oct 10 | 70   | 36 (40%) | 5    | 75    |
| 2009     | May 9  | May 13 | Jun 5  | 28   | 28 (41%) | 4    | 53    | Aug 1 | Aug 18 | Oct 2  | 63   | 33 (36%) | 4    | 45    |
| 2010     | May 7  | May 18 | Jun 5  | 30   | 28 (40%) | 4    | 74    | Aug 2 | Aug 30 | Sep 21 | 51   | 29 (32%) | 4    | 49    |
| 2011     | May 9  | May 24 | Jun 5  | 28   | 24 (34%) | 6    | 47    | Aug 1 | Aug 27 | Sep 25 | 56   | 31 (34%) | 5    | 55    |
| 2012     | May 7  | May 11 | May 19 | 13   | 9 (13%)  | 3    | 12    | Aug 1 | Aug 24 | Sep 25 | 56   | 28 (31%) | 3    | 38    |
| 2013     | May 12 | May 17 | Jun 5  | 25   | 15 (21%) | 2    | 19    | Aug 3 | Aug 9  | Oct 3  | 62   | 39 (43%) | 4    | 63    |
| 2014     | May 10 | May 26 | Jun 1  | 23   | 13 (19%) | 3    | 26    | Aug 5 | Aug 16 | Sep 24 | 51   | 32 (35%) | 5    | 51    |
| Mean     | May 10 | May 18 | Jun 1  | 23   | 17 (24%) | 3    | 31    | Aug 2 | Aug 20 | Sep 26 | 56   | 31 (34%) | 4    | 50    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |     |     | 0.6 | 1.0 | 0.2    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      | 0.3 | 1.0 | 1.3 | 1.1 | 0.4    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    | 0.3  | 0.4 | 1.3 | 0.6 | 0.1 | 0.3    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 2.0 | 0.7 | 0.3 |     | 0.3    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |      | 2.1 | 2.1 | 1.1 | 2.1 | 0.8    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 1.7 | 3.0 | 2.7 | 3.0 | 1.1    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      | 0.6 | 2.1 | 2.4 | 1.6 | 0.7    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 1.3 | 0.3 |     |     | 0.2    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      | 0.3 | 0.7 | 0.7 | 1.0 | 0.3    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.7 | 0.3 | 1.9 | 1.0 | 0.4    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.07 | 0.9 | 1.2 | 1.2 | 1.1 | 0.4    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9   | F10  | F11  | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|-----|------|
| 2005     | 0.2 | 0.4 | 0.3    | 0.1 | 0.1 | 0.7 | 0.9 | 1.9 | 1.3 | 1.0 | 0.7 |      |      |      |     |     | 0.5  |
| 2006     |     | 0.2 | 0.09   | 0.6 | 0.9 | 2.3 | 1.9 | 0.6 | 1.4 | 0.6 | 0.3 |      |      |      |     |     | 0.6  |
| 2007     | 0.9 |     | 0.5    | 0.4 | 0.3 | 0.4 | 0.6 | 0.7 | 0.3 | 0.1 |     |      |      |      |     |     | 0.2  |
| 2008     | 0.6 |     | 0.3    | 0.3 | 1.0 | 1.6 | 1.0 | 2.0 | 2.3 | 1.3 | 1.0 | 0.1  |      | 0.1  |     |     | 0.8  |
| 2009     | 0.7 | 0.5 | 0.6    | 1.1 | 0.6 | 1.1 | 1.4 | 0.6 | 0.4 | 0.1 | 0.7 | 0.3  |      |      |     |     | 0.5  |
| 2010     | 1.0 |     | 0.3    | 0.6 | 0.7 | 1.1 | 1.3 | 1.1 | 1.3 | 0.6 | 0.3 |      |      |      |     |     | 0.5  |
| 2011     | 0.3 | 0.8 | 0.6    | 1.0 | 0.9 | 0.9 | 1.9 | 1.1 | 0.7 | 0.7 | 0.7 |      |      |      |     |     | 0.6  |
| 2012     |     | 0.3 | 0.1    | 0.7 | 0.3 | 0.7 | 1.6 | 0.7 | 0.6 | 0.6 | 0.3 |      |      |      |     |     | 0.4  |
| 2013     | 1.0 | 0.3 | 0.6    | 0.9 | 1.3 | 0.9 | 1.7 | 1.0 | 0.9 | 1.4 | 0.7 | 0.1  | 0.1  |      |     |     | 0.7  |
| 2014     |     | 1.8 | 1.0    | 0.3 | 0.7 | 1.6 | 1.1 | 1.6 | 1.1 | 0.6 | 0.3 |      |      |      |     |     | 0.6  |
| Mean     | 0.4 | 0.3 | 0.3    | 0.6 | 0.7 | 1.1 | 1.3 | 1.1 | 1.0 | 0.7 | 0.5 | 0.06 | 0.01 | 0.01 |     |     | 0.6  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 1   |     | 2      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 3   |     |     | 4      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |     |     | 1      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |     |     | 1      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.2 | 0.5 | 0.1 |     | 0.8    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        | 1   | 1   | 4   | 6   | 7   | 6   | 6   | 3   |     |     |     |     |     | 34   |
| 2006   |     | 1   | 1      | 4   | 6   | 8   | 10  | 3   | 9   | 4   | 2   |     |     |     |     |     | 46   |
| 2007   |     |     |        | 1   | 2   | 2   | 2   | 3   | 2   | 1   |     |     |     |     |     |     | 13   |
| 2008   |     |     |        | 1   | 7   | 7   | 5   | 12  | 3   | 3   | 5   | 1   |     |     |     |     | 44   |
| 2009   |     | 1   | 1      | 8   | 2   | 6   | 8   | 2   | 3   | 1   | 4   | 2   |     |     |     |     | 36   |
| 2010   |     |     |        | 4   | 5   | 8   | 7   | 6   | 7   | 1   | 2   |     |     |     |     |     | 40   |
| 2011   |     | 2   | 2      | 5   | 6   | 6   | 12  | 7   | 4   | 3   | 4   |     |     |     |     |     | 47   |
| 2012   |     | 1   | 1      | 4   | 2   | 4   | 9   | 4   | 4   | 3   | 2   |     |     |     |     |     | 32   |
| 2013   |     | 1   | 1      | 3   | 8   | 4   | 10  | 6   | 5   | 6   | 3   | 1   | 1   |     |     |     | 47   |
| 2014   |     | 5   | 5      | 1   | 5   | 8   | 7   | 10  | 6   | 2   | 2   |     |     |     |     |     | 41   |
| Mean   |     | 1.2 | 1.2    | 3.2 | 4.4 | 5.7 | 7.6 | 6.0 | 4.9 | 3.0 | 2.7 | 0.4 | 0.1 |     |     |     | 38.0 |

Ovenbird is typically present at MBO from the second week of May until late September or early October. The first spring arrival has been between May 7 and 12 every year except 2005 when no Ovenbirds were observed until May 24. Although mean daily counts are comparable during the peak of spring and fall migration, almost 50 times more individuals have been banded in fall. The spring peak is usually indistinct, varying between week 7 and 10; in fall there is a more consistent peak between week 3 and 5. Spring numbers have been relatively consistent except for a distinct high in 2010; fall numbers have fluctuated only slightly over the years. At least one pair breeds in the woods at MBO in most years.



**NOWA: Northern Waterthrush / Paruline des ruisseaux (*Parkesia noveboracensis*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 14 | May 21 | May 31 | 18   | 9 (15%)  | 2    | 10    | Aug 6 | Aug 29 | Sep 19 | 45   | 22 (25%) | 3    | 28    |
| 2006     | May 11 | May 24 | Jun 3  | 24   | 10 (14%) | 4    | 15    | Aug 9 | Aug 22 | Sep 15 | 38   | 22 (24%) | 7    | 51    |
| 2007     | May 5  | May 25 | Jun 1  | 28   | 13 (19%) | 5    | 22    | Aug 7 | Aug 9  | Sep 21 | 46   | 23 (25%) | 2    | 26    |
| 2008     | May 6  | May 28 | May 30 | 25   | 14 (20%) | 8    | 24    | Aug 9 | Aug 31 | Sep 27 | 50   | 10 (11%) | 4    | 21    |
| 2009     | Apr 27 | May 21 | Jun 4  | 39   | 21 (30%) | 13   | 59    | Aug 8 | Aug 26 | Sep 17 | 41   | 22 (24%) | 4    | 36    |
| 2010     | May 1  | May 22 | May 28 | 28   | 12 (17%) | 4    | 22    | Aug 6 | Sep 3  | Sep 19 | 45   | 29 (32%) | 10   | 63    |
| 2011     | May 1  | May 22 | Jun 5  | 36   | 24 (34%) | 7    | 62    | Aug 1 | Sep 2  | Sep 18 | 49   | 16 (18%) | 6    | 27    |
| 2012     | May 2  | May 21 | Jun 1  | 31   | 21 (30%) | 6    | 49    | Aug 4 | Sep 1  | Sep 12 | 40   | 26 (29%) | 4    | 42    |
| 2013     | May 2  | May 23 | Jun 1  | 31   | 24 (34%) | 12   | 84    | Aug 3 | Aug 28 | Sep 4  | 33   | 19 (21%) | 6    | 39    |
| 2014     | May 5  | May 12 | May 31 | 27   | 26 (38%) | 8    | 109   | Aug 1 | Aug 23 | Oct 1  | 62   | 34 (37%) | 5    | 66    |
| Mean     | May 4  | May 21 | Jun 1  | 29   | 17 (25%) | 7    | 46    | Aug 5 | Aug 26 | Sep 18 | 45   | 22 (25%) | 5    | 40    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|------|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |      |     | 0.3 | 0.7 | 0.1 | 0.4 | 0.2    |
| 2006     |     |     |     |     |     |        |    |    |    |    |      |     | 0.1 | 0.6 | 1.3 | 0.1 | 0.2    |
| 2007     |     |     |     |     |     |        |    |    |    |    |      | 0.1 | 0.6 | 0.3 | 1.9 | 0.3 | 0.3    |
| 2008     |     |     |     |     |     |        |    |    |    |    |      | 0.3 | 0.6 | 0.3 | 1.9 | 0.4 | 0.3    |
| 2009     |     |     |     |     |     |        |    |    |    |    | 0.4  | 0.4 | 0.1 | 4.6 | 2.1 | 0.7 | 0.9    |
| 2010     |     |     |     |     |     |        |    |    |    |    | 0.1  | 0.1 |     | 2.0 | 0.9 |     | 0.3    |
| 2011     |     |     |     |     |     |        |    |    |    |    | 0.1  |     | 1.6 | 2.6 | 3.6 | 1.0 | 0.9    |
| 2012     |     |     |     |     |     |        |    |    |    |    |      | 0.3 | 1.9 | 2.7 | 1.9 | 0.3 | 0.7    |
| 2013     |     |     |     |     |     |        |    |    |    |    |      | 0.4 | 1.1 | 5.0 | 4.7 | 0.7 | 1.2    |
| 2014     |     |     |     |     |     |        |    |    |    |    |      | 0.4 | 5.0 | 5.6 | 4.0 | 0.7 | 1.6    |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.07 | 0.2 | 1.1 | 2.4 | 2.2 | 0.5 | 0.7    |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8   | F9   | F10 | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|------|
| 2005     |     | 0.06 | 0.03   | 0.1 | 0.3 | 0.1 | 0.9 | 1.0 | 0.6 | 0.9 | 0.1  |      |     |     |     |     | 0.3  |
| 2006     |     |      |        |     | 0.9 | 0.3 | 3.9 | 1.6 | 0.6 | 0.1 |      |      |     |     |     |     | 0.6  |
| 2007     |     |      |        | 0.1 | 0.7 | 0.1 | 0.9 | 0.7 | 0.6 | 0.4 | 0.1  |      |     |     |     |     | 0.3  |
| 2008     |     |      |        |     | 0.3 |     | 0.6 | 1.3 | 0.7 |     |      | 0.1  |     |     |     |     | 0.2  |
| 2009     |     |      |        |     | 0.7 | 0.4 | 1.0 | 1.6 | 0.9 | 0.6 |      |      |     |     |     |     | 0.4  |
| 2010     |     |      |        | 0.1 | 0.3 | 0.9 | 1.0 | 2.6 | 3.4 | 0.6 | 0.1  |      |     |     |     |     | 0.7  |
| 2011     |     |      |        | 0.3 | 0.3 | 0.3 | 0.3 | 2.1 | 0.4 | 0.1 |      |      |     |     |     |     | 0.3  |
| 2012     |     |      |        | 0.7 | 1.1 | 1.1 | 0.4 | 1.3 | 1.1 | 0.1 |      |      |     |     |     |     | 0.5  |
| 2013     |     |      |        | 0.3 | 0.6 | 0.9 | 2.9 | 1.0 |     |     |      |      |     |     |     |     | 0.4  |
| 2014     |     |      |        | 1.1 | 1.3 | 1.1 | 3.0 | 0.6 | 1.1 | 0.9 | 0.1  | 0.1  |     |     |     |     | 0.7  |
| Mean     |     | 0.02 | <0.01  | 0.3 | 0.6 | 0.5 | 1.5 | 1.4 | 0.9 | 0.4 | 0.06 | 0.03 |     |     |     |     | 0.4  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |     |     |     | 3   |     | 1   | 4      |
| 2006   |     |     |     |     |     |        |    |    |    |    |     |     | 1   |     | 4   |     | 5      |
| 2007   |     |     |     |     |     |        |    |    |    |    |     | 1   | 1   | 2   | 9   | 2   | 15     |
| 2008   |     |     |     |     |     |        |    |    |    |    |     | 1   | 1   | 2   | 8   |     | 12     |
| 2009   |     |     |     |     |     |        |    |    |    |    | 2   |     | 1   | 15  | 7   | 1   | 26     |
| 2010   |     |     |     |     |     |        |    |    |    |    | 1   |     |     | 8   | 3   |     | 12     |
| 2011   |     |     |     |     |     |        |    |    |    |    |     |     | 2   | 8   | 15  | 3   | 28     |
| 2012   |     |     |     |     |     |        |    |    |    |    |     |     | 6   | 15  | 6   | 1   | 28     |
| 2013   |     |     |     |     |     |        |    |    |    |    |     | 1   | 4   | 23  | 14  | 1   | 43     |
| 2014   |     |     |     |     |     |        |    |    |    |    |     | 2   | 16  | 15  | 13  | 2   | 48     |
| Mean   |     |     |     |     |     |        |    |    |    |    | 0.3 | 0.5 | 3.2 | 9.1 | 7.9 | 1.1 | 22.1   |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     | 1   | 1      | 1   | 2   |     | 1   | 4   | 4   | 4   | 1   |     |     |     |     |     | 17   |
| 2006   |     |     |        |     | 4   | 2   | 20  | 8   | 4   | 1   |     |     |     |     |     |     | 39   |
| 2007   |     |     |        | 1   | 2   | 1   | 5   | 4   | 2   |     | 1   |     |     |     |     |     | 16   |
| 2008   |     |     |        |     | 2   |     | 3   | 8   | 5   |     |     | 1   |     |     |     |     | 19   |
| 2009   |     |     |        |     | 2   | 2   | 6   | 4   | 3   | 4   |     |     |     |     |     |     | 21   |
| 2010   |     |     |        | 1   | 2   | 6   | 7   | 17  | 17  | 2   | 1   |     |     |     |     |     | 53   |
| 2011   |     |     |        | 2   | 2   |     | 2   | 15  | 2   |     |     |     |     |     |     |     | 23   |
| 2012   |     |     |        | 5   | 7   | 6   | 3   | 8   | 5   | 1   |     |     |     |     |     |     | 35   |
| 2013   |     |     |        | 2   | 4   | 5   | 17  | 5   |     |     |     |     |     |     |     |     | 33   |
| 2014   |     |     |        | 7   | 4   | 6   | 18  | 4   | 8   | 5   | 1   | 1   |     |     |     |     | 54   |
| Mean   |     | 0.1 | 0.1    | 1.9 | 3.1 | 2.8 | 8.2 | 7.7 | 5.0 | 1.7 | 0.4 | 0.2 |     |     |     |     | 31.0 |

Northern Waterthrush arrives slightly earlier in spring than Ovenbird, and also departs earlier in fall, but differs in that there is only one summer record for the species. Spring migration always has a distinct peak in week 8 or 9, and also unlike Ovenbird, relatively large numbers of Northern Waterthrush are banded in spring. Fall migration is similarly predictable, almost always peaking in week 4 or 5. Spring numbers have shown a substantial increase over time; the trend in fall is in the same direction but far more modest.

**GWWA: Golden-winged Warbler / Paruline à ailes dorées (*Vermivora chrysoptera*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       | Sep 11 | Sep 11 | Sep 11 | 1    | 1 (1%) | 1    | 1     |
| 2008     |        |        |        |      |        |      |       | Aug 10 | Aug 10 | Aug 11 | 2    | 2 (2%) | 1    | 2     |
| 2009     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2012     | May 18 | May 18 | May 18 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | May 18 | May 18 | May 18 | 1    | 1 (1%) | 1    | 0.1   | Aug 26 | Aug 26 | Aug 26 | 2    | 2 (2%) | 1    | 0.3   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8   | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|------|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1  |    |     | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.01 |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2   | F3 | F4 | F5 | F6   | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|------|----|----|----|------|----|----|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |      |    |    |    |      |    |    |    |     |     |     |     |       |
| 2006     |     |     |        |    |      |    |    |    |      |    |    |    |     |     |     |     |       |
| 2007     |     |     |        |    |      |    |    |    | 0.1  |    |    |    |     |     |     |     | 0.01  |
| 2008     |     |     |        |    | 0.3  |    |    |    |      |    |    |    |     |     |     |     | 0.02  |
| 2009     |     |     |        |    |      |    |    |    |      |    |    |    |     |     |     |     |       |
| 2010     |     |     |        |    |      |    |    |    |      |    |    |    |     |     |     |     |       |
| 2011     |     |     |        |    |      |    |    |    |      |    |    |    |     |     |     |     |       |
| 2012     |     |     |        |    |      |    |    |    |      |    |    |    |     |     |     |     |       |
| 2013     |     |     |        |    |      |    |    |    |      |    |    |    |     |     |     |     |       |
| 2014     |     |     |        |    |      |    |    |    |      |    |    |    |     |     |     |     |       |
| Mean     |     |     |        |    | 0.03 |    |    |    | 0.01 |    |    |    |     |     |     |     | <0.01 |

| Banded | Jun | Jul | Summer | F1 | F2  | F3 | F4 | F5 | F6  | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|-----|----|----|----|-----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |     |    |    |    |     |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |    |     |    |    |    |     |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |     |    |    |    | 1   |    |    |    |     |     |     |     | 1    |
| 2008   |     |     |        |    | 1   |    |    |    |     |    |    |    |     |     |     |     | 1    |
| 2009   |     |     |        |    |     |    |    |    |     |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |     |    |    |    |     |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |     |    |    |    |     |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |     |    |    |    |     |    |    |    |     |     |     |     |      |
| 2013   |     |     |        |    |     |    |    |    |     |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |     |    |    |    |     |    |    |    |     |     |     |     |      |
| Mean   |     |     |        |    | 0.1 |    |    |    | 0.1 |    |    |    |     |     |     |     | 0.2  |

Golden-winged Warbler is among the rarest of the 27 warbler species observed at MBO, with only one spring and two fall records over ten years. Both fall birds were banded, and appeared almost exactly one month apart, in consecutive years.

**BWWA: Blue-winged Warbler / Paruline à ailes bleues (*Vermivora cyanoptera*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       | Aug 27 | Aug 27 | Aug 27 | 1    | 1 (1%) | 1    | 1     |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     | May 14 | May 14 | May 14 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | May 14 | May 14 | May 14 | 1    | 1 (1%) | 1    | 0.1   | Aug 27 | Aug 27 | Aug 27 | 1    | 1 (1%) | 1    | 0.1   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7   | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|------|----|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  |    |    |     | 0.01   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.01 |    |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4   | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|----|------|----|----|----|----|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |    |    | 0.1  |    |    |    |    |    |     |     |     |     | 0.01  |
| 2006     |     |     |        |    |    |    |      |    |    |    |    |    |     |     |     |     |       |
| 2007     |     |     |        |    |    |    |      |    |    |    |    |    |     |     |     |     |       |
| 2008     |     |     |        |    |    |    |      |    |    |    |    |    |     |     |     |     |       |
| 2009     |     |     |        |    |    |    |      |    |    |    |    |    |     |     |     |     |       |
| 2010     |     |     |        |    |    |    |      |    |    |    |    |    |     |     |     |     |       |
| 2011     |     |     |        |    |    |    |      |    |    |    |    |    |     |     |     |     |       |
| 2012     |     |     |        |    |    |    |      |    |    |    |    |    |     |     |     |     |       |
| 2013     |     |     |        |    |    |    |      |    |    |    |    |    |     |     |     |     |       |
| 2014     |     |     |        |    |    |    |      |    |    |    |    |    |     |     |     |     |       |
| Mean     |     |     |        |    |    |    | 0.01 |    |    |    |    |    |     |     |     |     | <0.01 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |    |    |     | 1      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 |    |    |     | 0.1    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4  | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|-----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    | 1   |    |    |    |    |    |     |     |     |     | 1    |
| 2006   |     |     |        |    |    |    |     |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |     |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |     |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |     |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |     |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |     |    |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |     |    |    |    |    |    |     |     |     |     |      |
| 2013   |     |     |        |    |    |    |     |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |     |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        |    |    |    | 0.1 |    |    |    |    |    |     |     |     |     | 0.1  |

Blue-winged Warbler is another of the rare warblers at MBO, with only one spring and one fall record over ten years, and none since 2009. Both individuals were banded.

**BAWW: Black-and-white Warbler / Paruline noir et blanc (*Mniotilta varia*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 13 | May 16 | May 29 | 17   | 10 (17%) | 2    | 13    | Aug 1 | Aug 27 | Sep 28 | 59   | 33 (38%) | 4    | 53    |
| 2006     | May 3  | May 25 | Jun 5  | 34   | 22 (32%) | 7    | 57    | Aug 5 | Aug 16 | Oct 1  | 58   | 22 (24%) | 4    | 47    |
| 2007     | May 8  | May 11 | Jun 5  | 29   | 12 (17%) | 3    | 20    | Aug 1 | Aug 19 | Sep 12 | 43   | 28 (31%) | 5    | 52    |
| 2008     | May 6  | May 17 | May 31 | 26   | 20 (29%) | 6    | 47    | Aug 1 | Aug 20 | Oct 3  | 64   | 34 (37%) | 4    | 52    |
| 2009     | Apr 28 | May 12 | May 25 | 28   | 14 (20%) | 3    | 24    | Aug 1 | Aug 24 | Sep 13 | 44   | 25 (27%) | 7    | 60    |
| 2010     | May 6  | May 18 | May 29 | 24   | 14 (20%) | 16   | 41    | Aug 2 | Aug 20 | Sep 18 | 48   | 30 (33%) | 11   | 71    |
| 2011     | May 3  | May 7  | May 25 | 23   | 14 (20%) | 2    | 18    | Aug 1 | Aug 30 | Sep 25 | 56   | 32 (35%) | 6    | 66    |
| 2012     | May 4  | May 9  | May 21 | 18   | 8 (11%)  | 5    | 23    | Aug 1 | Aug 15 | Sep 16 | 47   | 24 (26%) | 3    | 35    |
| 2013     | May 1  | May 19 | May 25 | 25   | 6 (9%)   | 4    | 13    | Aug 5 | Aug 13 | Sep 24 | 51   | 26 (29%) | 3    | 40    |
| 2014     | May 10 | May 11 | Jun 3  | 25   | 13 (19%) | 6    | 29    | Aug 1 | Aug 18 | Oct 5  | 66   | 33 (36%) | 4    | 46    |
| Mean     | May 5  | May 14 | May 29 | 25   | 13 (19%) | 5    | 29    | Aug 1 | Aug 20 | Sep 23 | 54   | 29 (32%) | 5    | 52    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|------|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |      |     | 0.4 | 0.6 | 0.9 |     | 0.2    |
| 2006     |     |     |     |     |     |        |    |    |    |    |      | 0.4 | 0.4 | 3.9 | 2.6 | 0.9 | 0.8    |
| 2007     |     |     |     |     |     |        |    |    |    |    |      | 0.1 | 0.9 | 1.6 | 0.1 | 0.1 | 0.3    |
| 2008     |     |     |     |     |     |        |    |    |    |    |      | 0.6 | 2.7 | 2.4 | 0.4 | 0.6 | 0.7    |
| 2009     |     |     |     |     |     |        |    |    |    |    | 0.3  | 0.1 | 1.3 | 1.6 | 0.1 |     | 0.3    |
| 2010     |     |     |     |     |     |        |    |    |    |    |      | 0.4 | 0.4 | 4.1 | 0.9 |     | 0.6    |
| 2011     |     |     |     |     |     |        |    |    |    |    |      | 0.6 | 0.7 | 0.9 | 0.4 |     | 0.3    |
| 2012     |     |     |     |     |     |        |    |    |    |    |      | 0.7 | 2.1 | 0.4 |     |     | 0.3    |
| 2013     |     |     |     |     |     |        |    |    |    |    | 0.3  |     |     | 1.1 | 0.4 |     | 0.2    |
| 2014     |     |     |     |     |     |        |    |    |    |    |      |     | 3.0 | 0.6 | 0.3 | 0.3 | 0.4    |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.06 | 0.3 | 1.2 | 1.7 | 0.6 | 0.2 | 0.4    |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9   | F10  | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|-----|------|
| 2005     | 0.3 | 0.2  | 0.2    | 0.6 | 1.0 | 1.0 | 2.1 | 0.9 | 0.4 | 1.1 | 0.1 | 0.3  |      |     |     |     | 0.6  |
| 2006     | 0.1 | 0.08 | 0.09   | 0.1 | 1.0 | 1.0 | 1.3 | 0.7 | 1.1 | 1.1 |     | 0.3  |      |     |     |     | 0.5  |
| 2007     | 0.3 | 0.3  | 0.3    | 1.9 | 1.9 | 2.0 | 1.1 | 0.3 | 0.1 | 0.1 |     |      |      |     |     |     | 0.6  |
| 2008     |     |      |        | 0.7 | 0.9 | 1.7 | 1.4 | 0.6 | 0.9 | 1.0 | 0.1 |      | 0.1  |     |     |     | 0.6  |
| 2009     |     |      |        | 1.4 | 1.0 | 3.0 | 2.6 | 0.3 | 0.1 | 0.1 |     |      |      |     |     |     | 0.7  |
| 2010     |     |      |        | 1.1 | 1.0 | 3.1 | 1.4 | 1.4 | 1.0 | 1.0 |     |      |      |     |     |     | 0.8  |
| 2011     |     | 0.8  | 0.4    | 0.9 | 1.1 | 1.1 | 2.3 | 2.3 | 0.7 | 0.7 | 0.3 |      |      |     |     |     | 0.7  |
| 2012     |     | 0.3  | 0.1    | 1.0 | 0.7 | 1.1 | 1.1 | 0.4 | 0.3 | 0.3 |     |      |      |     |     |     | 0.4  |
| 2013     |     |      |        | 0.1 | 1.0 | 1.0 | 0.9 | 0.6 | 0.6 | 1.3 | 0.3 |      |      |     |     |     | 0.4  |
| 2014     |     |      |        | 0.7 | 0.3 | 1.0 | 1.1 | 0.6 | 0.7 | 0.4 | 1.3 |      | 0.4  |     |     |     | 0.5  |
| Mean     | 0.1 | 0.2  | 0.1    | 0.9 | 1.0 | 1.6 | 1.5 | 0.8 | 0.6 | 0.7 | 0.2 | 0.06 | 0.06 |     |     |     | 0.6  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |     |     | 1   |     |     | 1      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |     |     | 2   |     |     | 2      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |     |     | 3   | 1   |     | 4      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    | 1   | 1   | 3   | 1   |     | 6      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |     |     | 2   |     |     | 2      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |     |     | 1   | 1   |     | 2      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    | 2   |     | 1   | 2   |     | 5      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |     | 2   |     |     |     | 2      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |     |     | 1   |     |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |     | 3   |     | 1   |     | 4      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    | 0.3 | 0.6 | 1.4 | 0.6 |     | 2.9    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        | 1   | 2   | 3   | 6   | 5   |     | 4   |     | 1   |     |     |     |     | 22   |
| 2006   |     |     |        |     | 3   | 3   | 5   | 2   | 4   | 1   |     |     |     |     |     |     | 18   |
| 2007   |     |     |        | 3   | 2   | 1   | 2   | 1   |     |     |     |     |     |     |     |     | 9    |
| 2008   |     |     |        | 4   | 5   | 5   | 4   | 1   | 3   | 5   |     |     | 1   |     |     |     | 28   |
| 2009   |     |     |        | 3   | 3   | 10  | 8   |     |     | 1   |     |     |     |     |     |     | 25   |
| 2010   |     |     |        | 6   | 3   | 12  | 2   | 8   | 4   | 4   |     |     |     |     |     |     | 39   |
| 2011   |     | 3   | 3      | 2   | 3   | 4   | 5   | 4   | 1   | 2   | 1   |     |     |     |     |     | 22   |
| 2012   |     |     |        | 5   | 2   | 3   | 2   | 1   | 1   | 2   |     |     |     |     |     |     | 16   |
| 2013   |     |     |        | 1   | 4   | 4   | 4   | 3   | 1   | 6   |     |     |     |     |     |     | 23   |
| 2014   |     |     |        | 3   |     | 1   | 2   | 1   | 1   | 2   | 4   |     | 1   |     |     |     | 15   |
| Mean   |     | 0.3 | 0.3    | 2.8 | 2.7 | 4.6 | 4.0 | 2.6 | 1.5 | 2.7 | 0.5 | 0.1 | 0.2 |     |     |     | 21.7 |

Black-and-white Warbler is a fairly common spring and fall migrant and occasional summer resident at MBO. The timing of spring arrival varies considerably, but regularly peaks in week 8 (occasionally one week earlier, including two of the past three years). The species was observed in both June and July in the first three years, but since then summer observations have been limited to July 2011 and 2012, and the three banded in July 2011 were all molting adults, suggesting a molt migration for this species. Fall counts always peaked in week 3 or 4 over the first eight years, but then suddenly switched to a later peak of week 7 or 8 in 2013 and 2014. Both in spring and fall there have been fluctuations over time, with a weak declining trend overall.

**TEWA: Tennessee Warbler / Paruline obscure (*Oreothlypis peregrina*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 18 | May 28 | May 28 | 11   | 4 (7%)   | 6    | 12    | Aug 6 | Aug 22 | Oct 8  | 64   | 40 (45%) | 8    | 83    |
| 2006     | May 16 | May 21 | May 29 | 14   | 9 (13%)  | 5    | 21    | Aug 2 | Sep 13 | Sep 30 | 60   | 38 (42%) | 13   | 135   |
| 2007     | May 13 | May 21 | Jun 1  | 20   | 13 (19%) | 17   | 68    | Aug 4 | Aug 4  | Oct 10 | 68   | 24 (26%) | 2    | 33    |
| 2008     | May 8  | May 20 | Jun 1  | 25   | 15 (21%) | 6    | 32    | Aug 1 | Sep 13 | Oct 3  | 64   | 48 (53%) | 14   | 147   |
| 2009     | May 15 | May 23 | Jun 3  | 20   | 19 (28%) | 30   | 166   | Aug 2 | Sep 22 | Sep 28 | 58   | 24 (26%) | 4    | 38    |
| 2010     | May 7  | May 21 | May 28 | 22   | 11 (16%) | 6    | 28    | Aug 1 | Sep 9  | Oct 1  | 62   | 48 (53%) | 9    | 141   |
| 2011     | May 13 | May 22 | May 30 | 18   | 15 (21%) | 33   | 153   | Aug 1 | Sep 30 | Oct 10 | 71   | 64 (70%) | 23   | 382   |
| 2012     | May 5  | May 17 | May 28 | 24   | 21 (30%) | 45   | 248   | Aug 3 | Aug 24 | Oct 5  | 64   | 49 (54%) | 20   | 168   |
| 2013     | May 14 | May 22 | May 28 | 15   | 15 (21%) | 30   | 126   | Aug 1 | Sep 3  | Oct 11 | 72   | 57 (63%) | 56   | 473   |
| 2014     | May 14 | May 23 | Jun 3  | 21   | 21 (31%) | 72   | 344   | Aug 2 | Aug 22 | Oct 8  | 68   | 58 (64%) | 32   | 314   |
| Mean     | May 12 | May 21 | May 30 | 19   | 14 (21%) | 25   | 120   | Aug 2 | Sep 3  | Oct 5  | 65   | 45 (50%) | 18   | 191   |

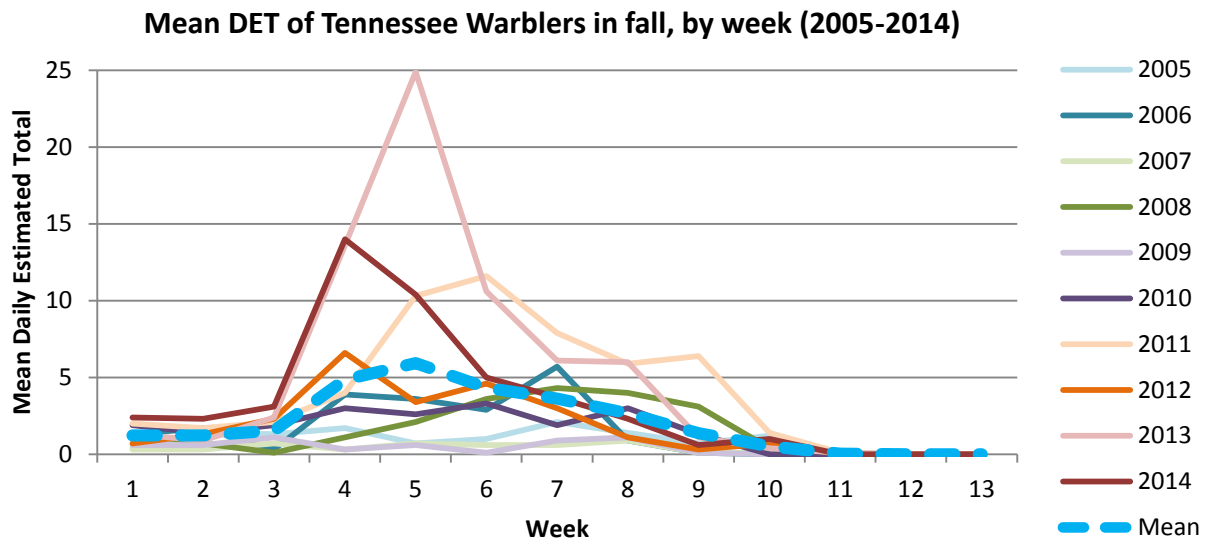
| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7  | S8   | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|-----|------|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.1  | 1.6  |     | 0.2    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |     | 1.4  | 1.6  |     | 0.3    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      | 0.9 | 7.0  | 1.4  | 0.4 | 1.0    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.9 | 1.9  | 1.0  | 0.7 | 0.5    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |      | 0.4 | 12.9 | 8.7  | 1.7 | 2.4    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    | 0.4  | 1.0 | 2.3  | 0.3  |     | 0.4    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      | 1.1 | 6.6  | 14.0 | 0.1 | 2.2    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    | 0.3  | 7.6 | 18.0 | 9.6  |     | 3.5    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      | 0.3 | 9.6  | 8.1  |     | 1.8    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.9 | 12.6 | 28.1 | 8.8 | 5.1    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.09 | 1.3 | 7.2  | 7.4  | 1.1 | 1.7    |

| Observed | Jun  | Jul  | Summer | F1  | F2  | F3  | F4   | F5   | F6   | F7  | F8  | F9  | F10 | F11  | F12 | F13 | Fall |
|----------|------|------|--------|-----|-----|-----|------|------|------|-----|-----|-----|-----|------|-----|-----|------|
| 2005     |      | 0.2  | 0.09   | 0.4 | 1.4 | 1.3 | 1.7  | 0.7  | 1.0  | 2.1 | 1.4 | 0.7 | 1.3 |      |     |     | 0.9  |
| 2006     |      | 0.08 | 0.05   | 1.3 | 0.7 | 0.3 | 3.9  | 3.6  | 2.9  | 5.7 | 0.9 | 0.1 |     |      |     |     | 1.5  |
| 2007     |      |      |        | 0.3 | 0.3 | 0.7 | 0.3  | 0.7  | 0.6  | 0.6 | 0.9 | 0.1 | 0.1 | 0.1  |     |     | 0.4  |
| 2008     |      |      |        | 1.4 | 0.7 | 0.1 | 1.1  | 2.1  | 3.6  | 4.3 | 4.0 | 3.1 | 0.4 |      |     |     | 1.6  |
| 2009     |      | 0.3  | 0.1    | 0.6 | 0.6 | 1.1 | 0.3  | 0.6  | 0.1  | 0.9 | 1.1 | 0.1 |     |      |     |     | 0.4  |
| 2010     | 0.3  | 0.2  | 0.2    | 1.9 | 1.4 | 1.9 | 3.0  | 2.6  | 3.3  | 1.9 | 3.0 | 1.3 |     |      |     |     | 1.5  |
| 2011     |      | 0.3  | 0.1    | 2.0 | 1.7 | 2.1 | 4.0  | 10.4 | 11.6 | 7.9 | 6.0 | 7.3 | 1.4 | 0.1  |     |     | 4.2  |
| 2012     |      |      |        | 0.7 | 1.3 | 2.3 | 6.6  | 3.4  | 4.6  | 3.0 | 1.1 | 0.3 | 0.7 |      |     |     | 1.8  |
| 2013     |      |      |        | 1.3 | 0.9 | 2.4 | 13.7 | 24.9 | 10.6 | 6.1 | 6.0 | 1.1 | 0.4 | 0.1  |     |     | 5.2  |
| 2014     |      | 0.3  | 0.1    | 2.4 | 2.3 | 3.1 | 14.0 | 10.4 | 5.0  | 3.7 | 2.3 | 0.6 | 1.0 |      |     |     | 3.5  |
| Mean     | 0.02 | 0.1  | 0.07   | 1.2 | 1.1 | 1.5 | 4.9  | 5.9  | 4.3  | 3.6 | 2.7 | 1.5 | 0.5 | 0.04 |     |     | 2.1  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8   | S9   | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|------|------|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1    | 3    |     | 4      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1    | 1    |     | 2      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 12   | 3    |     | 16     |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     | 2    | 1    | 3   | 6      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     | 36   | 44   | 2   | 82     |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 6    |      |     | 7      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 23   | 46   | 1   | 71     |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    | 16  | 48   | 30   |     | 94     |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     | 38   | 11   |     | 49     |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 25   | 100  | 16  | 142    |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 2.0 | 19.2 | 23.9 | 2.2 | 47.3   |

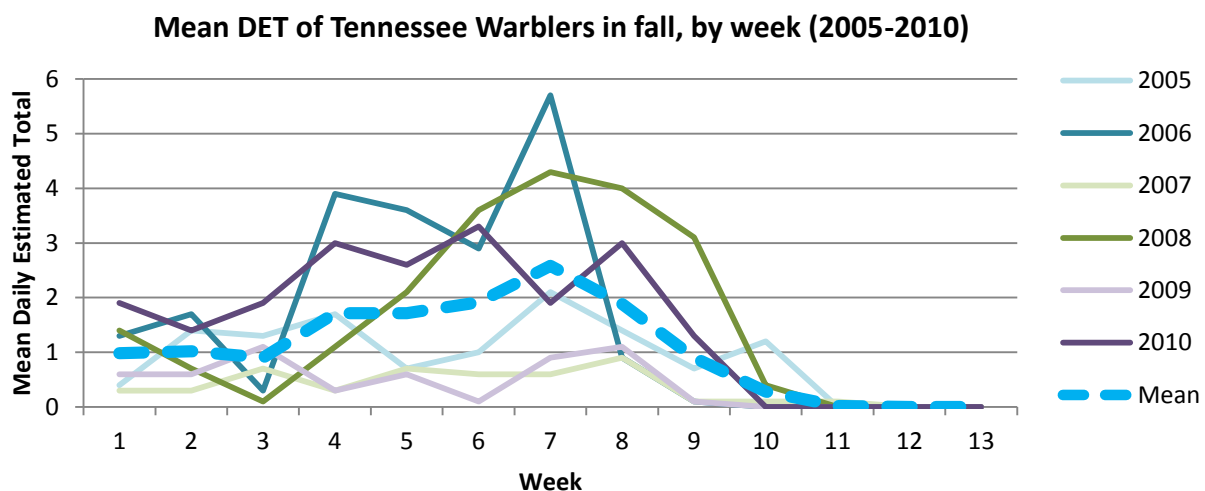
| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4   | F5   | F6   | F7   | F8   | F9  | F10 | F11 | F12 | F13 | Fall  |
|--------|-----|-----|--------|-----|-----|-----|------|------|------|------|------|-----|-----|-----|-----|-----|-------|
| 2005   |     |     |        | 3   | 7   | 3   | 7    | 2    | 1    | 13   | 6    | 2   | 2   |     |     |     | 46    |
| 2006   |     |     |        | 5   | 3   | 1   | 10   | 7    | 9    | 20   | 1    | 1   |     |     |     |     | 57    |
| 2007   |     |     |        |     | 2   | 2   | 1    | 2    | 2    | 3    | 4    |     | 1   | 1   |     |     | 18    |
| 2008   |     |     |        | 9   | 3   | 1   | 6    | 6    | 16   | 18   | 16   | 11  |     |     |     |     | 86    |
| 2009   |     | 1   | 1      | 2   | 1   | 5   | 1    | 1    |      | 5    | 7    | 1   |     |     |     |     | 23    |
| 2010   |     | 1   | 1      | 10  | 6   | 11  | 10   | 17   | 20   | 11   | 20   | 9   |     |     |     |     | 114   |
| 2011   |     |     |        | 8   | 6   | 5   | 23   | 52   | 37   | 28   | 23   | 22  | 4   |     |     |     | 208   |
| 2012   |     |     |        | 4   | 5   | 5   | 21   | 8    | 20   | 5    | 2    | 1   | 4   |     |     |     | 75    |
| 2013   |     |     |        | 2   | 2   | 8   | 74   | 87   | 36   | 17   | 18   | 3   | 2   |     |     |     | 249   |
| 2014   |     | 1   | 1      | 7   | 6   | 9   | 56   | 47   | 12   | 14   | 9    | 3   | 5   |     |     |     | 168   |
| Mean   |     | 0.3 | 0.3    | 5.0 | 4.1 | 5.0 | 20.9 | 22.9 | 15.3 | 13.4 | 10.6 | 5.3 | 1.8 | 0.1 |     |     | 104.4 |

Tennessee Warbler is one of the most common warblers at MBO, with a total of 473 banded in spring (more than any other warbler) and 1044 banded in fall (ranked fifth behind Yellow-rumped, Magnolia, Nashville, and American Redstart). Spring numbers consistently peak in weeks 8 and 9, with observations as early as week 6 in only three years out of ten. Limited summer records are primarily early arriving molt migrants near the end of July. Additional molt migrants arrive in the first week of August each year, and the span of fall observations generally extends over more than two months, longer than any other warbler. Observations typically trickle into early October, but to date none have extended past week 11.



The overall fall peak of Tennessee Warblers occurs in week 5, but this is driven strongly by the unusually high peaks in 2011 (week 6), 2013 (week 5), and 2014 (week 4), and to a lesser degree 2012 (week 4). This is consistent with a spike in banding records from 2011 through 2014, with those four years accounting for 75% and 67% of birds banded in spring and fall, respectively. This presumably is at least partly the result of a growing spruce budworm outbreak in parts of Quebec northeast of MBO.

Recognizing that Tennessee Warbler numbers have been elevated at MBO since 2011, the figure below shows the fall pattern for 2005 through 2010. Over that period, the peak of observations was somewhat variable, but overall increased steadily until week 7, which was the peak in three of those six years. The two-week advance in the peak of migration in recent years may simply reflect a shift in timing, as is the case for some other species (e.g., American Redstart). However, it is also possible that it reflects a larger volume of birds coming from Quebec than before, which may be migrating through MBO earlier in fall than those coming from farther away (stable isotope analysis has shown that a number of species migrating through MBO originate in northwestern Canada, following the boreal forest east across Lake Superior, before starting to curve south).



OCWA: Orange-crowned Warbler / Paruline verdâtre (*Oreothlypis celata*)

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     |        |        |        |      |        |      |       | Sep 15 | Oct 11 | Oct 11 | 27   | 9 (10%)  | 4    | 13    |
| 2006     | May 18 | May 21 | May 25 | 8    | 3 (4%) | 2    | 4     | Sep 17 | Sep 23 | Oct 20 | 34   | 12 (13%) | 4    | 18    |
| 2007     |        |        |        |      |        |      |       | Sep 17 | Sep 28 | Oct 16 | 30   | 14 (15%) | 4    | 22    |
| 2008     |        |        |        |      |        |      |       | Sep 30 | Sep 30 | Oct 15 | 16   | 7 (8%)   | 1    | 7     |
| 2009     | May 2  | May 18 | Jun 1  | 31   | 4 (6%) | 2    | 6     | Sep 17 | Oct 10 | Oct 12 | 26   | 8 (9%)   | 4    | 13    |
| 2010     | May 18 | May 19 | May 28 | 11   | 3 (4%) | 4    | 6     | Sep 25 | Sep 25 | Oct 18 | 24   | 2 (2%)   | 1    | 2     |
| 2011     | May 19 | May 19 | May 19 | 1    | 1 (1%) | 1    | 1     | Sep 10 | Oct 3  | Oct 3  | 24   | 6 (7%)   | 8    | 13    |
| 2012     | May 20 | May 20 | May 21 | 2    | 2 (3%) | 1    | 2     | Sep 19 | Oct 4  | Oct 19 | 31   | 10 (11%) | 5    | 16    |
| 2013     | May 29 | May 29 | May 29 | 1    | 1 (1%) | 1    | 1     | Sep 7  | Sep 15 | Oct 4  | 28   | 6 (7%)   | 2    | 8     |
| 2014     | May 11 | May 11 | May 20 | 10   | 2 (3%) | 1    | 2     | Sep 12 | Oct 5  | Oct 13 | 32   | 12 (13%) | 2    | 17    |
| Mean     | May 16 | May 19 | May 24 | 9    | 2 (3%) | 2    | 2.2   | Sep 16 | Sep 30 | Oct 13 | 27   | 9 (9%)   | 4    | 13    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7   | S8  | S9   | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|------|-----|------|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |      |     |      |      |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.4 | 0.1  |      | 0.06   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |      |     |      |      |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      |      |     |      |      |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.1  | 0.3 |      | 0.3  | 0.09   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.7 | 0.1  |      | 0.09   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.1 |      |      | 0.01   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.3 |      |      | 0.03   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |      |     | 0.1  |      | 0.01   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  | 0.1 |      |      | 0.03   |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.01 | 0.03 | 0.2 | 0.04 | 0.03 | 0.03   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6   | F7  | F8  | F9  | F10 | F11 | F12  | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|------|-----|-----|-----|-----|-----|------|-----|------|
| 2005     |     |     |        |    |    |    |    |    |      | 0.3 | 0.7 |     | 0.2 | 0.8 |      |     | 0.1  |
| 2006     |     |     |        |    |    |    |    |    |      | 0.3 | 0.7 | 0.1 |     | 1.0 | 0.4  |     | 0.2  |
| 2007     |     |     |        |    |    |    |    |    |      | 0.1 | 0.4 | 1.1 | 0.9 | 0.6 |      |     | 0.2  |
| 2008     |     |     |        |    |    |    |    |    |      |     |     | 0.1 | 0.6 | 0.3 |      |     | 0.08 |
| 2009     |     |     |        |    |    |    |    |    |      | 0.3 |     | 0.1 | 0.4 | 1.0 |      |     | 0.1  |
| 2010     |     |     |        |    |    |    |    |    |      |     | 0.1 |     |     |     | 0.1  |     | 0.02 |
| 2011     |     |     |        |    |    |    |    |    | 0.1  |     | 0.1 | 0.4 | 1.1 |     |      |     | 0.1  |
| 2012     |     |     |        |    |    |    |    |    |      |     | 0.1 | 0.3 | 1.6 | 0.1 | 0.1  |     | 0.2  |
| 2013     |     |     |        |    |    |    |    |    | 0.1  | 0.4 |     | 0.4 | 0.1 |     |      |     | 0.09 |
| 2014     |     |     |        |    |    |    |    |    |      | 0.1 | 0.1 | 0.1 | 1.0 | 1.0 |      |     | 0.2  |
| Mean     |     |     |        |    |    |    |    |    | 0.03 | 0.2 | 0.2 | 0.3 | 0.6 | 0.5 | 0.07 |     | 0.1  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |    |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     | 2   |    |     | 2      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |    |     | 1      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |    |     | 1      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 | 0.4 |    |     | 0.5    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    | 1   | 3   |     |     | 3   |     |     | 7    |
| 2006   |     |     |        |    |    |    |    |    |    | 1   |     | 1   |     | 4   | 1   |     | 7    |
| 2007   |     |     |        |    |    |    |    |    |    | 1   | 2   | 5   | 2   | 2   |     |     | 12   |
| 2008   |     |     |        |    |    |    |    |    |    |     |     | 1   | 3   | 2   |     |     | 6    |
| 2009   |     |     |        |    |    |    |    |    | 1  |     |     | 1   | 3   | 2   |     |     | 7    |
| 2010   |     |     |        |    |    |    |    |    |    |     | 1   |     |     |     | 1   |     | 2    |
| 2011   |     |     |        |    |    |    |    |    |    |     |     | 2   | 2   |     |     |     | 4    |
| 2012   |     |     |        |    |    |    |    |    |    |     |     | 2   | 7   |     | 1   |     | 10   |
| 2013   |     |     |        |    |    |    |    |    |    | 1   |     | 3   | 1   |     |     |     | 5    |
| 2014   |     |     |        |    |    |    |    |    |    |     |     |     | 3   | 3   |     |     | 6    |
| Mean   |     |     |        |    |    |    |    |    |    | 0.5 | 0.6 | 1.5 | 2.1 | 1.6 | 0.3 |     | 6.6  |

Orange-crowned Warbler is a rare spring and uncommon fall migrant at MBO. The majority of spring sightings have occurred in the second half of May, with four of the five individuals banded in week 8, corresponding to the peak of observations in most years. Fall observations span seven weeks, but are heavily weighted to weeks 9 to 11. Spring sightings, although rare, have occurred annually since 2009 after being missed in three of the first four years. Fall numbers fluctuate somewhat irregularly, without any discernible pattern over time.



# NAWA: Nashville Warbler / Paruline à joues grises (*Oreothlypis ruficapilla*)



| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 11 | May 28 | Jun 2  | 23   | 10 (17%) | 4    | 16    | Aug 2 | Sep 10 | Oct 9  | 69   | 62 (70%) | 16   | 347   |
| 2006     | May 5  | May 18 | May 26 | 22   | 19 (28%) | 5    | 40    | Aug 1 | Aug 28 | Oct 12 | 73   | 56 (62%) | 11   | 204   |
| 2007     | May 1  | May 18 | May 25 | 25   | 18 (26%) | 17   | 58    | Aug 1 | Sep 11 | Oct 16 | 77   | 45 (49%) | 10   | 116   |
| 2008     | May 5  | May 20 | May 29 | 25   | 22 (31%) | 8    | 42    | Aug 1 | Oct 3  | Oct 11 | 72   | 64 (70%) | 26   | 285   |
| 2009     | Apr 29 | May 11 | May 29 | 31   | 18 (26%) | 7    | 55    | Aug 4 | Sep 14 | Oct 22 | 80   | 41 (45%) | 9    | 95    |
| 2010     | May 4  | May 15 | May 26 | 23   | 11 (16%) | 3    | 19    | Aug 1 | Sep 9  | Oct 8  | 69   | 51 (56%) | 31   | 220   |
| 2011     | May 1  | May 20 | Jun 5  | 36   | 14 (20%) | 9    | 46    | Aug 1 | Sep 16 | Oct 23 | 84   | 64 (70%) | 23   | 288   |
| 2012     | May 4  | May 12 | May 26 | 23   | 16 (23%) | 6    | 42    | Aug 1 | Oct 4  | Oct 17 | 78   | 49 (54%) | 15   | 126   |
| 2013     | May 6  | May 26 | May 28 | 23   | 19 (27%) | 8    | 53    | Aug 1 | Oct 3  | Oct 15 | 76   | 53 (58%) | 9    | 113   |
| 2014     | May 10 | May 13 | May 29 | 20   | 18 (26%) | 8    | 54    | Aug 2 | Sep 12 | Oct 18 | 78   | 63 (69%) | 16   | 175   |
| Mean     | May 4  | May 18 | May 28 | 25   | 16 (24%) | 8    | 43    | Aug 1 | Sep 16 | Oct 15 | 76   | 55 (60%) | 17   | 197   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6  | S7  | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|------|-----|-----|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |      |     | 0.3 | 0.7 | 1.0 | 0.4  | 0.3    |
| 2006     |     |     |     |     |     |        |    |    |    |    |      | 0.4 | 1.4 | 3.0 | 0.9 |      | 0.6    |
| 2007     |     |     |     |     |     |        |    |    |    |    | 0.1  | 0.1 | 2.6 | 4.9 | 0.6 |      | 0.8    |
| 2008     |     |     |     |     |     |        |    |    |    |    |      | 0.4 | 2.1 | 2.4 | 1.0 |      | 0.6    |
| 2009     |     |     |     |     |     |        |    |    |    |    | 0.1  | 0.6 | 4.4 | 2.0 | 0.7 |      | 0.8    |
| 2010     |     |     |     |     |     |        |    |    |    |    |      | 0.7 | 1.0 | 0.9 | 0.1 |      | 0.3    |
| 2011     |     |     |     |     |     |        |    |    |    |    | 0.3  |     | 1.9 | 3.1 | 1.1 | 0.1  | 0.7    |
| 2012     |     |     |     |     |     |        |    |    |    |    |      | 1.0 | 3.6 | 1.3 | 0.1 |      | 0.6    |
| 2013     |     |     |     |     |     |        |    |    |    |    |      | 0.3 | 3.4 | 1.7 | 2.1 |      | 0.8    |
| 2014     |     |     |     |     |     |        |    |    |    |    |      |     | 3.9 | 2.3 | 1.6 |      | 0.8    |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.06 | 0.4 | 2.5 | 2.2 | 0.9 | 0.04 | 0.6    |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6   | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     |     | 0.2  | 0.1    | 2.4 | 5.9 | 2.7 | 4.0 | 6.7 | 10.0 | 8.9 | 5.0 | 2.8 | 1.8 |     |     |     | 3.9  |
| 2006     |     |      |        | 0.6 | 1.0 | 2.1 | 3.6 | 2.6 | 4.1  | 5.7 | 5.1 | 2.6 | 1.4 | 0.3 |     |     | 2.2  |
| 2007     |     |      |        | 2.3 | 2.3 | 1.9 | 1.1 | 1.0 | 2.0  | 2.7 | 2.1 | 0.4 | 0.3 | 0.4 |     |     | 1.3  |
| 2008     |     |      |        | 1.1 | 1.1 | 2.3 | 3.1 | 4.1 | 6.7  | 4.3 | 5.0 | 6.4 | 5.7 | 0.7 |     |     | 3.1  |
| 2009     |     |      |        | 0.1 | 0.3 | 0.9 | 0.6 | 1.3 | 0.4  | 1.9 | 2.6 | 3.1 | 2.1 | 0.1 | 0.1 |     | 1.0  |
| 2010     |     | 0.2  | 0.1    | 0.6 |     | 0.9 | 2.0 | 1.4 | 8.1  | 4.1 | 9.6 | 4.3 | 0.4 |     |     |     | 2.4  |
| 2011     |     |      |        | 2.6 | 1.6 | 2.4 | 4.6 | 6.3 | 7.1  | 5.7 | 3.1 | 4.6 | 2.4 | 0.1 | 0.6 |     | 3.2  |
| 2012     |     |      |        | 0.6 | 0.6 | 1.4 | 1.1 | 0.7 | 2.7  | 3.3 | 2.0 | 2.1 | 3.3 |     | 0.1 |     | 1.4  |
| 2013     |     |      |        | 0.6 | 0.4 | 0.7 | 1.4 | 2.1 | 1.7  | 3.0 | 2.3 | 1.6 | 2.0 | 0.3 |     |     | 1.2  |
| 2014     |     | 0.3  | 0.1    | 0.9 | 1.3 | 1.4 | 3.1 | 1.6 | 1.6  | 5.7 | 3.6 | 2.3 | 2.0 | 1.0 | 0.6 |     | 1.9  |
| Mean     |     | 0.09 | 0.05   | 1.2 | 1.4 | 1.7 | 2.5 | 2.8 | 4.5  | 4.5 | 4.0 | 3.0 | 2.2 | 0.3 | 0.1 |     | 2.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |     |     | 1   | 3   | 1   | 1   | 6      |
| 2006   |     |     |     |     |     |        |    |    |    |    |     | 1   | 2   | 3   |     |     | 6      |
| 2007   |     |     |     |     |     |        |    |    |    |    |     |     | 5   | 8   | 1   |     | 14     |
| 2008   |     |     |     |     |     |        |    |    |    |    |     | 1   | 3   | 4   |     |     | 8      |
| 2009   |     |     |     |     |     |        |    |    |    |    | 1   | 1   | 6   | 5   | 1   |     | 14     |
| 2010   |     |     |     |     |     |        |    |    |    |    |     | 2   | 4   | 2   |     |     | 8      |
| 2011   |     |     |     |     |     |        |    |    |    |    |     |     | 1   | 6   |     |     | 7      |
| 2012   |     |     |     |     |     |        |    |    |    |    |     | 3   | 10  | 3   |     |     | 16     |
| 2013   |     |     |     |     |     |        |    |    |    |    |     | 2   | 6   | 5   |     |     | 13     |
| 2014   |     |     |     |     |     |        |    |    |    |    |     |     | 10  |     |     |     | 10     |
| Mean   |     |     |     |     |     |        |    |    |    |    | 0.1 | 1.0 | 4.8 | 3.9 | 0.3 | 0.1 | 10.2   |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6   | F7   | F8   | F9   | F10 | F11 | F12 | F13 | Fall  |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|------|------|------|------|-----|-----|-----|-----|-------|
| 2005   |     |     |        | 2   | 18  | 5   | 16  | 28  | 20   | 38   | 19   | 10   | 8   |     |     |     | 164   |
| 2006   |     |     |        | 2   | 2   | 7   | 9   | 7   | 18   | 23   | 15   | 10   | 5   |     |     |     | 98    |
| 2007   |     |     |        | 7   | 5   | 4   | 5   | 3   | 5    | 8    | 10   | 1    | 1   | 1   |     |     | 50    |
| 2008   |     |     |        | 5   | 4   | 6   | 11  | 10  | 22   | 19   | 20   | 36   | 21  | 4   |     |     | 158   |
| 2009   |     |     |        | 1   | 2   | 4   | 3   | 3   | 2    | 10   | 10   | 13   | 9   |     | 1   |     | 58    |
| 2010   |     | 1   | 1      | 2   |     | 2   | 3   | 5   | 47   | 22   | 53   | 26   | 1   |     |     |     | 161   |
| 2011   |     |     |        | 12  | 2   | 4   | 10  | 22  | 22   | 19   | 18   | 22   | 8   |     | 2   |     | 141   |
| 2012   |     |     |        | 3   | 2   | 3   | 4   | 1   | 11   | 13   | 8    | 11   | 16  |     | 1   |     | 73    |
| 2013   |     |     |        | 3   | 1   | 3   | 7   | 6   | 4    | 8    | 9    | 8    | 10  |     |     |     | 59    |
| 2014   |     | 1   | 1      | 3   | 5   | 5   | 13  | 4   | 4    | 26   | 15   | 12   | 11  | 5   | 3   |     | 106   |
| Mean   |     | 0.2 | 0.2    | 4.0 | 4.1 | 4.3 | 8.1 | 8.9 | 15.5 | 18.6 | 17.7 | 14.9 | 9.0 | 1.0 | 0.7 |     | 106.8 |

Nashville Warbler is among the more common spring and fall warbler migrants at MBO, with early fall migrants arriving in late July in three years. The earliest spring arrival has been in the first week of May in seven years. The spring peak was in week 8 or 9 from 2005 through 2008, but then shifted earlier, occurring in week 7 in five of the next six years. The fall pattern is somewhat more variable, with the peak fluctuating between week 6 and 9, although in 2012 and 2013 the largest number banded was not until week 10. Spring numbers have been fairly consistent except for lows in 2005 and 2010; fall results show greater fluctuations, but without any trend over time.

**CONW: Connecticut Warbler / Paruline à gorge grise (*Oporornis agilis*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       | Sep 4  | Sep 4  | Sep 4  | 1    | 1 (1%) | 1    | 1     |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |      |      |      |        |      |       | Sep 23 | Sep 23 | Sep 23 | 1    | 1 (1%) | 1    | 1     |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |      |      |      |        |      |       | Sep 3  | Sep 3  | Sep 3  | 1    | 1 (1%) | 1    | 1     |
| Mean     |       |      |      |      |        |      |       | Sep 10 | Sep 10 | Sep 10 | 1    | 1 (1%) | 1    | 0.3   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5   | F6 | F7 | F8   | F9 | F10 | F11 | F12 | F13 | Fall  |
|----------|-----|-----|--------|----|----|----|----|------|----|----|------|----|-----|-----|-----|-----|-------|
| 2005     |     |     |        |    |    |    |    | 0.1  |    |    |      |    |     |     |     |     | 0.01  |
| 2006     |     |     |        |    |    |    |    |      |    |    |      |    |     |     |     |     |       |
| 2007     |     |     |        |    |    |    |    |      |    |    |      |    |     |     |     |     |       |
| 2008     |     |     |        |    |    |    |    |      |    |    |      |    |     |     |     |     |       |
| 2009     |     |     |        |    |    |    |    |      |    |    | 0.1  |    |     |     |     |     | 0.01  |
| 2010     |     |     |        |    |    |    |    |      |    |    |      |    |     |     |     |     |       |
| 2011     |     |     |        |    |    |    |    |      |    |    |      |    |     |     |     |     |       |
| 2012     |     |     |        |    |    |    |    |      |    |    |      |    |     |     |     |     |       |
| 2013     |     |     |        |    |    |    |    |      |    |    |      |    |     |     |     |     |       |
| 2014     |     |     |        |    |    |    |    | 0.1  |    |    |      |    |     |     |     |     | 0.01  |
| Mean     |     |     |        |    |    |    |    | 0.03 |    |    | 0.01 |    |     |     |     |     | <0.01 |

Connecticut Warbler joins Golden-winged and Blue-winged as the rarest of the warblers at MBO, with only three observations over ten years. Unlike those other two rarities, Connecticut Warbler has yet to be banded at MBO. All observations have come between September 3 and 23.

**MOWA: Mourning Warbler / Paruline triste (*Oporornis philadelphia*)**


| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 28 | May 28 | May 30 | 3    | 2 (3%)   | 1    | 2     | Aug 7  | Aug 15 | Oct 9  | 64   | 14 (16%) | 2    | 15    |
| 2006     | May 20 | May 20 | May 27 | 8    | 4 (6%)   | 1    | 4     | Aug 16 | Aug 16 | Sep 2  | 18   | 7 (8%)   | 1    | 7     |
| 2007     | May 18 | May 23 | May 28 | 11   | 3 (4%)   | 2    | 4     | Aug 16 | Aug 16 | Sep 11 | 27   | 7 (8%)   | 3    | 9     |
| 2008     | May 25 | May 25 | May 30 | 6    | 2 (3%)   | 2    | 3     | Aug 10 | Aug 29 | Oct 7  | 59   | 15 (16%) | 3    | 20    |
| 2009     | May 21 | May 21 | May 30 | 10   | 2 (3%)   | 1    | 2     | Aug 3  | Aug 13 | Sep 10 | 39   | 12 (13%) | 3    | 16    |
| 2010     | May 27 | May 27 | May 27 | 1    | 1 (1%)   | 2    | 2     | Aug 7  | Aug 9  | Sep 16 | 41   | 13 (14%) | 3    | 15    |
| 2011     | May 18 | May 25 | May 28 | 11   | 5 (7%)   | 5    | 14    | Aug 7  | Aug 15 | Sep 7  | 32   | 11 (12%) | 2    | 12    |
| 2012     | May 19 | May 19 | May 19 | 1    | 1 (1%)   | 1    | 1     | Aug 11 | Aug 15 | Aug 31 | 21   | 11 (12%) | 2    | 12    |
| 2013     |        |        |        |      |          |      |       | Aug 9  | Aug 9  | Aug 18 | 10   | 5 (5%)   | 2    | 7     |
| 2014     | May 13 | May 19 | Jun 3  | 22   | 12 (18%) | 3    | 18    | Aug 10 | Aug 23 | Sep 8  | 30   | 8 (9%)   | 2    | 9     |
| Mean     | May 21 | May 23 | May 28 | 8    | 4 (5%)   | 2    | 5.0   | Aug 9  | Aug 16 | Sep 11 | 34   | 10 (11%) | 2    | 12    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7   | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|------|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |      |     | 0.1 | 0.2  | 0.03   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.3 | 0.3 |      | 0.06   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.1 | 0.4 |      | 0.06   |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |      |     | 0.3 | 0.1  | 0.04   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.1 |     | 0.1  | 0.03   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |      |     | 0.3 |      | 0.03   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.3 | 1.7 |      | 0.2    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |      | 0.1 |     |      | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |      |     |     |      |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  | 1.3 | 0.9 | 0.3  | 0.3    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.01 | 0.2 | 0.4 | 0.07 | 0.07   |

| Observed | Jun | Jul | Summer | F1   | F2  | F3  | F4  | F5  | F6  | F7   | F8 | F9   | F10  | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|------|-----|-----|-----|-----|-----|------|----|------|------|-----|-----|-----|------|
| 2005     |     |     |        | 0.1  | 0.6 | 0.6 |     | 0.4 | 0.1 | 0.1  |    |      | 0.2  |     |     |     | 0.2  |
| 2006     |     |     |        |      |     | 0.3 | 0.4 | 0.3 |     |      |    |      |      |     |     |     | 0.08 |
| 2007     |     |     |        |      |     | 0.7 | 0.3 | 0.1 | 0.1 |      |    |      |      |     |     |     | 0.10 |
| 2008     |     |     |        |      | 0.3 | 0.4 | 1.0 | 0.6 | 0.1 | 0.1  |    | 0.1  | 0.1  |     |     |     | 0.2  |
| 2009     |     |     |        | 0.1  | 0.4 | 0.7 | 0.4 | 0.4 | 0.1 |      |    |      |      |     |     |     | 0.2  |
| 2010     |     |     |        | 0.1  | 0.6 | 0.4 | 0.4 |     | 0.1 | 0.4  |    |      |      |     |     |     | 0.2  |
| 2011     |     |     |        | 0.1  | 0.1 | 0.4 | 0.3 | 0.6 | 0.1 |      |    |      |      |     |     |     | 0.1  |
| 2012     |     |     |        |      | 0.6 | 0.9 | 0.1 | 0.1 |     |      |    |      |      |     |     |     | 0.1  |
| 2013     |     |     |        |      | 0.6 | 0.4 |     |     |     |      |    |      |      |     |     |     | 0.08 |
| 2014     |     |     |        |      | 0.3 | 0.3 | 0.4 | 0.1 | 0.1 |      |    |      |      |     |     |     | 0.10 |
| Mean     |     |     |        | 0.06 | 0.3 | 0.5 | 0.3 | 0.3 | 0.1 | 0.07 |    | 0.01 | 0.03 |     |     |     | 0.1  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   | 3   |     | 4      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   | 1   | 2      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |     | 1   | 2      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   |     | 1      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 4   |     | 4      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    | 2   | 4   |     | 6      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.4 | 1.3 | 0.2 | 1.9    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8 | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     | 2   | 2   |     | 3   | 1   | 1   |    |     | 1   |     |     |     | 10   |
| 2006   |     |     |        |     |     | 2   | 2   | 2   |     |     |    |     |     |     |     |     | 6    |
| 2007   |     |     |        |     |     | 5   | 2   | 1   | 1   |     |    |     |     |     |     |     | 9    |
| 2008   |     |     |        |     | 2   | 1   | 6   | 2   | 1   |     |    | 1   |     |     |     |     | 13   |
| 2009   |     |     |        | 1   | 2   | 4   | 3   | 3   | 1   |     |    |     |     |     |     |     | 14   |
| 2010   |     |     |        | 1   | 4   | 3   | 3   |     |     | 2   |    |     |     |     |     |     | 13   |
| 2011   |     |     |        | 1   | 1   | 1   | 1   | 3   |     |     |    |     |     |     |     |     | 7    |
| 2012   |     |     |        |     | 3   | 6   | 1   | 1   |     |     |    |     |     |     |     |     | 11   |
| 2013   |     |     |        |     | 1   | 2   |     |     |     |     |    |     |     |     |     |     | 3    |
| 2014   |     |     |        |     | 2   | 1   | 2   | 1   | 1   |     |    |     |     |     |     |     | 7    |
| Mean   |     |     |        | 0.3 | 1.7 | 2.7 | 2.0 | 1.6 | 0.5 | 0.3 |    | 0.1 | 0.1 |     |     |     | 9.3  |

Mourning Warbler is typically a rare spring and uncommon fall migrant at MBO. Although observed in the final week of spring in four years and the first week of fall in another four years, and despite presence of somewhat suitable habitat nearby, there have not yet been any summer records. Mourning Warbler is a late spring migrant, only once arriving before the second half of May. The fall peak spans weeks 2 to 5 depending on the year, although the number banded tends to be highest in week 3. In both spring and fall, numbers have declined over the past 2-3 years after being at an elevated level for 4-5 years.

**COYE: Common Yellowthroat / Paruline masquée (*Geothlypis trichas*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 7  | May 30 | Jun 3 | 28   | 21 (36%) | 12   | 115   | Aug 1 | Sep 5  | Oct 12 | 73   | 58 (66%) | 18   | 238   |
| 2006     | May 16 | May 25 | Jun 5 | 21   | 21 (30%) | 15   | 161   | Aug 1 | Aug 30 | Oct 2  | 63   | 62 (68%) | 16   | 329   |
| 2007     | May 8  | May 31 | Jun 5 | 29   | 28 (40%) | 13   | 157   | Aug 1 | Aug 19 | Oct 18 | 79   | 63 (69%) | 11   | 231   |
| 2008     | May 7  | May 20 | Jun 5 | 30   | 29 (41%) | 11   | 159   | Aug 1 | Sep 1  | Oct 12 | 73   | 66 (73%) | 15   | 350   |
| 2009     | Apr 28 | May 20 | Jun 5 | 39   | 31 (45%) | 12   | 139   | Aug 1 | Aug 22 | Oct 12 | 73   | 63 (69%) | 9    | 236   |
| 2010     | Apr 29 | May 22 | Jun 5 | 38   | 32 (46%) | 8    | 139   | Aug 1 | Sep 3  | Oct 17 | 78   | 63 (69%) | 15   | 295   |
| 2011     | Apr 29 | May 22 | Jun 5 | 38   | 32 (46%) | 13   | 174   | Aug 1 | Aug 19 | Oct 4  | 65   | 58 (64%) | 26   | 349   |
| 2012     | Apr 28 | May 15 | Jun 5 | 39   | 30 (43%) | 13   | 180   | Aug 1 | Aug 5  | Oct 29 | 90   | 69 (76%) | 15   | 389   |
| 2013     | Apr 29 | May 21 | Jun 5 | 38   | 30 (43%) | 15   | 190   | Aug 1 | Sep 5  | Oct 15 | 76   | 63 (69%) | 16   | 354   |
| 2014     | May 10 | May 27 | Jun 4 | 26   | 26 (38%) | 18   | 240   | Aug 1 | Aug 26 | Oct 11 | 72   | 65 (71%) | 12   | 298   |
| Mean     | May 4  | May 23 | Jun 4 | 33   | 28 (41%) | 13   | 165   | Aug 1 | Aug 25 | Oct 13 | 74   | 63 (69%) | 15   | 307   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6  | S7  | S8   | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|-----|-----|-----|------|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |     | 0.1 | 0.4 | 4.0  | 7.6  | 6.0 | 1.9    |
| 2006     |     |     |     |     |     |        |    |    |    |    |     |     |     | 6.4  | 10.7 | 5.9 | 2.3    |
| 2007     |     |     |     |     |     |        |    |    |    |    |     | 0.3 | 1.7 | 5.4  | 8.9  | 6.1 | 2.2    |
| 2008     |     |     |     |     |     |        |    |    |    |    |     | 0.6 | 4.1 | 6.0  | 7.1  | 4.9 | 2.3    |
| 2009     |     |     |     |     |     |        |    |    |    |    | 0.1 | 0.3 | 3.1 | 7.3  | 5.1  | 3.9 | 2.0    |
| 2010     |     |     |     |     |     |        |    |    |    |    | 0.1 | 1.3 | 3.3 | 5.4  | 5.9  | 3.9 | 2.0    |
| 2011     |     |     |     |     |     |        |    |    |    |    | 0.6 | 0.7 | 3.7 | 6.6  | 6.6  | 6.7 | 2.5    |
| 2012     |     |     |     |     |     |        |    |    |    |    | 0.3 | 0.1 | 4.1 | 8.4  | 6.9  | 5.9 | 2.6    |
| 2013     |     |     |     |     |     |        |    |    |    |    | 0.1 | 0.3 | 3.0 | 9.0  | 8.1  | 6.6 | 2.7    |
| 2014     |     |     |     |     |     |        |    |    |    |    |     |     | 6.1 | 11.9 | 10.0 | 7.3 | 3.5    |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.1 | 0.4 | 3.0 | 7.0  | 7.7  | 5.7 | 2.4    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12  | F13  | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| 2005     | 1.6 | 2.9 | 2.3    | 2.7 | 2.4 | 1.9 | 3.6 | 4.0 | 8.4 | 6.3 | 3.0 | 1.0 | 0.8 | 0.2 |      |      | 2.7  |
| 2006     | 4.1 | 3.4 | 3.7    | 5.4 | 2.3 | 3.3 | 7.1 | 7.4 | 9.1 | 7.3 | 2.6 | 2.4 |     |     |      |      | 3.6  |
| 2007     | 4.6 | 2.7 | 3.7    | 5.3 | 4.4 | 4.9 | 2.6 | 3.7 | 3.7 | 3.9 | 2.6 | 1.3 | 0.6 |     | 0.1  |      | 2.5  |
| 2008     | 5.2 | 5.0 | 5.1    | 5.6 | 3.9 | 6.1 | 6.3 | 8.3 | 8.0 | 3.7 | 4.0 | 3.3 | 0.7 | 0.1 |      |      | 3.8  |
| 2009     | 2.3 | 1.5 | 1.9    | 4.6 | 3.1 | 4.0 | 5.1 | 4.0 | 3.0 | 3.3 | 3.9 | 1.3 | 1.1 | 0.3 |      |      | 2.6  |
| 2010     | 1.3 | 1.3 | 1.3    | 5.1 | 5.3 | 5.3 | 5.0 | 7.0 | 6.9 | 2.9 | 3.1 | 1.0 | 0.1 | 0.3 | 0.1  |      | 3.2  |
| 2011     | 2.7 | 4.3 | 3.6    | 7.6 | 6.9 | 9.7 | 4.3 | 3.7 | 6.1 | 4.7 | 5.6 | 0.9 | 0.4 |     |      |      | 3.8  |
| 2012     | 2.3 | 6.0 | 4.1    | 9.6 | 6.9 | 7.7 | 7.6 | 5.6 | 3.9 | 8.0 | 3.3 | 1.4 | 0.6 | 0.3 |      | 0.9  | 4.3  |
| 2013     | 4.3 | 3.8 | 4.0    | 6.1 | 4.4 | 6.4 | 7.7 | 8.6 | 7.0 | 5.7 | 2.9 | 1.0 | 0.6 | 0.1 |      |      | 3.9  |
| 2014     | 4.3 | 3.8 | 4.0    | 5.0 | 3.9 | 3.7 | 6.4 | 5.7 | 4.1 | 5.1 | 5.0 | 2.6 | 0.6 | 0.4 |      |      | 3.3  |
| Mean     | 3.1 | 3.3 | 3.2    | 5.7 | 4.3 | 5.3 | 5.6 | 5.8 | 6.0 | 5.1 | 3.6 | 1.6 | 0.6 | 0.2 | 0.03 | 0.09 | 3.4  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6  | S7  | S8   | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|-----|-----|-----|------|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |     | 1   |     | 11   | 9   | 1   | 22     |
| 2006   |     |     |     |     |     |        |    |    |    |    |     |     |     | 11   | 13  | 1   | 25     |
| 2007   |     |     |     |     |     |        |    |    |    |    |     |     | 1   | 4    | 4   | 3   | 12     |
| 2008   |     |     |     |     |     |        |    |    |    |    |     | 2   | 4   | 8    | 10  | 1   | 25     |
| 2009   |     |     |     |     |     |        |    |    |    |    |     |     | 5   | 17   | 4   | 2   | 28     |
| 2010   |     |     |     |     |     |        |    |    |    |    |     | 2   | 3   | 8    | 4   |     | 17     |
| 2011   |     |     |     |     |     |        |    |    |    |    |     | 3   | 9   | 10   | 7   | 1   | 30     |
| 2012   |     |     |     |     |     |        |    |    |    |    |     |     | 4   | 15   | 5   | 1   | 25     |
| 2013   |     |     |     |     |     |        |    |    |    |    | 1   |     | 5   | 9    | 7   | 1   | 23     |
| 2014   |     |     |     |     |     |        |    |    |    |    |     |     | 16  | 12   | 10  | 2   | 40     |
| Mean   |     |     |     |     |     |        |    |    |    |    | 0.1 | 0.8 | 4.7 | 10.5 | 7.3 | 1.3 | 24.7   |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4   | F5   | F6   | F7   | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|------|------|------|------|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        | 2   | 3   | 3   | 8    | 13   | 19   | 14   | 9   | 3   | 2   |     |     |     | 76   |
| 2006   |     |     |        | 1   | 1   | 5   | 7    | 12   | 27   | 15   | 6   | 3   |     |     |     |     | 77   |
| 2007   |     |     |        | 6   | 5   | 8   | 4    | 7    | 9    | 4    | 3   | 4   | 1   |     |     |     | 51   |
| 2008   |     |     |        | 7   | 3   | 9   | 14   | 19   | 16   | 9    | 8   | 7   | 1   |     |     |     | 93   |
| 2009   |     | 5   | 5      | 7   | 5   | 10  | 16   | 8    | 6    | 7    | 13  | 3   | 2   |     |     |     | 77   |
| 2010   |     |     |        | 11  | 14  | 12  | 4    | 17   | 24   | 8    | 7   | 2   |     | 1   |     |     | 100  |
| 2011   | 1   | 2   | 3      | 9   | 10  | 10  | 11   | 8    | 7    | 10   | 13  | 1   | 1   |     |     |     | 80   |
| 2012   |     | 8   | 8      | 28  | 10  | 21  | 15   | 11   | 6    | 18   | 4   | 6   | 1   |     |     | 1   | 121  |
| 2013   |     | 1   | 1      | 8   | 9   | 8   | 19   | 20   | 10   | 6    | 3   | 2   | 2   |     |     |     | 87   |
| 2014   |     | 2   | 2      | 2   | 6   | 6   | 16   | 12   | 6    | 10   | 7   | 6   |     |     |     |     | 71   |
| Mean   | 0.2 | 2.0 | 2.1    | 8.1 | 6.6 | 9.2 | 11.4 | 12.7 | 13.0 | 10.1 | 7.3 | 3.7 | 1.0 | 0.1 |     | 0.1 | 83.3 |

Common Yellowthroat is a common migrant and breeder at MBO, generally present from mid-spring until mid-October. The first arrival of spring was on April 28 or 29 for five years in a row (2009-2013), but in other years has been much later, between May 7 and 16. Regardless of arrival date, the spring peak is almost always in week 8 or 9, before tapering off to just the local breeders. Fall numbers remain high throughout the first half of the season, with peak ranging from week 1 to 6, although there has been at least one October sighting each year. Spring numbers have shown a modest but fairly steady increase over the years, but fall counts have fluctuated without a clear long-term trend.

# AMRE: American Redstart / Paruline flamboyante (*Setophaga ruticilla*)

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 12 | May 30 | Jun 3  | 23   | 18 (31%) | 5    | 39    | Aug 6 | Aug 29 | Oct 9  | 65   | 36 (41%) | 10   | 132   |
| 2006     | May 12 | May 22 | Jun 5  | 25   | 19 (28%) | 7    | 49    | Aug 2 | Sep 2  | Sep 20 | 50   | 37 (41%) | 13   | 124   |
| 2007     | May 16 | May 24 | May 29 | 14   | 5 (7%)   | 3    | 8     | Aug 1 | Aug 26 | Sep 28 | 59   | 49 (54%) | 10   | 147   |
| 2008     | May 13 | May 26 | Jun 3  | 22   | 14 (20%) | 7    | 30    | Aug 2 | Sep 8  | Sep 27 | 57   | 41 (45%) | 11   | 186   |
| 2009     | May 4  | May 24 | Jun 2  | 30   | 15 (22%) | 4    | 26    | Aug 1 | Aug 28 | Oct 3  | 64   | 48 (53%) | 15   | 211   |
| 2010     | May 13 | May 24 | Jun 5  | 24   | 22 (31%) | 6    | 57    | Aug 1 | Aug 17 | Sep 22 | 53   | 49 (54%) | 20   | 299   |
| 2011     | May 13 | May 13 | May 31 | 19   | 15 (21%) | 14   | 52    | Aug 1 | Aug 26 | Oct 3  | 64   | 51 (56%) | 31   | 354   |
| 2012     | May 9  | May 25 | May 31 | 23   | 15 (21%) | 6    | 40    | Aug 1 | Aug 18 | Oct 2  | 63   | 52 (57%) | 18   | 243   |
| 2013     | May 4  | May 25 | Jun 5  | 33   | 17 (24%) | 6    | 39    | Aug 1 | Aug 17 | Oct 6  | 67   | 56 (62%) | 16   | 297   |
| 2014     | May 10 | May 15 | Jun 1  | 23   | 21 (31%) | 4    | 37    | Aug 1 | Aug 9  | Oct 19 | 80   | 57 (63%) | 19   | 259   |
| Mean     | May 10 | May 22 | Jun 2  | 24   | 16 (24%) | 6    | 38    | Aug 1 | Aug 24 | Oct 1  | 62   | 48 (52%) | 16   | 225   |

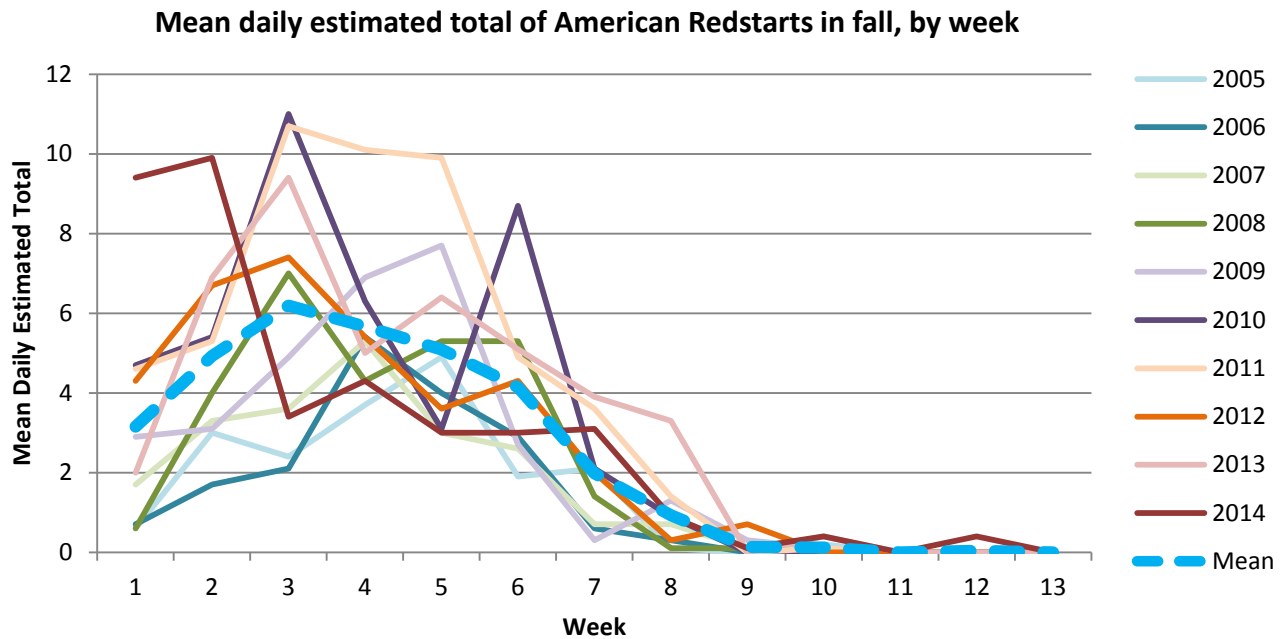
| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      | 0.4 | 1.6 | 2.1 | 2.0 | 0.7    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 2.7 | 2.7 | 1.4 | 0.7    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.3 | 0.9 |     | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      | 0.4 | 0.6 | 1.6 | 1.7 | 0.4    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.6 | 1.3 | 0.9 | 0.9 | 0.4    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      | 0.3 | 1.3 | 3.6 | 3.0 | 0.8    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      | 2.3 | 2.3 | 2.7 | 0.1 | 0.7    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      | 0.9 | 2.0 | 2.7 | 0.1 | 0.6    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.1 | 0.9 | 2.6 | 1.9 | 0.6    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 1.6 | 1.7 | 1.7 | 0.3 | 0.5    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.03 | 0.7 | 1.5 | 2.1 | 1.1 | 0.6    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3   | F4   | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12  | F13 | Fall |
|----------|-----|-----|--------|-----|-----|------|------|-----|-----|-----|-----|-----|-----|-----|------|-----|------|
| 2005     | 0.9 |     | 0.4    | 0.6 | 3.0 | 2.4  | 3.7  | 4.9 | 1.9 | 2.1 | 0.1 |     | 0.2 |     |      |     | 1.5  |
| 2006     | 0.8 | 0.2 | 0.5    | 0.7 | 1.7 | 2.1  | 5.4  | 4.0 | 2.9 | 0.6 | 0.3 |     |     |     |      |     | 1.4  |
| 2007     | 0.9 | 0.3 | 0.6    | 1.7 | 3.3 | 3.6  | 5.3  | 3.0 | 2.6 | 0.7 | 0.7 | 0.1 |     |     |      |     | 1.6  |
| 2008     | 0.2 | 0.2 | 0.2    | 0.6 | 4.0 | 5.4  | 4.3  | 5.3 | 1.4 | 0.1 | 0.1 |     |     |     |      |     | 2.0  |
| 2009     | 0.3 |     | 0.1    | 2.9 | 3.1 | 4.9  | 6.9  | 7.7 | 2.7 | 0.3 | 1.3 | 0.3 | 0.1 |     |      |     | 2.3  |
| 2010     |     | 0.2 | 0.1    | 5.1 | 5.4 | 11.0 | 6.3  | 3.1 | 8.7 | 2.1 | 0.9 |     |     |     |      |     | 3.3  |
| 2011     | 1.0 | 0.3 | 0.6    | 4.6 | 5.3 | 10.7 | 10.1 | 9.9 | 4.9 | 3.6 | 1.4 |     | 0.1 |     |      |     | 3.9  |
| 2012     |     |     |        | 4.3 | 6.7 | 7.4  | 5.4  | 3.6 | 4.3 | 2.0 | 0.3 | 0.7 |     |     |      |     | 2.7  |
| 2013     | 0.7 | 0.8 | 0.7    | 2.0 | 6.9 | 9.4  | 5.0  | 6.4 | 5.1 | 3.9 | 3.3 |     | 0.4 |     |      |     | 3.3  |
| 2014     |     | 1.3 | 0.7    | 8.4 | 9.9 | 3.4  | 4.3  | 3.0 | 3.0 | 3.1 | 0.9 | 0.1 | 0.4 |     | 0.4  |     | 2.8  |
| Mean     | 0.6 | 0.2 | 0.4    | 3.1 | 4.9 | 6.0  | 5.7  | 5.1 | 4.1 | 2.0 | 0.9 | 0.1 | 0.1 |     | 0.04 |     | 2.5  |

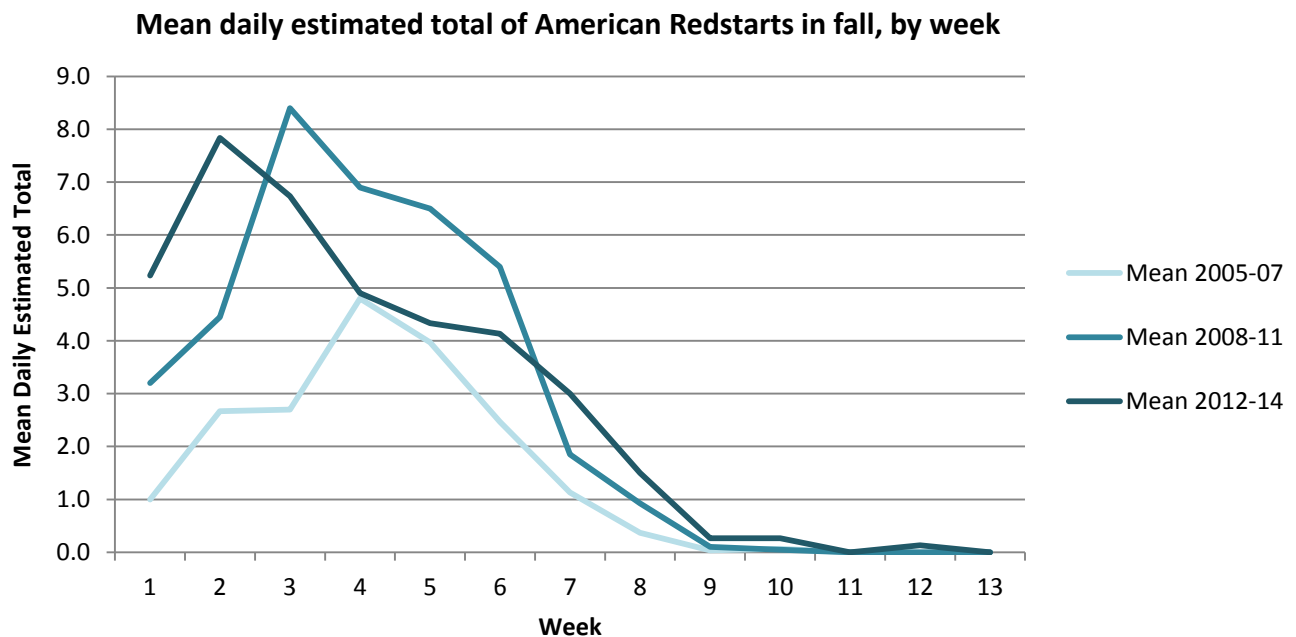
| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |     |     | 1   | 4   | 1   | 6      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |     |     | 1   | 2   |     | 3      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |     |     |     | 3   |     | 3      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |     |     | 1   | 5   |     | 6      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |     |     | 5   | 1   |     | 6      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |     |     | 2   | 2   | 1   | 5      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |     | 2   | 7   | 5   |     | 14     |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |     | 2   | 5   | 12  |     | 19     |
| 2013   |     |     |     |     |     |        |    |    |    |    |    | 1   |     | 3   | 4   | 1   | 9      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |     | 5   | 1   | 4   |     | 10     |
| Mean   |     |     |     |     |     |        |    |    |    |    |    | 0.1 | 0.9 | 2.6 | 4.2 | 0.3 | 8.1    |

| Banded | Jun | Jul | Summer | F1   | F2   | F3   | F4   | F5   | F6   | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall  |
|--------|-----|-----|--------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-------|
| 2005   |     |     |        | 1    | 13   | 7    | 6    | 26   | 6    | 6   | 1   |     |     |     |     |     | 66    |
| 2006   |     |     |        | 3    | 6    | 6    | 12   | 10   | 8    | 2   | 1   |     |     |     |     |     | 48    |
| 2007   |     |     |        | 9    | 15   | 12   | 14   | 14   | 10   | 1   | 2   |     |     |     |     |     | 77    |
| 2008   |     |     |        | 4    | 21   | 22   | 17   | 15   | 11   | 8   |     | 1   |     |     |     |     | 99    |
| 2009   |     |     |        | 15   | 10   | 20   | 18   | 26   | 7    | 2   | 3   | 2   | 1   |     |     |     | 104   |
| 2010   |     | 1   | 1      | 22   | 14   | 41   | 22   | 8    | 32   | 8   | 2   |     |     |     |     |     | 149   |
| 2011   | 1   |     | 1      | 20   | 22   | 25   | 31   | 26   | 10   | 12  | 3   |     | 1   |     |     |     | 150   |
| 2012   |     |     |        | 23   | 39   | 19   | 28   | 10   | 12   | 5   |     | 3   |     |     |     |     | 139   |
| 2013   | 1   | 3   | 4      | 10   | 22   | 29   | 19   | 24   | 18   | 12  | 11  |     | 1   |     |     |     | 146   |
| 2014   |     | 2   | 2      | 29   | 38   | 13   | 15   | 10   | 11   | 13  | 5   | 1   | 1   |     | 2   |     | 138   |
| Mean   | 0.3 | 0.7 | 0.9    | 13.6 | 20.0 | 19.4 | 18.2 | 16.9 | 12.5 | 6.9 | 2.8 | 0.7 | 0.4 |     | 0.2 |     | 111.6 |

American Redstart is present at MBO from around mid-May to late September, with a few individuals lingering into October in some years. Spring numbers most commonly peak in week 9, but sometimes one week earlier. The fall peak has advanced over time, from week 5 in 2005 to week 2 in 2014. The number of individuals observed in both spring and fall has increased greatly over time, with the largest change between 2007 and 2010, and this has largely been reflected in the number banded as well. The species has been observed at MBO every summer, although has been banded during the season only since 2010.



The figure above shows considerable variability in the patterns of abundance of American Redstart over the first half of fall, with an overall peak of abundance that is quite protracted and rounded. Combining data into 3-4 years periods (see figure below) reveals different patterns. Overall numbers have been higher since 2008 than from 2005-07. More notably though, the peak has advanced by one week for every 3-4 year period. In fact, a comparison of 2008-11 vs. 2012-14 shows a very similar pattern of occurrence over the first half of the season, just with the 2012-14 results all shifted one week earlier. Notably, week 1 counts were higher in 2014 than any previous year, only slightly below the numbers in week 2, suggesting that the shift may be continuing further. Conversely, timing of spring migration does not appear to have changed over time.



**CMWA: Cape May Warbler / Paruline tigrée (*Setophaga tigrina*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     |        |        |        |      |         |      |       | Aug 15 | Sep 18 | Sep 18 | 35   | 4 (5%)   | 2    | 5     |
| 2006     | May 18 | May 18 | May 21 | 4    | 3 (4%)  | 1    | 3     | Aug 9  | Aug 24 | Aug 31 | 23   | 3 (3%)   | 2    | 4     |
| 2007     | May 9  | May 9  | May 22 | 14   | 4 (6%)  | 1    | 4     | Aug 30 | Aug 30 | Sep 11 | 13   | 3 (3%)   | 1    | 3     |
| 2008     | May 12 | May 27 | May 30 | 19   | 3 (4%)  | 4    | 6     |        |        |        |      |          |      |       |
| 2009     | May 11 | May 18 | May 31 | 21   | 9 (13%) | 3    | 13    | Aug 4  | Oct 1  | Oct 1  | 59   | 3 (3%)   | 2    | 4     |
| 2010     | May 17 | May 17 | May 17 | 1    | 1 (1%)  | 1    | 1     | Aug 2  | Aug 2  | Sep 9  | 39   | 8 (9%)   | 1    | 8     |
| 2011     | May 16 | May 16 | May 25 | 10   | 3 (4%)  | 1    | 3     | Aug 1  | Aug 3  | Sep 18 | 49   | 24 (26%) | 4    | 35    |
| 2012     | May 9  | May 9  | May 9  | 1    | 1 (1%)  | 5    | 5     | Aug 14 | Aug 21 | Sep 15 | 33   | 6 (7%)   | 2    | 8     |
| 2013     | May 14 | May 22 | May 23 | 10   | 7 (10%) | 4    | 12    | Aug 16 | Sep 8  | Oct 1  | 47   | 27 (30%) | 12   | 96    |
| 2014     | May 14 | May 25 | May 27 | 14   | 7 (10%) | 4    | 13    | Aug 3  | Aug 11 | Oct 8  | 67   | 16 (18%) | 4    | 24    |
| Mean     | May 13 | May 17 | May 22 | 10   | 4 (6%)  | 3    | 6.0   | Aug 10 | Aug 26 | Sep 19 | 41   | 10 (12%) | 3    | 19    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |      |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |     | 0.4 |     |      | 0.04   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    | 0.3 | 0.3 |     |      | 0.06   |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 |     | 0.6 | 0.1  | 0.09   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    | 0.6 |     | 0.4 | 0.3  | 0.2    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 |     |     |      | 0.01   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    | 0.3 |     | 0.1 |      | 0.04   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    | 0.7 |     |     |      | 0.07   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    | 0.4 | 1.1 | 0.1 |      | 0.2    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 | 0.6 | 1.1 |      | 0.2    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.2 | 0.3 | 0.2 | 0.04 | 0.09   |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8   | F9  | F10  | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|------|-----|------|-----|-----|-----|------|
| 2005     |     |     |        |     |     | 0.1 | 0.1 | 0.1 |     | 0.3 |      |     |      |     |     |     | 0.06 |
| 2006     |     |     |        |     | 0.1 |     | 0.3 | 0.1 |     |     |      |     |      |     |     |     | 0.04 |
| 2007     |     |     |        |     |     |     |     | 0.1 | 0.3 |     |      |     |      |     |     |     | 0.03 |
| 2008     |     |     |        |     |     |     |     |     |     |     |      |     |      |     |     |     |      |
| 2009     |     |     |        | 0.1 |     |     |     |     | 0.1 |     |      | 0.3 |      |     |     |     | 0.04 |
| 2010     |     |     |        | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 |     |      |     |      |     |     |     | 0.09 |
| 2011     |     |     |        | 1.7 | 0.3 | 0.7 | 0.7 | 0.9 | 0.4 | 0.3 |      |     |      |     |     |     | 0.4  |
| 2012     |     |     |        |     | 0.1 | 0.3 | 0.4 |     | 0.1 | 0.1 |      |     |      |     |     |     | 0.09 |
| 2013     |     |     |        |     |     | 0.4 | 2.3 | 2.6 | 3.0 | 4.1 | 0.6  | 0.7 |      |     |     |     | 1.1  |
| 2014     |     |     |        | 0.9 | 1.1 | 0.4 | 0.3 | 0.1 | 0.1 |     | 0.1  | 0.1 | 0.1  |     |     |     | 0.3  |
| Mean     |     |     |        | 0.3 | 0.2 | 0.2 | 0.4 | 0.4 | 0.5 | 0.5 | 0.07 | 0.1 | 0.01 |     |     |     | 0.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |     |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 1   |     |     | 2      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |     |     | 1      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |     |     | 1      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    | 3   |     |     |     | 3      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |     |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 1   |     | 2      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.4 | 0.6 | 0.1 |     | 1.1    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     | 1   |     | 1   |     | 1   |     |     |     |     |     |     | 3    |
| 2006   |     |     |        |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
| 2007   |     |     |        |     |     |     |     | 1   | 2   |     |     |     |     |     |     |     | 3    |
| 2008   |     |     |        |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
| 2009   |     |     |        |     |     |     |     |     | 1   |     |     |     |     |     |     |     | 1    |
| 2010   |     |     |        | 1   | 1   | 1   | 1   |     | 2   |     |     |     |     |     |     |     | 6    |
| 2011   |     |     |        | 6   | 1   | 2   | 4   | 3   | 2   | 1   |     |     |     |     |     |     | 19   |
| 2012   |     |     |        |     |     | 2   |     |     |     | 1   |     |     |     |     |     |     | 3    |
| 2013   |     |     |        |     |     | 3   | 10  | 12  | 4   | 14  |     | 2   |     |     |     |     | 45   |
| 2014   |     |     |        | 5   | 4   |     |     |     |     |     | 1   |     |     |     |     |     | 10   |
| Mean   |     |     |        | 1.2 | 0.6 | 0.9 | 1.5 | 1.7 | 1.1 | 1.7 | 0.1 | 0.2 |     |     |     |     | 9.0  |

Cape May Warbler is typically observed at MBO during both spring and fall migration, although missed in spring 2005 and fall 2008. Nearly all spring records are from weeks 7 to 9, without a consistent peak within that period. Fall results are more variable, with observations spanning the first ten weeks of the season, and the peak ranging from week 1 to 9, although most commonly between late August and mid-September. Numbers have increased over time, most notably in fall, presumably in response to the outbreak of Spruce Budworm in parts of Quebec northeast of MBO.



**NOPA: Northern Parula / Paruline à collier (*Setophaga americana*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 20 | May 20 | May 28 | 9    | 3 (5%)   | 2    | 4     | Aug 7  | Sep 14 | Sep 28 | 53   | 9 (10%)  | 5    | 20    |
| 2006     | May 19 | May 25 | May 29 | 11   | 8 (12%)  | 6    | 18    | Aug 15 | Aug 30 | Oct 4  | 51   | 8 (9%)   | 3    | 11    |
| 2007     | May 8  | May 17 | Jun 1  | 25   | 10 (14%) | 6    | 25    | Aug 31 | Sep 17 | Sep 17 | 18   | 2 (2%)   | 2    | 3     |
| 2008     | May 12 | May 20 | May 22 | 11   | 6 (9%)   | 3    | 8     | Aug 31 | Sep 12 | Oct 3  | 34   | 10 (11%) | 2    | 11    |
| 2009     | May 8  | May 18 | May 27 | 20   | 9 (13%)  | 5    | 17    | Sep 4  | Sep 4  | Oct 4  | 31   | 3 (3%)   | 2    | 6     |
| 2010     | May 13 | May 13 | May 18 | 6    | 5 (7%)   | 2    | 7     | Aug 31 | Aug 31 | Oct 2  | 33   | 6 (7%)   | 1    | 6     |
| 2011     | May 14 | May 22 | May 30 | 17   | 8 (11%)  | 4    | 13    | Sep 1  | Sep 18 | Sep 24 | 24   | 7 (8%)   | 3    | 10    |
| 2012     | May 9  | May 9  | May 13 | 5    | 3 (4%)   | 5    | 7     | Aug 29 | Sep 6  | Sep 26 | 29   | 10 (11%) | 4    | 17    |
| 2013     | May 11 | May 11 | May 23 | 13   | 4 (6%)   | 2    | 6     | Aug 7  | Sep 13 | Sep 26 | 51   | 9 (10%)  | 3    | 12    |
| 2014     | May 10 | May 13 | May 25 | 16   | 6 (9%)   | 3    | 10    | Aug 23 | Sep 13 | Sep 20 | 29   | 9 (10%)  | 2    | 11    |
| Mean     | May 12 | May 16 | May 24 | 13   | 6 (9%)   | 4    | 12    | Aug 24 | Sep 9  | Sep 27 | 35   | 7 (8%)   | 3    | 11    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7  | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|-----|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.4 | 0.1 |      | 0.07   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.9 | 1.7 |      | 0.3    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 1.0 | 1.7 | 0.4 | 0.3  | 0.4    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      | 0.3 | 0.9 |     |      | 0.1    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.1 | 1.7 | 0.4 |      | 0.2    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      | 0.6 | 0.4 |     |      | 0.1    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      | 0.3 | 1.0 | 0.4 | 0.1  | 0.2    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      | 1.0 |     |     |      | 0.1    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      | 0.6 |     | 0.3 |      | 0.09   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.7 | 0.1 | 0.6 |      | 0.1    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.03 | 0.5 | 0.7 | 0.4 | 0.04 | 0.2    |

| Observed | Jun | Jul | Summer | F1   | F2 | F3   | F4   | F5  | F6  | F7  | F8  | F9  | F10  | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|------|----|------|------|-----|-----|-----|-----|-----|------|-----|-----|-----|------|
| 2005     |     |     |        | 0.1  |    |      |      | 0.1 | 0.4 | 1.4 | 0.6 | 0.2 |      |     |     |     | 0.2  |
| 2006     |     |     |        |      |    | 0.1  |      | 0.6 | 0.1 |     | 0.3 | 0.3 | 0.1  |     |     |     | 0.1  |
| 2007     |     |     |        |      |    |      |      | 0.1 |     | 0.3 |     |     |      |     |     |     | 0.03 |
| 2008     |     |     |        |      |    |      |      | 0.3 | 0.6 | 0.4 |     | 0.1 | 0.1  |     |     |     | 0.1  |
| 2009     |     |     |        |      |    |      |      | 0.3 |     |     | 0.3 |     | 0.3  |     |     |     | 0.07 |
| 2010     |     |     |        |      |    |      |      | 0.3 |     | 0.3 | 0.1 | 0.1 |      |     |     |     | 0.07 |
| 2011     |     |     |        |      |    |      |      | 0.1 | 0.3 | 0.6 | 0.4 |     |      |     |     |     | 0.1  |
| 2012     |     |     |        |      |    |      |      | 0.3 | 1.0 | 1.0 |     | 0.1 |      |     |     |     | 0.2  |
| 2013     |     |     |        | 0.1  |    |      | 0.1  |     | 0.3 | 0.9 | 0.1 | 0.1 |      |     |     |     | 0.1  |
| 2014     |     |     |        |      |    |      | 0.3  | 0.1 | 0.1 | 0.9 | 0.1 |     |      |     |     |     | 0.1  |
| Mean     |     |     |        | 0.03 |    | 0.01 | 0.04 | 0.2 | 0.3 | 0.6 | 0.2 | 0.1 | 0.06 |     |     |     | 0.1  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 1   |     | 2      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |     |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     | 5   | 2   |     | 7      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 2   |     |     | 3      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     | 3   | 1   |     | 4      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.2 | 1.1 | 0.5 |     | 1.8    |

| Banded | Jun | Jul | Summer | F1  | F2 | F3 | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |    |    |     |     | 1   | 5   | 3   | 1   |     |     |     |     | 10   |
| 2006   |     |     |        |     |    |    |     |     |     |     |     | 1   | 1   |     |     |     | 2    |
| 2007   |     |     |        |     |    |    |     | 1   |     |     |     |     |     |     |     |     | 1    |
| 2008   |     |     |        |     |    |    |     |     | 1   | 2   |     | 1   |     |     |     |     | 4    |
| 2009   |     |     |        |     |    |    |     |     |     |     |     |     | 1   |     |     |     | 1    |
| 2010   |     |     |        |     |    |    |     | 1   |     | 2   | 1   | 1   |     |     |     |     | 5    |
| 2011   |     |     |        |     |    |    |     |     |     |     | 3   |     |     |     |     |     | 3    |
| 2012   |     |     |        |     |    |    |     |     | 5   | 3   |     |     |     |     |     |     | 8    |
| 2013   |     |     |        | 1   |    |    |     |     | 1   | 3   |     | 1   |     |     |     |     | 6    |
| 2014   |     |     |        |     |    |    | 1   |     | 1   | 2   | 1   |     |     |     |     |     | 5    |
| Mean   |     |     |        | 0.1 |    |    | 0.1 | 0.2 | 0.9 | 1.7 | 0.8 | 0.5 | 0.2 |     |     |     | 4.5  |

Northern Parula is an uncommon spring and fall migrant at MBO, with observations in both seasons annually, although the species has only been banded in six of ten spring seasons. Since 2007, the first arrival of spring has always been between May 8 and 14; over the first two years the species was much later, with no observations until May 19 or 20. The spring peak has been advancing, from week 8 or 9 in the first several years to week 7 in four of the past five years. Fall migration usually spans several weeks in the middle of the season, with a distinct overall peak in week 7. Numbers have fluctuated somewhat over time in both seasons, but without any clear patterns.

**MAWA: Magnolia Warbler / Paruline à tête cendrée (*Setophaga magnolia*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 16 | May 27 | Jun 1  | 17   | 8 (14%)  | 4    | 15    | Aug 9  | Aug 27 | Oct 9  | 62   | 44 (50%) | 27   | 323   |
| 2006     | May 14 | May 18 | Jun 2  | 20   | 17 (25%) | 20   | 98    | Aug 7  | Aug 28 | Oct 2  | 57   | 43 (47%) | 24   | 303   |
| 2007     | May 8  | May 17 | Jun 1  | 25   | 20 (29%) | 8    | 70    | Aug 2  | Aug 26 | Oct 5  | 65   | 37 (41%) | 19   | 111   |
| 2008     | May 7  | May 20 | May 28 | 22   | 16 (23%) | 13   | 60    | Aug 13 | Sep 6  | Oct 12 | 61   | 49 (54%) | 31   | 406   |
| 2009     | May 12 | May 18 | Jun 1  | 21   | 18 (26%) | 12   | 78    | Aug 1  | Aug 31 | Oct 12 | 73   | 40 (44%) | 20   | 149   |
| 2010     | May 5  | May 15 | Jun 5  | 32   | 19 (27%) | 8    | 37    | Aug 5  | Sep 9  | Oct 9  | 66   | 52 (57%) | 50   | 355   |
| 2011     | May 1  | May 13 | Jun 4  | 35   | 19 (27%) | 20   | 77    | Aug 5  | Sep 16 | Oct 2  | 59   | 45 (49%) | 45   | 432   |
| 2012     | May 7  | May 9  | May 30 | 24   | 21 (30%) | 21   | 97    | Aug 4  | Sep 12 | Oct 6  | 64   | 55 (60%) | 32   | 350   |
| 2013     | May 17 | May 22 | Jun 1  | 16   | 14 (20%) | 39   | 101   | Aug 3  | Sep 14 | Oct 15 | 74   | 55 (60%) | 48   | 450   |
| 2014     | May 10 | May 16 | Jun 3  | 25   | 23 (34%) | 20   | 147   | Aug 2  | Sep 12 | Oct 19 | 79   | 54 (59%) | 50   | 460   |
| Mean     | May 9  | May 17 | Jun 1  | 24   | 18 (26%) | 16   | 78    | Aug 5  | Sep 5  | Oct 9  | 66   | 47 (52%) | 35   | 334   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6  | S7  | S8   | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|------|-----|-----|------|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |      |     |     | 0.6  | 1.1 | 0.6 | 0.3    |
| 2006     |     |     |     |     |     |        |    |    |    |    |      |     | 0.1 | 8.4  | 5.1 | 0.3 | 1.4    |
| 2007     |     |     |     |     |     |        |    |    |    |    |      | 0.1 | 2.4 | 3.9  | 2.7 | 0.9 | 1.0    |
| 2008     |     |     |     |     |     |        |    |    |    |    |      | 0.3 | 0.6 | 3.6  | 4.1 |     | 0.9    |
| 2009     |     |     |     |     |     |        |    |    |    |    |      |     | 0.6 | 7.4  | 2.7 | 0.4 | 1.1    |
| 2010     |     |     |     |     |     |        |    |    |    |    |      | 0.3 | 1.1 | 2.0  | 0.7 | 1.1 | 0.5    |
| 2011     |     |     |     |     |     |        |    |    |    |    | 0.1  |     | 3.3 | 2.9  | 3.7 | 1.0 | 1.1    |
| 2012     |     |     |     |     |     |        |    |    |    |    |      | 0.6 | 7.3 | 3.7  | 2.1 | 0.1 | 1.4    |
| 2013     |     |     |     |     |     |        |    |    |    |    |      |     |     | 10.1 | 4.0 | 0.3 | 1.4    |
| 2014     |     |     |     |     |     |        |    |    |    |    |      |     | 4.9 | 10.1 | 5.0 | 1.2 | 2.2    |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.01 | 0.1 | 2.0 | 5.3  | 3.1 | 0.6 | 1.1    |

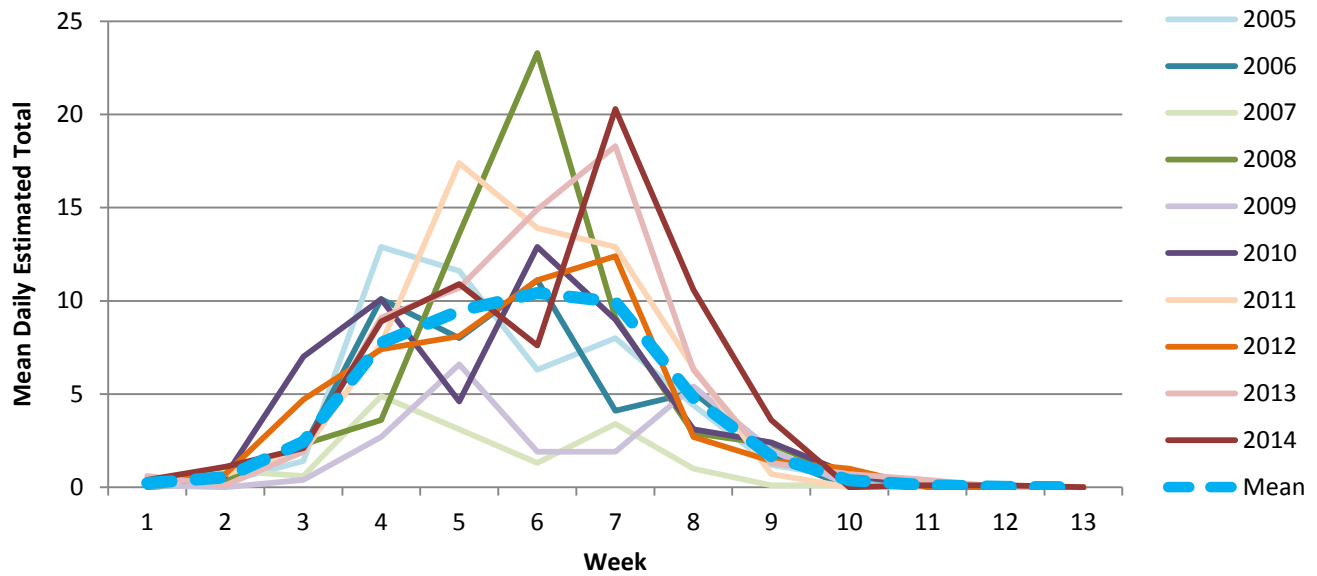
| Observed | Jun  | Jul | Summer | F1  | F2  | F3  | F4   | F5   | F6   | F7   | F8   | F9  | F10 | F11  | F12  | F13 | Fall |
|----------|------|-----|--------|-----|-----|-----|------|------|------|------|------|-----|-----|------|------|-----|------|
| 2005     |      |     |        |     | 0.3 | 1.4 | 12.9 | 11.6 | 6.3  | 7.9  | 4.4  | 1.2 | 0.5 |      |      |     | 3.7  |
| 2006     |      |     |        | 0.1 | 0.7 | 2.1 | 10.1 | 8.0  | 11.1 | 4.1  | 5.1  | 1.7 |     |      |      |     | 3.3  |
| 2007     |      |     |        | 0.4 | 0.9 | 0.6 | 4.9  | 3.1  | 1.3  | 3.4  | 1.0  | 0.1 | 0.1 |      |      |     | 1.2  |
| 2008     | 0.2  |     | 0.1    |     | 0.3 | 2.3 | 3.6  | 13.6 | 23.3 | 9.1  | 2.9  | 2.3 | 0.6 | 0.1  |      |     | 4.5  |
| 2009     |      |     |        | 0.1 |     | 0.4 | 2.7  | 6.6  | 1.9  | 1.9  | 5.4  | 2.0 | 0.1 | 0.1  |      |     | 1.6  |
| 2010     | 0.3  |     | 0.1    | 0.3 | 0.6 | 7.0 | 10.1 | 4.6  | 12.9 | 9.0  | 3.1  | 2.4 | 0.7 |      |      |     | 3.9  |
| 2011     |      |     |        | 0.1 | 0.7 | 1.9 | 7.7  | 17.4 | 13.9 | 12.9 | 6.4  | 0.7 |     |      |      |     | 4.7  |
| 2012     |      |     |        | 0.3 | 0.7 | 4.7 | 7.4  | 8.1  | 11.1 | 12.4 | 2.7  | 1.4 | 1.0 |      |      |     | 3.8  |
| 2013     |      |     |        | 0.6 | 0.1 | 1.9 | 9.1  | 10.7 | 14.9 | 18.3 | 6.3  | 1.3 | 0.7 | 0.4  |      |     | 4.9  |
| 2014     |      |     |        | 0.4 | 1.1 | 2.1 | 8.9  | 10.9 | 7.6  | 20.3 | 10.6 | 3.6 |     | 0.1  | 0.1  |     | 5.1  |
| Mean     | 0.04 |     | 0.02   | 0.2 | 0.5 | 2.4 | 7.7  | 9.5  | 10.4 | 9.9  | 4.8  | 1.7 | 0.4 | 0.09 | 0.01 |     | 3.7  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8   | S9   | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|------|------|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1    | 3    | 1   | 5      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     | 10   | 11   | 1   | 22     |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    | 5   | 4    | 5    | 3   | 17     |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     | 7    | 11   |     | 18     |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 26   | 12   | 2   | 41     |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    | 3   | 3    | 3    | 2   | 11     |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    | 6   | 8    | 12   | 1   | 27     |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    | 8   | 18   | 13   |     | 39     |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     | 51   | 14   | 1   | 66     |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    | 19  | 39   | 21   | 3   | 82     |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 4.2 | 16.7 | 10.5 | 1.4 | 32.8   |

| Banded | Jun | Jul | Summer | F1  | F2  | F3   | F4   | F5   | F6   | F7   | F8   | F9  | F10 | F11 | F12 | F13 | Fall  |
|--------|-----|-----|--------|-----|-----|------|------|------|------|------|------|-----|-----|-----|-----|-----|-------|
| 2005   |     |     |        |     | 1   | 7    | 48   | 53   | 20   | 37   | 22   | 3   | 1   |     |     |     | 192   |
| 2006   |     |     |        | 1   | 3   | 12   | 39   | 21   | 39   | 18   | 16   | 8   |     |     |     |     | 157   |
| 2007   |     |     |        | 1   | 3   | 2    | 24   | 19   | 5    | 14   | 4    | 1   | 1   |     |     |     | 74    |
| 2008   |     |     |        |     | 2   | 12   | 19   | 62   | 109  | 36   | 10   | 11  | 3   |     |     |     | 264   |
| 2009   |     |     |        | 1   |     | 1    | 11   | 31   | 10   | 12   | 25   | 11  | 1   |     |     |     | 103   |
| 2010   |     |     |        | 2   | 4   | 37   | 44   | 23   | 74   | 46   | 17   | 11  | 2   |     |     |     | 260   |
| 2011   |     |     |        | 1   | 2   | 4    | 43   | 79   | 52   | 38   | 28   | 5   |     |     |     |     | 252   |
| 2012   |     |     |        | 1   | 3   | 12   | 36   | 31   | 44   | 59   | 7    | 7   | 3   |     |     |     | 203   |
| 2013   |     |     |        | 3   |     | 5    | 45   | 53   | 70   | 84   | 19   | 3   | 2   |     |     |     | 284   |
| 2014   |     |     |        | 2   | 4   | 9    | 40   | 40   | 27   | 94   | 42   | 20  |     | 1   |     |     | 279   |
| Mean   |     |     |        | 1.2 | 2.2 | 10.1 | 34.9 | 41.2 | 45.0 | 43.8 | 19.0 | 8.0 | 1.3 | 0.1 |     |     | 206.8 |

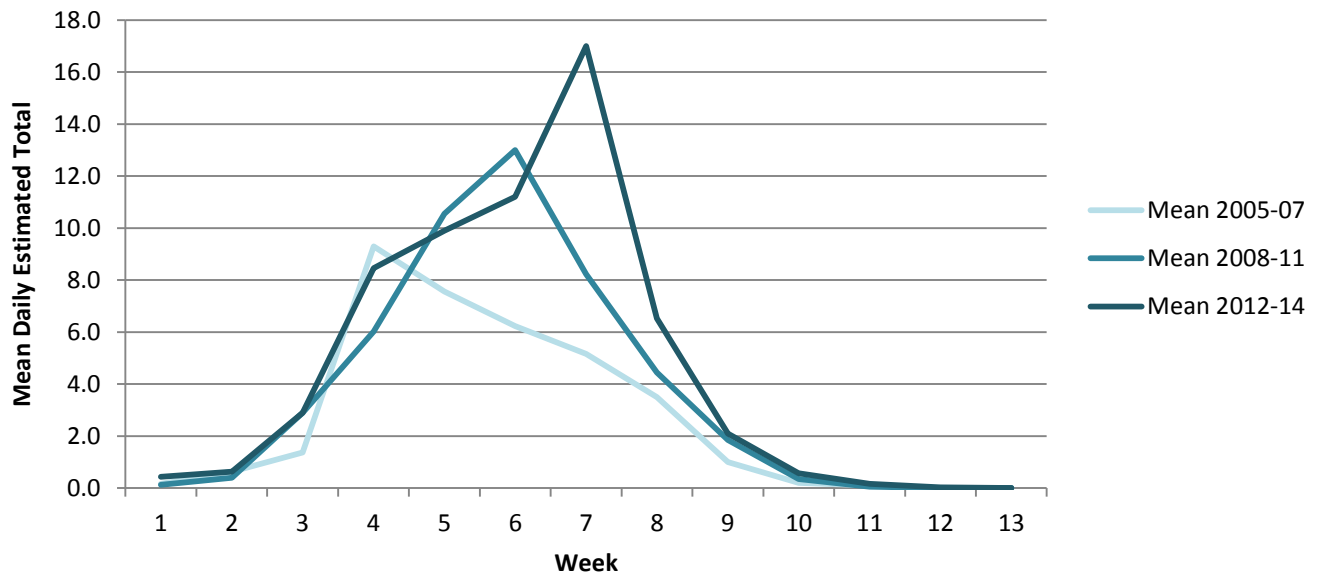
Magnolia Warbler is consistently among the most common spring and fall migrants at MBO. The date of spring arrival varies widely, but the peak is almost always in week 8 or 9; late migrants have lingered into June in most years, including two that stayed into the summer period. Fall migrants almost always start arriving in the first week of August and linger into early-mid October annually. The fall peak has been getting later over time, occurring in week 4 to 6 from 2005 through 2011, but in week 7 in each of the past three years. Both in spring and fall, numbers have shown an increasing trend over time.

**Mean daily estimated total of Magnolia Warblers in fall, by week**



The figure above shows that the fall peak of Magnolia Warbler migration varies considerably, with an overall peak of abundance that is quite protracted and rounded. Combining data into 3-4 years periods (see figure below) reveals different patterns. As with American Redstart, overall numbers have been higher since 2008 than from 2005-07. However, whereas the peak of American Redstart migration has been advancing, the opposite is the case for Magnolia Warbler, with a peak in week 4 over the first three years, shifting to week 6 over the next four years, and finally week 7 over the three most recent years. Notably, numbers over the first four weeks have remained largely consistent over all three periods; the difference is that from 2005-07, migration tapered off beginning in week 5, whereas in 2008-11 it continued to increase for another two weeks before declining, and from 2012-14, that period of increase extended yet another week. From week 9 onward, results are again almost identical across all periods.

**Mean daily estimated total of Magnolia Warblers in fall, by week**



**BBWA: Bay-breasted Warbler / Paruline à poitrine baie (*Setophaga castanea*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     |        |        |        |      |          |      |       | Aug 7  | Sep 21 | Sep 21 | 46   | 7 (8%)   | 2    | 8     |
| 2006     | May 18 | May 18 | May 18 | 1    | 1 (1%)   | 1    | 1     | Aug 11 | Sep 1  | Sep 24 | 45   | 8 (9%)   | 2    | 10    |
| 2007     |        |        |        |      |          |      |       | Aug 25 | Aug 25 | Aug 26 | 2    | 2 (2%)   | 1    | 2     |
| 2008     | May 20 | May 20 | May 26 | 7    | 4 (6%)   | 2    | 6     | Aug 31 | Aug 31 | Sep 7  | 8    | 4 (4%)   | 1    | 4     |
| 2009     | May 5  | May 5  | May 30 | 26   | 10 (14%) | 4    | 16    | Aug 21 | Aug 21 | Sep 26 | 37   | 4 (4%)   | 1    | 4     |
| 2010     | May 18 | May 18 | May 22 | 5    | 2 (3%)   | 1    | 2     | Aug 22 | Sep 9  | Oct 1  | 41   | 5 (5%)   | 3    | 7     |
| 2011     | May 14 | May 14 | May 22 | 9    | 2 (3%)   | 1    | 2     | Aug 26 | Aug 26 | Sep 27 | 33   | 6 (7%)   | 2    | 8     |
| 2012     | May 14 | May 14 | May 18 | 5    | 2 (3%)   | 1    | 2     | Aug 15 | Aug 15 | Sep 22 | 39   | 8 (9%)   | 1    | 8     |
| 2013     | May 19 | May 25 | May 25 | 7    | 3 (4%)   | 4    | 7     | Aug 25 | Aug 27 | Oct 1  | 38   | 11 (12%) | 4    | 18    |
| 2014     | May 10 | May 21 | May 30 | 21   | 4 (6%)   | 4    | 7     | Aug 8  | Aug 23 | Sep 23 | 47   | 17 (19%) | 2    | 22    |
| Mean     | May 14 | May 16 | May 23 | 10   | 4 (5%)   | 2    | 4.3   | Aug 19 | Aug 29 | Sep 20 | 34   | 7 (8%)   | 2    | 9.1   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7  | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|-----|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |     |     |     |      |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.1 |     |      | 0.01   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |     |     |     |      |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.4 | 0.4 |      | 0.09   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.6  | 1.0 | 0.6 |     | 0.1  | 0.2    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.3 |     |      | 0.03   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 0.1 |     |      | 0.03   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 0.1 |     |      | 0.03   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.4 | 0.6 |      | 0.1    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 0.7 |     | 0.2  | 0.1    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.06 | 0.1 | 0.3 | 0.1 | 0.03 | 0.06   |

| Observed | Jun | Jul | Summer | F1   | F2   | F3   | F4  | F5  | F6  | F7  | F8  | F9   | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|------|------|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|
| 2005     |     |     |        | 0.1  |      |      | 0.3 | 0.3 |     | 0.1 | 0.3 |      |     |     |     |     | 0.09 |
| 2006     |     |     |        |      | 0.1  |      | 0.1 | 0.9 |     |     | 0.3 |      |     |     |     |     | 0.1  |
| 2007     |     |     |        |      |      |      | 0.3 |     |     |     |     |      |     |     |     |     | 0.02 |
| 2008     |     |     |        |      |      |      |     | 0.1 | 0.4 |     |     |      |     |     |     |     | 0.04 |
| 2009     |     |     |        |      |      | 0.1  |     | 0.1 | 0.1 |     |     | 0.1  |     |     |     |     | 0.04 |
| 2010     |     |     |        |      |      |      | 0.3 |     | 0.4 | 0.1 |     | 0.1  |     |     |     |     | 0.08 |
| 2011     |     |     |        |      |      |      | 0.3 | 0.4 |     | 0.3 |     | 0.1  |     |     |     |     | 0.09 |
| 2012     |     |     |        |      |      | 0.1  | 0.3 |     | 0.1 | 0.4 | 0.1 |      |     |     |     |     | 0.09 |
| 2013     |     |     |        |      |      |      | 1.1 | 0.9 | 0.1 | 0.3 |     | 0.1  |     |     |     |     | 0.2  |
| 2014     |     |     |        |      |      | 0.6  | 0.6 | 0.7 |     | 0.9 | 0.4 |      |     |     |     |     | 0.2  |
| Mean     |     |     |        | 0.01 | 0.07 | 0.03 | 0.3 | 0.3 | 0.1 | 0.2 | 0.1 | 0.06 |     |     |     |     | 0.1  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 1   |     | 1   | 3      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |     |     | 1      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |     |     | 1      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 1   |     | 2      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |     | 3   |     | 1   | 4      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 | 0.7 | 0.2 | 0.2 | 1.2    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |     | 1   | 2   |     |     | 2   |     |     |     |     |     | 5    |
| 2006   |     |     |        |    |    |     | 1   | 2   |     |     |     |     |     |     |     |     | 3    |
| 2007   |     |     |        |    |    |     | 2   |     |     |     |     |     |     |     |     |     | 2    |
| 2008   |     |     |        |    |    |     |     | 1   | 2   |     |     |     |     |     |     |     | 3    |
| 2009   |     |     |        |    |    |     |     | 1   | 1   |     |     |     |     |     |     |     | 2    |
| 2010   |     |     |        |    |    |     | 2   |     | 3   |     |     | 1   |     |     |     |     | 6    |
| 2011   |     |     |        |    |    |     | 2   | 3   |     | 2   |     |     |     |     |     |     | 7    |
| 2012   |     |     |        |    |    | 1   | 1   |     |     | 3   | 1   |     |     |     |     |     | 6    |
| 2013   |     |     |        |    |    |     | 6   | 2   |     | 2   |     |     |     |     |     |     | 10   |
| 2014   |     |     |        |    |    | 1   | 1   | 3   |     | 3   | 2   |     |     |     |     |     | 10   |
| Mean   |     |     |        |    |    | 0.1 | 0.1 | 1.6 | 1.4 | 0.6 | 1.0 | 0.5 | 0.1 |     |     |     | 5.4  |

Bay-breasted Warbler is a rare to uncommon spring and fall migrant at MBO. In spring, week 8 is the only period with regular observations, although some sightings have been as early as week 6 or as late as week 10. The fall migration window is also relatively narrow compared to other warblers, with an overall peak ranging from week 4 to 7, and relatively few earlier or later records, including just two sightings on the first of October. In both seasons, numbers have shown a modest increase over time, with the growth in recent years perhaps reflecting the Spruce Budworm outbreak in parts of Quebec northeast of MBO.

**BLBW: Blackburnian Warbler / Paruline à gorge orangée (*Setophaga fusca*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 21 | May 21 | May 21 | 1    | 1 (2%) | 1    | 1     | Aug 8  | Sep 14 | Sep 14 | 38   | 3 (3%)   | 2    | 4     |
| 2006     | May 11 | May 18 | May 20 | 10   | 4 (6%) | 2    | 6     | Aug 10 | Sep 2  | Sep 4  | 26   | 10 (11%) | 4    | 16    |
| 2007     | May 8  | May 8  | May 28 | 21   | 4 (6%) | 1    | 4     | Aug 19 | Aug 19 | Aug 25 | 7    | 2 (2%)   | 1    | 2     |
| 2008     | May 20 | May 20 | May 20 | 1    | 1 (1%) | 2    | 2     | Aug 21 | Aug 21 | Aug 25 | 5    | 2 (2%)   | 1    | 2     |
| 2009     | May 15 | May 15 | May 28 | 14   | 4 (6%) | 1    | 4     | Aug 28 | Aug 28 | Sep 4  | 8    | 3 (3%)   | 1    | 3     |
| 2010     | May 13 | May 13 | May 16 | 4    | 2 (3%) | 1    | 2     | Aug 17 | Aug 17 | Sep 22 | 37   | 8 (9%)   | 3    | 11    |
| 2011     | May 14 | May 14 | May 29 | 16   | 2 (3%) | 2    | 3     | Aug 26 | Aug 26 | Sep 20 | 26   | 10 (11%) | 3    | 15    |
| 2012     | May 9  | May 9  | May 21 | 13   | 4 (6%) | 4    | 8     | Aug 20 | Aug 20 | Aug 31 | 12   | 2 (2%)   | 1    | 2     |
| 2013     | May 22 | May 22 | May 22 | 1    | 1 (1%) | 1    | 1     | Aug 25 | Aug 25 | Sep 22 | 29   | 4 (4%)   | 1    | 4     |
| 2014     | May 13 | May 13 | May 31 | 19   | 5 (7%) | 3    | 8     |        |        |        |      |          |      |       |
| Mean     | May 14 | May 15 | May 23 | 10   | 3 (4%) | 2    | 3.9   | Aug 19 | Aug 26 | Sep 8  | 21   | 5 (5%)   | 2    | 5.9   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7  | S8  | S9   | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|-----|-----|------|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.1 |      |      | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 0.7 |      |      | 0.09   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.1 |     | 0.3  |      | 0.06   |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.3 |      |      | 0.03   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 0.1 | 0.3  |      | 0.06   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 0.1 |      |      | 0.03   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      | 0.3 |     | 0.1  |      | 0.04   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      | 0.9 | 0.3 |      |      | 0.1    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.1 |      |      | 0.01   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.4 | 0.6 |      | 0.2  | 0.1    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.01 | 0.2 | 0.2 | 0.07 | 0.01 | 0.06   |

| Observed | Jun  | Jul  | Summer | F1 | F2   | F3  | F4  | F5  | F6   | F7   | F8   | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|------|------|--------|----|------|-----|-----|-----|------|------|------|----|-----|-----|-----|-----|------|
| 2005     |      |      |        |    | 0.1  |     |     | 0.1 |      | 0.3  |      |    |     |     |     |     | 0.05 |
| 2006     |      | 0.2  | 0.09   |    | 0.3  | 0.7 | 0.1 | 1.1 |      |      |      |    |     |     |     |     | 0.2  |
| 2007     |      |      |        |    |      | 0.1 | 0.1 |     |      |      |      |    |     |     |     |     | 0.02 |
| 2008     |      |      |        |    |      | 0.1 | 0.1 |     |      |      |      |    |     |     |     |     | 0.02 |
| 2009     |      |      |        |    |      |     | 0.1 | 0.3 |      |      |      |    |     |     |     |     | 0.03 |
| 2010     | 0.3  |      | 0.1    |    |      | 1.0 | 0.1 |     | 0.3  |      | 0.1  |    |     |     |     |     | 0.1  |
| 2011     |      |      |        |    |      |     | 0.7 | 0.7 | 0.3  | 0.3  | 0.1  |    |     |     |     |     | 0.2  |
| 2012     |      |      |        |    |      | 0.1 |     | 0.1 |      |      |      |    |     |     |     |     | 0.02 |
| 2013     |      |      |        |    |      |     | 0.3 | 0.1 |      |      | 0.1  |    |     |     |     |     | 0.04 |
| 2014     |      |      |        |    |      |     |     |     |      |      |      |    |     |     |     |     |      |
| Mean     | 0.02 | 0.03 | 0.02   |    | 0.04 | 0.2 | 0.2 | 0.3 | 0.06 | 0.06 | 0.04 |    |     |     |     |     | 0.07 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |     |     | 1      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   |     | 1      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |     |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.2 | 0.1 |     | 0.3    |

| Banded | Jun | Jul | Summer | F1 | F2  | F3  | F4  | F5  | F6  | F7 | F8  | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|-----|-----|-----|-----|-----|----|-----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |     |     |     |     |     |    |     |    |     |     |     |     |      |
| 2006   |     |     |        |    | 1   | 3   | 1   | 3   |     |    |     |    |     |     |     |     | 8    |
| 2007   |     |     |        |    |     |     | 1   |     |     |    |     |    |     |     |     |     | 1    |
| 2008   |     |     |        |    |     |     |     |     |     |    |     |    |     |     |     |     |      |
| 2009   |     |     |        |    |     |     |     |     |     |    |     |    |     |     |     |     |      |
| 2010   |     |     |        |    |     | 4   |     |     |     |    |     |    |     |     |     |     | 4    |
| 2011   |     |     |        |    |     |     | 3   | 1   | 2   |    |     |    |     |     |     |     | 6    |
| 2012   |     |     |        |    |     |     |     |     |     |    |     |    |     |     |     |     |      |
| 2013   |     |     |        |    |     |     |     |     |     |    | 1   |    |     |     |     |     | 1    |
| 2014   |     |     |        |    |     |     |     |     |     |    |     |    |     |     |     |     |      |
| Mean   |     |     |        |    | 0.1 | 0.7 | 0.5 | 0.4 | 0.2 |    | 0.1 |    |     |     |     |     | 2.0  |

Blackburnian Warbler is generally a rare spring and fall migrant at MBO, though it was missed entirely in fall 2014. Compared to other warblers, it is banded quite irregularly, with none banded in either season in 2007, 2012, or 2014. Almost all spring records are within a 20-day span from May 8 to 28. Fall migration is also relatively constrained compared to other warblers, with all observations to date between week 2 and 8, and a distinct overall peak spanning weeks 3 to 5. Fall numbers were somewhat higher in 2010 and 2011, but otherwise there has been little change in abundance over time.

**YEWA: Yellow Warbler / Paruline jaune (*Setophaga petechia*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak  | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|-------|--------|------|----------|------|-------|
| 2005     | May 11 | May 20 | Jun 3 | 24   | 24 (41%) | 25   | 358   | Aug 1 | Aug 3 | Sep 19 | 50   | 27 (31%) | 20   | 135   |
| 2006     | May 4  | May 25 | Jun 5 | 33   | 30 (43%) | 30   | 444   | Aug 1 | Aug 6 | Sep 25 | 56   | 33 (36%) | 18   | 189   |
| 2007     | May 7  | May 13 | Jun 5 | 30   | 30 (43%) | 25   | 405   | Aug 1 | Aug 5 | Sep 5  | 36   | 24 (26%) | 15   | 115   |
| 2008     | May 6  | May 22 | Jun 5 | 31   | 31 (44%) | 25   | 390   | Aug 1 | Aug 1 | Sep 3  | 34   | 23 (25%) | 14   | 106   |
| 2009     | Apr 28 | May 19 | Jun 5 | 39   | 38 (55%) | 20   | 339   | Aug 1 | Aug 6 | Sep 3  | 34   | 21 (23%) | 15   | 131   |
| 2010     | May 2  | May 13 | Jun 5 | 35   | 32 (46%) | 15   | 303   | Aug 1 | Aug 4 | Sep 12 | 43   | 24 (26%) | 15   | 93    |
| 2011     | May 1  | May 29 | Jun 5 | 36   | 31 (44%) | 21   | 317   | Aug 1 | Aug 5 | Sep 11 | 42   | 28 (31%) | 28   | 246   |
| 2012     | May 4  | May 12 | Jun 5 | 33   | 33 (47%) | 30   | 431   | Aug 1 | Aug 1 | Sep 14 | 45   | 23 (25%) | 18   | 148   |
| 2013     | May 5  | May 16 | Jun 5 | 32   | 32 (46%) | 25   | 450   | Aug 1 | Aug 4 | Sep 17 | 48   | 30 (33%) | 11   | 115   |
| 2014     | May 9  | May 27 | Jun 4 | 27   | 27 (40%) | 28   | 329   | Aug 1 | Aug 9 | Sep 12 | 43   | 27 (30%) | 6    | 69    |
| Mean     | May 4  | May 19 | Jun 4 | 32   | 31 (45%) | 24   | 377   | Aug 1 | Aug 4 | Sep 12 | 43   | 26 (29%) | 16   | 135   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6  | S7   | S8   | S9   | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|-----|-----|------|------|------|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |     |     | 6.3  | 16.7 | 14.6 | 19.0 | 6.1    |
| 2006     |     |     |     |     |     |        |    |    |    |    |     | 0.4 | 11.7 | 15.3 | 21.1 | 14.9 | 6.4    |
| 2007     |     |     |     |     |     |        |    |    |    |    |     | 0.6 | 17.9 | 15.6 | 15.1 | 8.7  | 5.8    |
| 2008     |     |     |     |     |     |        |    |    |    |    |     | 2.7 | 9.0  | 17.1 | 16.9 | 10.0 | 5.6    |
| 2009     |     |     |     |     |     |        |    |    |    |    | 2.0 | 3.0 | 9.1  | 14.1 | 11.6 | 8.6  | 4.9    |
| 2010     |     |     |     |     |     |        |    |    |    |    |     | 2.0 | 11.7 | 13.1 | 9.3  | 7.1  | 4.3    |
| 2011     |     |     |     |     |     |        |    |    |    |    | 0.1 | 0.6 | 7.3  | 12.0 | 15.1 | 10.1 | 4.5    |
| 2012     |     |     |     |     |     |        |    |    |    |    |     | 5.4 | 20.7 | 15.6 | 12.1 | 7.7  | 6.2    |
| 2013     |     |     |     |     |     |        |    |    |    |    |     | 5.0 | 13.7 | 20.0 | 13.0 | 12.6 | 6.4    |
| 2014     |     |     |     |     |     |        |    |    |    |    |     |     | 10.9 | 14.7 | 12.7 | 10.2 | 4.8    |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.2 | 2.0 | 11.8 | 15.4 | 14.2 | 10.7 | 5.5    |

| Observed | Jun  | Jul  | Summer | F1   | F2   | F3  | F4  | F5  | F6  | F7   | F8   | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|------|------|--------|------|------|-----|-----|-----|-----|------|------|----|-----|-----|-----|-----|------|
| 2005     | 11.7 | 5.5  | 8.5    | 7.9  | 6.0  | 3.3 | 1.7 | 0.1 |     | 0.1  | 0.1  |    |     |     |     |     | 1.5  |
| 2006     | 10.2 | 5.2  | 7.5    | 10.3 | 9.9  | 3.7 | 1.9 | 0.4 | 0.6 | 0.1  | 0.1  |    |     |     |     |     | 2.1  |
| 2007     | 7.7  | 5.0  | 6.5    | 8.1  | 5.3  | 2.3 | 0.6 |     | 0.1 |      |      |    |     |     |     |     | 1.3  |
| 2008     | 6.6  | 3.0  | 4.8    | 5.9  | 5.1  | 3.3 | 0.4 | 0.4 |     |      |      |    |     |     |     |     | 1.2  |
| 2009     | 5.3  | 2.8  | 3.9    | 7.3  | 7.9  | 3.4 |     | 0.1 |     |      |      |    |     |     |     |     | 1.4  |
| 2010     | 1.3  | 2.7  | 2.2    | 6.6  | 3.9  | 2.1 | 0.1 | 0.3 | 0.1 | 0.1  |      |    |     |     |     |     | 1.0  |
| 2011     | 3.3  | 7.3  | 5.6    | 18.1 | 10.4 | 4.9 | 0.7 |     | 1.0 |      |      |    |     |     |     |     | 2.7  |
| 2012     | 2.5  | 19.0 | 10.8   | 10.7 | 6.3  | 3.4 | 0.6 |     |     | 0.1  |      |    |     |     |     |     | 1.6  |
| 2013     | 4.3  | 2.0  | 3.0    | 6.3  | 2.6  | 5.0 | 2.3 | 0.1 |     | 0.1  |      |    |     |     |     |     | 1.3  |
| 2014     | 3.0  | 1.0  | 1.9    | 3.0  | 3.0  | 1.7 | 1.9 | 0.1 |     | 0.1  |      |    |     |     |     |     | 0.8  |
| Mean     | 7.7  | 5.2  | 6.4    | 8.4  | 6.0  | 3.3 | 1.0 | 0.2 | 0.2 | 0.09 | 0.03 |    |     |     |     |     | 1.5  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6  | S7  | S8   | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|-----|-----|-----|------|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |     |     | 10  | 27   | 9   | 1   | 47     |
| 2006   |     |     |     |     |     |        |    |    |    |    |     |     | 3   | 5    | 13  |     | 21     |
| 2007   |     |     |     |     |     |        |    |    |    |    |     |     | 16  | 5    | 7   | 1   | 29     |
| 2008   |     |     |     |     |     |        |    |    |    |    |     | 2   | 1   | 24   | 9   |     | 36     |
| 2009   |     |     |     |     |     |        |    |    |    |    | 2   |     | 8   | 29   | 3   | 1   | 43     |
| 2010   |     |     |     |     |     |        |    |    |    |    |     |     | 7   | 12   | 4   | 3   | 26     |
| 2011   |     |     |     |     |     |        |    |    |    |    |     |     | 7   | 8    | 13  | 2   | 30     |
| 2012   |     |     |     |     |     |        |    |    |    |    |     | 3   | 13  | 17   | 2   | 2   | 37     |
| 2013   |     |     |     |     |     |        |    |    |    |    |     | 1   | 10  | 25   | 6   | 1   | 43     |
| 2014   |     |     |     |     |     |        |    |    |    |    |     |     | 15  | 16   | 4   | 1   | 36     |
| Mean   |     |     |     |     |     |        |    |    |    |    | 0.2 | 0.6 | 9.0 | 16.8 | 7.0 | 1.2 | 34.8   |

| Banded | Jun | Jul  | Summer | F1   | F2   | F3  | F4  | F5  | F6  | F7  | F8  | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|------|--------|------|------|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|
| 2005   |     | 4    | 4      | 6    | 19   | 7   | 5   |     |     | 1   | 1   |    |     |     |     |     | 39   |
| 2006   |     | 3    | 3      | 23   | 14   | 4   |     | 1   | 1   |     |     |    |     |     |     |     | 43   |
| 2007   |     |      |        | 27   | 9    | 6   |     |     | 1   |     |     |    |     |     |     |     | 43   |
| 2008   |     |      |        | 24   | 4    | 7   | 2   | 2   |     |     |     |    |     |     |     |     | 39   |
| 2009   | 1   | 9    | 10     | 25   | 18   | 7   |     |     |     |     |     |    |     |     |     |     | 50   |
| 2010   |     | 8    | 8      | 29   | 10   | 3   |     |     |     | 1   |     |    |     |     |     |     | 43   |
| 2011   | 2   | 9    | 11     | 52   | 15   | 5   | 3   |     |     |     |     |    |     |     |     |     | 75   |
| 2012   | 4   | 57   | 61     | 31   | 9    |     | 1   |     |     | 1   |     |    |     |     |     |     | 42   |
| 2013   | 1   | 7    | 8      | 19   | 2    | 6   | 7   |     |     |     |     |    |     |     |     |     | 34   |
| 2014   | 1   | 3    | 4      | 7    | 3    |     |     |     |     | 1   |     |    |     |     |     |     | 11   |
| Mean   | 1.5 | 11.1 | 12.1   | 24.3 | 10.3 | 4.5 | 1.8 | 0.3 | 0.2 | 0.4 | 0.1 |    |     |     |     |     | 41.9 |

Yellow Warbler is among the most abundant breeding birds at MBO, but observations also include migrants. The earliest spring arrival is most commonly in the first week of May, but numbers usually spike in week 7 and peak most often in week 8, before tapering off to just the local breeders by early June. Fall numbers almost always peak in the first week and decline sharply over the course of August, with only low counts extending into early-mid September. Spring numbers show a modest 2-4 year cycle, while fall observations have been relatively stable outside of highs in 2006 and 2011, and below average numbers in 2013 and 2014. The exceptional number banded in July 2012 likely reflected early fall migrants.

**CSWA: Chestnut-sided Warbler / Paruline à flancs marron (*Setophaga pensylvanica*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 16 | May 28 | Jun 3  | 19   | 11 (19%) | 4    | 18    | Aug 2  | Aug 22 | Sep 23 | 53   | 24 (27%) | 5    | 40    |
| 2006     | May 10 | May 16 | Jun 5  | 27   | 13 (19%) | 4    | 23    | Aug 12 | Aug 28 | Sep 30 | 50   | 20 (22%) | 3    | 27    |
| 2007     | May 10 | May 20 | Jun 5  | 27   | 19 (27%) | 5    | 35    | Aug 3  | Aug 26 | Sep 11 | 40   | 19 (21%) | 3    | 23    |
| 2008     | May 20 | May 26 | Jun 1  | 13   | 13 (19%) | 4    | 30    | Aug 1  | Aug 17 | Sep 27 | 58   | 32 (35%) | 6    | 56    |
| 2009     | May 2  | May 30 | Jun 5  | 35   | 21 (30%) | 4    | 34    | Aug 4  | Aug 16 | Sep 22 | 50   | 27 (30%) | 4    | 41    |
| 2010     | May 16 | May 27 | Jun 5  | 21   | 13 (19%) | 3    | 19    | Aug 1  | Aug 18 | Sep 18 | 49   | 22 (24%) | 10   | 51    |
| 2011     | May 7  | May 13 | Jun 5  | 30   | 24 (34%) | 4    | 46    | Aug 3  | Aug 26 | Sep 25 | 54   | 32 (35%) | 11   | 73    |
| 2012     | May 11 | May 24 | Jun 5  | 26   | 22 (31%) | 6    | 45    | Aug 1  | Aug 8  | Sep 24 | 55   | 28 (31%) | 3    | 40    |
| 2013     | May 10 | May 22 | May 30 | 20   | 18 (26%) | 5    | 38    | Aug 3  | Aug 20 | Oct 13 | 72   | 31 (34%) | 4    | 48    |
| 2014     | May 11 | May 14 | Jun 3  | 25   | 24 (35%) | 4    | 50    | Aug 5  | Aug 10 | Sep 27 | 54   | 17 (19%) | 3    | 27    |
| Mean     | May 11 | May 22 | Jun 3  | 24   | 18 (26%) | 4    | 34    | Aug 3  | Aug 19 | Sep 25 | 54   | 25 (28%) | 5    | 43    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.1 | 1.7 | 1.0 | 0.3    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      | 0.3 | 2.0 | 0.7 | 0.3 | 0.3    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      | 0.6 | 1.6 | 2.6 | 0.3 | 0.5    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.7 | 2.7 | 0.9 | 0.4    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.3  | 0.1 | 1.9 | 1.6 | 1.0 | 0.5    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.7 | 0.9 | 1.1 | 0.3    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 1.3 | 1.3 | 2.6 | 1.3 | 0.7    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      | 1.4 | 1.0 | 2.7 | 1.3 | 0.6    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      | 0.7 | 2.6 | 2.0 | 0.1 | 0.5    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 1.1 | 2.4 | 2.3 | 1.5 | 0.7    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.04 | 0.6 | 1.4 | 2.0 | 0.9 | 0.5    |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9   | F10 | F11  | F12 | F13 | Fall |
|----------|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|-----|-----|------|
| 2005     | 0.3 | 0.2  | 0.2    | 0.4 | 0.4 | 0.7 | 1.6 | 0.9 | 0.7 | 0.6 | 0.4 |      |     |      |     |     | 0.5  |
| 2006     |     |      |        |     | 0.7 | 0.4 | 0.6 | 0.6 | 0.6 | 0.4 | 0.4 | 0.1  |     |      |     |     | 0.3  |
| 2007     | 0.3 |      | 0.2    | 0.7 | 0.4 | 0.6 | 0.7 | 0.3 | 0.6 |     |     |      |     |      |     |     | 0.3  |
| 2008     |     |      |        | 0.4 | 0.7 | 2.6 | 0.7 | 1.3 | 1.3 | 0.6 | 0.3 | 0.1  |     |      |     |     | 0.6  |
| 2009     | 0.7 | 0.5  | 0.6    | 0.4 | 1.0 | 1.4 | 1.3 | 1.1 | 0.1 | 0.1 | 0.3 |      |     |      |     |     | 0.5  |
| 2010     |     |      |        | 0.3 | 0.4 | 3.7 | 0.9 | 0.1 | 1.4 | 0.4 |     |      |     |      |     |     | 0.6  |
| 2011     | 0.7 |      | 0.3    | 0.3 | 1.4 | 1.6 | 2.7 | 2.1 | 0.7 | 0.7 | 0.9 |      |     |      |     |     | 0.8  |
| 2012     | 0.3 |      | 0.1    | 1.0 | 1.6 | 0.9 | 0.3 | 0.9 | 0.7 | 0.3 | 0.1 |      |     |      |     |     | 0.4  |
| 2013     |     |      |        | 0.6 | 1.0 | 1.9 | 1.4 | 0.4 | 0.4 | 0.9 | 0.1 |      |     | 0.1  |     |     | 0.5  |
| 2014     | 0.3 | 0.3  | 0.3    | 0.3 | 0.4 | 0.9 | 0.3 | 0.6 | 0.4 | 0.9 |     | 0.1  |     |      |     |     | 0.3  |
| Mean     | 0.2 | 0.09 | 0.1    | 0.4 | 0.8 | 1.5 | 1.0 | 0.8 | 0.7 | 0.5 | 0.3 | 0.04 |     | 0.01 |     |     | 0.5  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 2   |     | 3      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1   |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 6   |     | 7      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 4   |     | 5      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     | 5   | 1   |     | 6      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 2   | 1   | 4      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 3   | 3   |     | 7      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    | 3   | 1   | 1   | 2   | 7      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 4   | 3   |     | 8      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    | 5   |     | 4   |     | 9      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 1.0 | 1.7 | 2.7 | 0.3 | 5.7    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     | 3   | 6   | 3   | 3   |     | 1   |     |     |     |     |     | 16   |
| 2006   |     |     |        |     | 4   | 1   | 2   | 1   | 2   | 1   | 1   | 1   |     |     |     |     | 13   |
| 2007   |     |     |        | 3   | 1   | 2   | 3   | 1   | 2   |     |     |     |     |     |     |     | 12   |
| 2008   |     |     |        | 3   | 2   | 10  | 3   | 3   | 6   | 1   |     | 1   |     |     |     |     | 29   |
| 2009   |     | 2   | 2      |     | 4   | 5   | 6   | 2   | 1   | 1   |     |     |     |     |     |     | 19   |
| 2010   |     |     |        | 2   | 2   | 13  | 5   | 1   | 9   | 1   |     |     |     |     |     |     | 33   |
| 2011   |     |     |        | 1   | 3   | 1   | 15  | 7   | 3   | 2   | 4   |     |     |     |     |     | 36   |
| 2012   |     |     |        | 6   | 6   | 3   | 2   | 1   | 3   | 2   |     |     |     |     |     |     | 23   |
| 2013   |     |     |        | 1   | 4   | 2   | 4   | 2   | 1   | 3   |     |     |     |     |     |     | 17   |
| 2014   |     | 1   | 1      | 1   | 1   | 2   |     | 1   | 1   | 3   |     | 1   |     |     |     |     | 10   |
| Mean   |     | 0.3 | 0.3    | 1.7 | 2.7 | 4.2 | 4.6 | 2.2 | 3.1 | 1.4 | 0.6 | 0.3 |     |     |     |     | 20.8 |

Chestnut-sided Warbler is an uncommon spring and fall migrant, with occasional summer records. The first arrival of spring was on May 10 or 11 in five of ten years, but as early as May 2 and late as May 20 in others. The spring peak has been in week 8 or 9 every year except 2010 when it was delayed until week 10, although the banding peak has been as early as week 7 in two years. Fall observations usually occur weekly throughout the first seven weeks of the season, then taper off sharp; there has been only one unusually late migrant in October. The fall peak is most commonly in week 3, although more have been banded in week 4. Numbers have fluctuated over time, but without a clear pattern.



**BLPW: Blackpoll Warbler / Paruline rayée (*Setophaga striata*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 16 | May 30 | Jun 2  | 18   | 8 (14%)  | 4    | 17    | Aug 22 | Sep 9  | Oct 3  | 43   | 16 (18%) | 3    | 22    |
| 2006     | May 25 | May 28 | Jun 2  | 9    | 9 (13%)  | 4    | 21    | Aug 26 | Sep 16 | Sep 25 | 31   | 17 (19%) | 7    | 36    |
| 2007     | May 21 | Jun 1  | Jun 1  | 12   | 12 (17%) | 12   | 97    | Aug 26 | Sep 2  | Sep 22 | 28   | 12 (13%) | 3    | 21    |
| 2008     | May 11 | May 26 | Jun 4  | 25   | 11 (16%) | 13   | 62    | Aug 25 | Aug 31 | Sep 29 | 36   | 20 (22%) | 15   | 68    |
| 2009     | May 18 | May 24 | Jun 4  | 18   | 14 (20%) | 21   | 119   | Sep 4  | Sep 13 | Oct 4  | 31   | 14 (15%) | 3    | 20    |
| 2010     | May 18 | May 22 | Jun 1  | 15   | 13 (19%) | 7    | 39    | Aug 29 | Sep 9  | Sep 30 | 33   | 18 (20%) | 9    | 41    |
| 2011     | May 13 | May 29 | Jun 1  | 20   | 14 (20%) | 27   | 148   | Aug 24 | Sep 6  | Oct 9  | 47   | 26 (29%) | 7    | 63    |
| 2012     | May 8  | May 23 | Jun 1  | 25   | 16 (23%) | 15   | 85    | Aug 20 | Sep 7  | Oct 2  | 44   | 19 (21%) | 13   | 70    |
| 2013     | May 19 | May 23 | May 31 | 13   | 12 (17%) | 20   | 58    | Aug 27 | Sep 13 | Sep 30 | 35   | 19 (21%) | 5    | 38    |
| 2014     | May 14 | May 27 | Jun 2  | 20   | 14 (21%) | 18   | 76    | Aug 19 | Sep 3  | Sep 26 | 39   | 17 (19%) | 6    | 27    |
| Mean     | May 16 | May 26 | Jun 1  | 18   | 12 (18%) | 14   | 72    | Aug 25 | Sep 7  | Sep 30 | 37   | 18 (20%) | 7    | 41    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7   | S8  | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|------|-----|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.1 | 0.7  | 2.2 | 0.3    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |      |     | 1.9  | 1.1 | 0.3    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |      | 1.0 | 9.3  | 3.6 | 1.4    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    | 0.1  |      | 1.4 | 10.7 | 4.9 | 1.7    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |      |      | 2.1 | 2.4  | 1.0 | 0.6    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  | 3.1 | 15.4 | 2.4 | 2.1    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    | 0.4  |      | 4.4 | 5.9  | 1.4 | 1.2    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      |      | 1.4 | 6.6  | 0.3 | 0.8    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      | 0.6  | 1.9 | 7.3  | 1.3 | 1.1    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      |      |     |      |     |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.04 | 0.09 | 1.6 | 6.5  | 2.2 | 1.1    |

| Observed | Jun  | Jul | Summer | F1 | F2 | F3   | F4  | F5  | F6  | F7  | F8  | F9  | F10  | F11 | F12 | F13 | Fall |
|----------|------|-----|--------|----|----|------|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|------|
| 2005     |      |     |        |    |    |      | 0.4 | 0.1 | 0.6 | 1.3 | 0.4 | 0.2 | 0.2  |     |     |     | 0.2  |
| 2006     |      |     |        |    |    |      | 0.6 | 0.9 | 2.1 | 1.3 | 0.3 |     |      |     |     |     | 0.4  |
| 2007     |      |     |        |    |    |      | 0.3 | 0.7 | 1.1 | 0.7 | 0.1 |     |      |     |     |     | 0.2  |
| 2008     | 0.2  |     | 0.1    |    |    |      | 0.3 | 4.0 | 2.9 | 1.4 | 0.9 | 0.3 |      |     |     |     | 0.7  |
| 2009     |      |     |        |    |    |      |     | 0.1 | 0.4 | 1.1 | 0.3 | 0.7 | 0.1  |     |     |     | 0.2  |
| 2010     |      |     |        |    |    |      |     | 0.3 | 2.4 | 1.0 | 1.6 | 0.6 |      |     |     |     | 0.5  |
| 2011     |      |     |        |    |    |      | 0.6 | 1.1 | 1.3 | 2.7 | 2.0 | 0.9 | 0.4  |     |     |     | 0.7  |
| 2012     |      |     |        |    |    | 0.1  |     | 0.6 | 5.7 | 2.6 | 0.9 | 0.1 |      |     |     |     | 0.8  |
| 2013     |      |     |        |    |    |      | 0.4 | 0.9 | 1.6 | 1.7 | 0.6 | 0.3 |      |     |     |     | 0.4  |
| 2014     |      |     |        |    |    | 0.1  | 0.3 | 1.4 | 0.4 | 1.1 | 0.3 | 0.1 |      |     |     |     | 0.3  |
| Mean     | 0.02 |     | <0.01  |    |    | 0.03 | 0.3 | 1.0 | 1.9 | 1.5 | 0.7 | 0.3 | 0.07 |     |     |     | 0.4  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9   | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|------|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 1    | 1   | 3      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 1    | 2   | 3      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     | 3   | 34   | 10  | 47     |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 17   | 7   | 24     |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     | 7   | 25   | 7   | 39     |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 4    | 1   | 6      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 8   | 31   | 5   | 45     |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     | 4   | 9    | 7   | 20     |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     |     | 14   | 1   | 15     |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 2   | 9    | 2   | 14     |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.2 | 2.6 | 14.5 | 4.3 | 21.6   |

| Banded | Jun | Jul | Summer | F1 | F2 | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |     | 2   | 1   | 1   | 4   | 1   | 1   | 1   |     |     |     | 11   |
| 2006   |     |     |        |    |    |     | 3   | 4   | 8   | 4   | 2   |     |     |     |     |     | 21   |
| 2007   |     |     |        |    |    |     | 2   | 4   | 4   | 3   | 1   |     |     |     |     |     | 14   |
| 2008   |     |     |        |    |    |     | 2   | 16  | 11  | 7   | 6   | 2   |     |     |     |     | 44   |
| 2009   |     |     |        |    |    |     |     | 1   | 3   | 7   |     | 4   |     |     |     |     | 15   |
| 2010   |     |     |        |    |    |     |     | 2   | 14  | 4   | 10  | 3   |     |     |     |     | 33   |
| 2011   |     |     |        |    |    |     | 3   | 2   | 8   | 15  | 12  | 5   | 2   |     |     |     | 47   |
| 2012   |     |     |        |    |    | 1   |     | 2   | 21  | 12  | 3   | 1   |     |     |     |     | 40   |
| 2013   |     |     |        |    |    |     | 2   | 5   | 7   | 5   | 1   |     |     |     |     |     | 20   |
| 2014   |     |     |        |    |    | 1   |     | 8   | 2   | 7   | 2   |     |     |     |     |     | 20   |
| Mean   |     |     |        |    |    | 0.2 | 1.4 | 4.5 | 7.9 | 6.8 | 3.8 | 1.6 | 0.3 |     |     |     | 26.5 |

Blackpoll Warbler is one of the latest spring migrants at MBO, with only a few records before week 8, and a strong peak in week 9 almost every year. Fall migrants almost always start arriving in the final third of August and build to a peak in mid-September, but then taper off by end of month, with early October records in just four years. Both in spring and fall, there seem to be high years (spring 2007, 2009, 2011; fall 2008, 2011, 2012) and low years (spring 2005, 2006, 2010; fall 2005, 2007, 2009).

**BTBW: Black-throated Blue Warbler / Paruline bleue (*Setophaga caerulescens*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 11 | May 20 | May 31 | 21   | 7 (12%)  | 2    | 9     | Aug 2  | Sep 20 | Oct 10 | 70   | 41 (47%) | 5    | 72    |
| 2006     | May 13 | May 18 | Jun 5  | 24   | 14 (20%) | 10   | 43    | Aug 14 | Sep 30 | Oct 16 | 64   | 19 (21%) | 5    | 30    |
| 2007     | May 9  | May 17 | May 31 | 23   | 12 (17%) | 4    | 20    | Aug 11 | Aug 26 | Oct 4  | 55   | 18 (20%) | 4    | 30    |
| 2008     | May 6  | May 20 | May 21 | 16   | 6 (9%)   | 3    | 11    | Aug 1  | Sep 19 | Oct 13 | 74   | 35 (38%) | 4    | 69    |
| 2009     | May 8  | May 14 | Jun 1  | 25   | 9 (13%)  | 2    | 11    | Aug 1  | Sep 3  | Oct 10 | 71   | 47 (52%) | 7    | 86    |
| 2010     | May 6  | May 16 | Jun 5  | 31   | 16 (23%) | 4    | 27    | Aug 2  | Sep 2  | Oct 14 | 74   | 43 (47%) | 5    | 71    |
| 2011     | May 9  | May 14 | May 25 | 17   | 11 (16%) | 3    | 17    | Aug 2  | Oct 4  | Oct 8  | 68   | 43 (47%) | 5    | 72    |
| 2012     | May 8  | May 9  | May 19 | 12   | 9 (13%)  | 11   | 22    | Aug 14 | Oct 2  | Oct 4  | 52   | 16 (18%) | 4    | 26    |
| 2013     | May 10 | May 22 | Jun 4  | 26   | 21 (30%) | 3    | 34    | Aug 2  | Aug 10 | Oct 21 | 81   | 31 (34%) | 3    | 50    |
| 2014     | May 10 | May 13 | Jun 4  | 26   | 24 (35%) | 4    | 49    | Aug 1  | Sep 23 | Oct 18 | 79   | 38 (42%) | 9    | 66    |
| Mean     | May 9  | May 16 | May 30 | 22   | 13 (19%) | 5    | 24    | Aug 5  | Sep 13 | Oct 11 | 69   | 33 (36%) | 5    | 57    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |     | 0.3 | 0.9 |     | 0.2 | 0.2    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |     | 0.1 | 4.3 | 1.3 | 0.4 | 0.6    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |     | 1.1 | 0.9 | 0.7 | 0.1 | 0.3    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    | 0.3 | 0.3 | 1.0 |     |     | 0.2    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.1 | 0.4 | 0.6 | 0.3 | 0.1 | 0.2    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    | 0.4 | 0.7 | 1.7 | 0.6 | 0.4 | 0.4    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |     | 1.4 | 0.7 | 0.3 |     | 0.2    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    | 0.1 | 2.1 | 0.9 |     |     | 0.3    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |     | 1.0 | 1.1 | 1.6 | 1.1 | 0.5    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |     | 2.6 | 2.1 | 1.4 | 1.0 | 0.7    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.1 | 1.0 | 1.4 | 0.6 | 0.3 | 0.4    |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12  | F13 | Fall |
|----------|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|
| 2005     |     | 0.06 | 0.03   | 0.3 | 1.0 | 1.0 | 0.4 | 1.1 | 0.7 | 0.6 | 2.0 | 2.0 | 1.5 | 0.2 |      |     | 0.8  |
| 2006     |     |      |        |     | 0.1 | 0.1 | 0.4 | 0.4 | 0.7 | 0.6 | 0.4 | 1.1 |     | 0.3 |      |     | 0.3  |
| 2007     |     |      |        |     | 0.1 | 0.3 | 0.7 | 0.7 | 0.3 | 0.9 | 0.7 | 0.3 | 0.3 |     |      |     | 0.3  |
| 2008     |     |      |        | 0.1 | 0.1 | 0.6 | 1.3 | 0.9 | 1.7 | 0.3 | 1.1 | 1.4 | 2.1 | 0.1 |      |     | 0.8  |
| 2009     |     |      |        | 1.0 | 0.4 | 0.9 | 0.4 | 3.1 | 1.4 | 0.6 | 1.4 | 1.4 | 1.3 | 0.3 |      |     | 0.9  |
| 2010     | 0.3 | 0.3  | 0.3    | 0.1 | 0.1 | 1.0 | 0.6 | 1.7 | 1.9 | 1.9 | 1.4 | 1.0 | 0.3 | 0.1 |      |     | 0.8  |
| 2011     | 0.7 |      | 0.3    | 1.3 | 1.3 | 0.9 | 1.3 | 0.9 | 0.9 | 1.1 | 0.9 | 0.9 | 1.0 |     |      |     | 0.8  |
| 2012     | 0.3 | 0.3  | 0.2    |     | 0.1 | 0.1 | 0.4 | 0.7 | 0.3 | 0.6 | 0.4 | 0.9 | 0.1 |     |      |     | 0.3  |
| 2013     |     | 0.5  | 0.3    | 0.6 | 0.6 | 0.9 | 0.1 | 1.0 | 0.6 | 1.1 | 1.1 | 0.7 | 0.3 |     | 0.1  |     | 0.5  |
| 2014     | 0.7 |      | 0.3    | 1.0 | 1.0 | 0.7 | 0.6 | 0.4 | 0.9 | 1.1 | 2.3 | 0.3 | 0.9 | 0.1 | 0.1  |     | 0.7  |
| Mean     | 0.1 | 0.09 | 0.10   | 0.4 | 0.5 | 0.6 | 0.6 | 1.1 | 0.9 | 0.9 | 1.2 | 1.0 | 0.8 | 0.1 | 0.03 |     | 0.6  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |     |     | 1   |    |     | 1      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |     |     |     |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |     | 1   |     |    |     | 1      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |     | 1   | 1   |    |     | 2      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |     | 1   | 1   |    | 1   | 3      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    | 1   | 1   |     |    |     | 2      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |     | 1   |     |    |     | 1      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |     | 2   |     |    |     | 2      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |     | 1   | 1   |    |     | 2      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |     | 2   | 1   |    |     | 3      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    | 0.1 | 1.0 | 0.5 |    | 0.1 | 1.7    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        | 1   | 2   | 1   | 1   | 4   | 1   | 2   | 8   | 10  | 4   |     |     |     | 34   |
| 2006   |     |     |        |     | 1   |     | 1   | 2   | 2   |     | 2   | 4   |     | 2   |     |     | 14   |
| 2007   |     |     |        |     |     |     | 4   | 5   | 2   | 5   | 4   | 2   |     |     |     |     | 22   |
| 2008   |     |     |        |     |     | 3   | 5   | 5   | 7   | 1   | 2   | 9   | 10  | 1   |     |     | 43   |
| 2009   |     |     |        | 4   |     | 3   | 1   | 8   | 5   | 3   | 10  | 8   | 8   |     |     |     | 50   |
| 2010   |     | 1   | 1      | 1   |     | 3   | 1   | 10  | 10  | 8   | 7   | 4   | 2   | 1   |     |     | 47   |
| 2011   |     |     |        | 8   | 1   | 1   | 6   | 2   | 5   | 6   | 1   | 5   | 4   |     |     |     | 39   |
| 2012   |     |     |        |     | 1   | 1   | 3   | 4   | 1   | 1   | 1   | 2   |     |     |     |     | 14   |
| 2013   |     | 2   | 2      | 2   |     | 2   |     | 2   | 1   | 7   | 6   | 1   | 2   |     | 1   |     | 24   |
| 2014   | 1   |     | 1      | 3   | 4   | 1   | 4   | 2   | 2   | 6   | 12  | 2   | 4   | 1   | 1   |     | 42   |
| Mean   | 0.2 | 0.3 | 0.4    | 1.9 | 0.9 | 1.5 | 2.6 | 4.4 | 3.6 | 3.9 | 5.3 | 4.7 | 3.4 | 0.5 | 0.2 |     | 32.9 |

Black-throated Blue Warbler is a mostly uncommon migrant through the second half of spring and much of fall, and a regular summer resident since 2010. Spring migration is quite regular, with the first arrival of the year always between May 6 and 13 (May 6-10, since 2007), and a peak in week 7 or 8, although far more have been banded in week 7. The fall peak ranges widely, between week 5 and 10 in most years, but as early as week 1 in 2011; overall though, numbers tend to be highest in late September. Spring and fall numbers have fluctuated modestly, without any distinct pattern.

**WPWA: Western Palm Warbler / Paruline à couronne rousse (forme de l'Ouest) (*Setophaga palmarum*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 18 | May 18 | May 18 | 1    | 1 (2%) | 1    | 1     | Aug 25 | Sep 7  | Oct 10 | 47   | 22 (25%) | 7    | 50    |
| 2006     | May 4  | May 4  | May 4  | 1    | 1 (1%) | 1    | 1     | Sep 12 | Sep 12 | Oct 12 | 31   | 9 (10%)  | 4    | 20    |
| 2007     | Apr 28 | Apr 28 | May 11 | 14   | 2 (3%) | 1    | 2     | Sep 16 | Sep 24 | Oct 7  | 22   | 13 (14%) | 17   | 51    |
| 2008     |        |        |        |      |        |      |       | Sep 1  | Sep 10 | Oct 6  | 36   | 13 (14%) | 3    | 19    |
| 2009     |        |        |        |      |        |      |       | Sep 8  | Sep 19 | Oct 12 | 35   | 15 (16%) | 3    | 19    |
| 2010     | May 5  | May 5  | May 5  | 1    | 1 (1%) | 1    | 1     | Aug 31 | Sep 7  | Oct 3  | 34   | 23 (25%) | 24   | 127   |
| 2011     | May 3  | May 13 | May 14 | 12   | 5 (7%) | 8    | 13    | Sep 14 | Sep 14 | Sep 27 | 14   | 5 (5%)   | 1    | 5     |
| 2012     | Apr 21 | Apr 21 | May 9  | 19   | 4 (6%) | 1    | 4     | Sep 8  | Sep 27 | Oct 12 | 35   | 18 (20%) | 5    | 41    |
| 2013     | Apr 29 | Apr 29 | May 16 | 18   | 6 (9%) | 1    | 6     | Sep 1  | Sep 25 | Oct 10 | 40   | 15 (16%) | 3    | 23    |
| 2014     | May 3  | May 3  | May 20 | 18   | 3 (4%) | 1    | 3     | Sep 7  | Sep 24 | Oct 17 | 41   | 15 (16%) | 4    | 25    |
| Mean     | May 2  | May 3  | May 12 | 10   | 3 (4%) | 2    | 3.1   | Sep 6  | Sep 16 | Oct 8  | 34   | 15 (16%) | 7    | 38    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5   | S6  | S7  | S8   | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|------|-----|-----|------|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |      |     |     | 0.1  |    |     | 0.02   |
| 2006     |     |     |     |     |     |        |    |    |    |      |      | 0.1 |     |      |    |     | 0.01   |
| 2007     |     |     |     |     |     |        |    |    |    |      | 0.1  |     | 0.1 |      |    |     | 0.03   |
| 2008     |     |     |     |     |     |        |    |    |    |      |      |     |     |      |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |      |      |     |     |      |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |      |      | 0.1 |     |      |    |     | 0.01   |
| 2011     |     |     |     |     |     |        |    |    |    |      |      | 0.6 | 1.3 |      |    |     | 0.2    |
| 2012     |     |     |     |     |     |        |    |    |    | 0.1  |      | 0.3 | 0.1 |      |    |     | 0.06   |
| 2013     |     |     |     |     |     |        |    |    |    |      | 0.3  | 0.1 | 0.3 | 0.1  |    |     | 0.09   |
| 2014     |     |     |     |     |     |        |    |    |    |      |      | 0.3 |     | 0.1  |    |     | 0.04   |
| Mean     |     |     |     |     |     |        |    |    |    | 0.01 | 0.04 | 0.2 | 0.2 | 0.04 |    |     | 0.05   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4   | F5  | F6   | F7  | F8  | F9  | F10 | F11 | F12  | F13 | Fall |
|----------|-----|-----|--------|----|----|----|------|-----|------|-----|-----|-----|-----|-----|------|-----|------|
| 2005     |     |     |        |    |    |    | 0.3  | 1.1 | 3.0  | 1.4 | 0.1 | 0.3 | 0.7 | 0.3 |      |     | 0.6  |
| 2006     |     |     |        |    |    |    |      |     |      | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |      |     | 0.2  |
| 2007     |     |     |        |    |    |    |      |     |      | 0.1 | 4.0 | 1.7 | 1.4 |     |      |     | 0.6  |
| 2008     |     |     |        |    |    |    |      | 0.3 | 0.9  |     | 0.1 | 0.9 | 0.6 |     |      |     | 0.2  |
| 2009     |     |     |        |    |    |    |      |     | 0.3  | 0.3 | 0.9 | 0.4 | 0.6 | 0.3 |      |     | 0.2  |
| 2010     |     |     |        |    |    |    |      | 1.9 | 10.4 | 2.4 | 2.6 | 0.7 | 0.1 |     |      |     | 1.4  |
| 2011     |     |     |        |    |    |    |      |     |      | 0.1 | 0.4 | 0.1 |     |     |      |     | 0.05 |
| 2012     |     |     |        |    |    |    |      |     | 0.3  | 0.9 | 1.0 | 2.6 | 1.0 | 0.1 |      |     | 0.5  |
| 2013     |     |     |        |    |    |    |      | 0.3 | 0.3  | 0.6 | 0.6 | 0.7 | 0.7 | 0.1 |      |     | 0.3  |
| 2014     |     |     |        |    |    |    |      |     | 0.3  | 0.1 | 1.1 | 1.3 | 0.4 | 0.1 | 0.1  |     | 0.3  |
| Mean     |     |     |        |    |    |    | 0.03 | 0.4 | 1.5  | 0.7 | 1.1 | 0.9 | 0.6 | 0.2 | 0.01 |     | 0.4  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5 | S6  | S7  | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|----|-----|-----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     |    |     |     |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |     |    |     |     |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |     |    |     |     |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |     |    |     |     |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |     |    |     |     |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |     |    |     |     |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |     |    | 1   |     |    |    |     | 1      |
| 2012   |     |     |     |     |     |        |    |    |    | 1   |    | 1   |     |    |    |     | 2      |
| 2013   |     |     |     |     |     |        |    |    |    |     |    |     | 1   |    |    |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |     |    |     |     |    |    |     |        |
| Mean   |     |     |     |     |     |        |    |    |    | 0.1 |    | 0.2 | 0.1 |    |    |     | 0.4    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    | 3   | 3   | 2   |     | 1   | 2   |     |     |     | 11   |
| 2006   |     |     |        |    |    |    |    |     |     |     | 1   | 3   |     |     |     |     | 4    |
| 2007   |     |     |        |    |    |    |    |     |     | 1   | 16  | 6   | 6   |     |     |     | 29   |
| 2008   |     |     |        |    |    |    |    | 1   | 4   |     | 1   | 6   | 3   |     |     |     | 15   |
| 2009   |     |     |        |    |    |    |    |     | 1   | 1   | 2   | 1   | 1   |     |     |     | 6    |
| 2010   |     |     |        |    |    |    |    | 3   | 37  | 5   | 13  | 5   |     |     |     |     | 63   |
| 2011   |     |     |        |    |    |    |    |     |     |     | 3   | 1   |     |     |     |     | 4    |
| 2012   |     |     |        |    |    |    |    |     | 2   | 2   | 1   | 6   | 4   | 1   |     |     | 16   |
| 2013   |     |     |        |    |    |    |    |     |     |     | 1   | 2   |     |     |     |     | 3    |
| 2014   |     |     |        |    |    |    |    |     |     |     | 2   | 4   | 1   |     |     |     | 7    |
| Mean   |     |     |        |    |    |    |    | 0.7 | 4.7 | 1.1 | 4.0 | 3.3 | 1.9 | 0.1 |     |     | 15.8 |

Western Palm Warbler is typically more numerous at MBO than Yellow Palm Warbler, but even so is generally a rare spring and uncommon fall migrant; numbers were substantially higher only in fall 2010 and spring 2011. Spring migration is earlier than most other warblers, with a peak centered around week 6; conversely the fall peak is typically past the middle of the season, although the big flight in 2010 peaked earlier, in week 6. Fall migration of Western Palm Warblers is on average slightly earlier than for Yellow Palm Warblers.

**YPWA: Yellow Palm Warbler / Paruline à couronne rousse (forme de l'Est) (*Setophaga palmarum hypochrysea*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     |        |        |        |      |        |      |       | Sep 8  | Sep 14 | Oct 10 | 33   | 21 (24%) | 15   | 110   |
| 2006     |        |        |        |      |        |      |       | Aug 21 | Sep 18 | Oct 7  | 48   | 9 (10%)  | 2    | 12    |
| 2007     | May 6  | May 6  | May 6  | 1    | 1 (1%) | 1    | 1     | Sep 24 | Sep 24 | Oct 6  | 13   | 7 (8%)   | 4    | 13    |
| 2008     | Apr 24 | Apr 24 | Apr 25 | 2    | 2 (3%) | 1    | 2     | Sep 19 | Sep 24 | Oct 13 | 25   | 7 (8%)   | 2    | 8     |
| 2009     | May 5  | May 5  | May 30 | 26   | 2 (3%) | 1    | 2     | Sep 20 | Sep 20 | Oct 8  | 19   | 4 (4%)   | 1    | 4     |
| 2010     | May 5  | May 5  | May 5  | 1    | 1 (1%) | 1    | 1     | Sep 19 | Sep 19 | Oct 8  | 20   | 3 (3%)   | 1    | 3     |
| 2011     |        |        |        |      |        |      |       | Sep 25 | Oct 4  | Oct 12 | 18   | 4 (4%)   | 2    | 5     |
| 2012     | May 6  | May 6  | May 6  | 1    | 1 (1%) | 1    | 1     | Sep 22 | Sep 22 | Oct 4  | 13   | 2 (2%)   | 1    | 2     |
| 2013     |        |        |        |      |        |      |       | Aug 21 | Oct 5  | Oct 5  | 46   | 3 (3%)   | 2    | 4     |
| 2014     |        |        |        |      |        |      |       | Oct 3  | Oct 3  | Oct 3  | 1    | 1 (1%)   | 1    | 1     |
| Mean     | May 3  | May 3  | May 8  | 6    | 1 (2%) | 1    | 0.7   | Sep 15 | Sep 24 | Oct 7  | 24   | 6 (7%)   | 3    | 16    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5   | S6   | S7 | S8 | S9 | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|------|------|----|----|----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    |      |        |
| 2006     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    |      |        |
| 2007     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    |      | 0.01   |
| 2008     |     |     |     |     |     |        |    |    |    | 0.1  | 0.1  |      |    |    |    |      | 0.03   |
| 2009     |     |     |     |     |     |        |    |    |    |      |      | 0.1  |    |    |    | 0.1  | 0.03   |
| 2010     |     |     |     |     |     |        |    |    |    |      |      | 0.1  |    |    |    |      | 0.01   |
| 2011     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    |      |        |
| 2012     |     |     |     |     |     |        |    |    |    |      |      | 0.1  |    |    |    |      | 0.01   |
| 2013     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    |      |        |
| 2014     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    |      |        |
| Mean     |     |     |     |     |     |        |    |    |    | 0.01 | 0.01 | 0.06 |    |    |    | 0.01 | 0.01   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3   | F4 | F5 | F6  | F7  | F8  | F9  | F10 | F11  | F12 | F13 | Fall |
|----------|-----|-----|--------|----|----|------|----|----|-----|-----|-----|-----|-----|------|-----|-----|------|
| 2005     |     |     |        |    |    |      |    |    | 5.4 | 7.3 | 2.0 | 0.7 | 0.3 | 0.2  |     |     | 1.2  |
| 2006     |     |     |        |    |    | 0.1  |    |    |     | 0.3 | 0.9 | 0.1 | 0.3 |      |     |     | 0.1  |
| 2007     |     |     |        |    |    |      |    |    |     |     | 1.0 | 0.6 | 0.3 |      |     |     | 0.1  |
| 2008     |     |     |        |    |    |      |    |    |     |     | 0.6 | 0.1 | 0.1 | 0.3  |     |     | 0.09 |
| 2009     |     |     |        |    |    |      |    |    |     |     | 0.1 | 0.1 | 0.3 |      |     |     | 0.04 |
| 2010     |     |     |        |    |    |      |    |    |     |     | 0.1 |     | 0.3 |      |     |     | 0.03 |
| 2011     |     |     |        |    |    |      |    |    |     |     | 0.1 |     | 0.3 | 0.3  |     |     | 0.05 |
| 2012     |     |     |        |    |    |      |    |    |     |     | 0.1 |     | 0.1 |      |     |     | 0.02 |
| 2013     |     |     |        |    |    | 0.1  |    |    |     |     |     | 0.1 | 0.3 |      |     |     | 0.04 |
| 2014     |     |     |        |    |    |      |    |    |     |     |     |     | 0.1 |      |     |     | 0.01 |
| Mean     |     |     |        |    |    | 0.03 |    |    | 0.5 | 0.8 | 0.5 | 0.2 | 0.2 | 0.07 |     |     | 0.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5 | S6  | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|----|-----|----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    | 1   |    |     |    |    |    |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |     |    | 1   |    |    |    |     | 1      |
| 2011   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |     |    |     |    |    |    |     |        |
| Mean   |     |     |     |     |     |        |    |    |    | 0.1 |    | 0.1 |    |    |    |     | 0.2    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    | 9   | 31  | 5   | 2   | 1   |     |     |     | 48   |
| 2006   |     |     |        |    |    |    |    |    |     | 2   | 2   |     | 1   |     |     |     | 5    |
| 2007   |     |     |        |    |    |    |    |    |     |     |     |     | 1   |     |     |     | 1    |
| 2008   |     |     |        |    |    |    |    |    |     |     | 2   | 1   | 1   | 1   |     |     | 5    |
| 2009   |     |     |        |    |    |    |    |    |     |     | 1   |     | 1   |     |     |     | 2    |
| 2010   |     |     |        |    |    |    |    |    |     |     |     |     |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |     |     | 1   |     | 1   | 1   |     |     | 3    |
| 2012   |     |     |        |    |    |    |    |    |     |     | 1   |     |     |     |     |     | 1    |
| 2013   |     |     |        |    |    |    |    |    |     |     |     | 1   |     |     |     |     | 1    |
| 2014   |     |     |        |    |    |    |    |    |     |     |     |     | 1   |     |     |     | 1    |
| Mean   |     |     |        |    |    |    |    |    | 0.9 | 3.3 | 1.2 | 0.4 | 0.7 | 0.2 |     |     | 6.7  |

Except in fall 2005, Yellow Palm Warblers have been outnumbered by Western Palm Warblers in every spring and fall season, often by a large margin. There are only seven spring records, four of which have come in week 6. The big flight in 2005 peaked in week 7, but most commonly the fall peak for Yellow Palm Warbler has been in week 10, which is later than the peak of Western Palm Warbler in any year. Even if the 2005 results are considered an anomaly, there has been a decreasing trend over time in fall.

**PIWA: Pine Warbler / Paruline des pins (*Setophaga pinus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     | Apr 30 | Apr 30 | May 7  | 8    | 3 (4%) | 1    | 3     | Aug 24 | Aug 24 | Sep 10 | 18   | 2 (2%) | 1    | 2     |
| 2007     |        |        |        |      |        |      |       | Oct 2  | Oct 2  | Oct 5  | 4    | 2 (2%) | 1    | 2     |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     | May 11 | May 11 | May 25 | 15   | 3 (4%) | 1    | 3     | Sep 3  | Sep 3  | Sep 3  | 1    | 1 (1%) | 1    | 1     |
| 2010     |        |        |        |      |        |      |       | Aug 16 | Aug 16 | Sep 20 | 36   | 3 (3%) | 2    | 4     |
| 2011     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       | Aug 27 | Aug 27 | Sep 7  | 12   | 2 (2%) | 1    | 2     |
| 2013     | May 13 | May 13 | May 13 | 1    | 1 (1%) | 1    | 1     | Aug 21 | Aug 21 | Sep 30 | 41   | 3 (3%) | 1    | 3     |
| 2014     | May 27 | May 27 | May 27 | 1    | 1 (1%) | 1    | 1     | Aug 29 | Aug 29 | Sep 1  | 4    | 2 (2%) | 1    | 2     |
| Mean     | May 12 | May 12 | May 18 | 6    | 2 (3%) | 1    | 0.8   | Aug 30 | Aug 30 | Sep 15 | 17   | 2 (2%) | 1    | 1.6   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6   | S7   | S8 | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|------|------|------|----|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |      |      |      |    |      |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    | 0.1  | 0.3  |      |    |      |     | 0.04   |
| 2007     |     |     |     |     |     |        |    |    |    |    |      |      |      |    |      |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |      |      |      |    |      |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |      |      | 0.3  |    | 0.1  |     | 0.04   |
| 2010     |     |     |     |     |     |        |    |    |    |    |      |      |      |    |      |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |      |      |      |    |      |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |      |      |      |    |      |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |      |      | 0.1  |    |      |     | 0.01   |
| 2014     |     |     |     |     |     |        |    |    |    |    |      |      |      |    | 0.1  |     | 0.01   |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.01 | 0.03 | 0.04 |    | 0.03 |     | 0.01   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3   | F4   | F5   | F6   | F7 | F8   | F9   | F10  | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|----|----|------|------|------|------|----|------|------|------|-----|-----|-----|------|
| 2005     |     |     |        |    |    |      |      |      |      |    |      |      |      |     |     |     |      |
| 2006     |     |     |        |    |    |      | 0.1  |      | 0.1  |    |      |      |      |     |     |     | 0.02 |
| 2007     |     |     |        |    |    |      |      |      |      |    |      | 0.1  | 0.1  |     |     |     | 0.02 |
| 2008     |     |     |        |    |    |      |      |      |      |    |      |      |      |     |     |     |      |
| 2009     |     |     |        |    |    |      |      | 0.1  |      |    |      |      |      |     |     |     | 0.01 |
| 2010     |     |     |        |    |    | 0.3  | 0.1  |      |      |    | 0.1  |      |      |     |     |     | 0.04 |
| 2011     |     |     |        |    |    |      |      |      |      |    |      |      |      |     |     |     |      |
| 2012     |     |     |        |    |    |      | 0.1  |      | 0.1  |    |      |      |      |     |     |     | 0.02 |
| 2013     |     |     |        |    |    | 0.1  |      |      |      |    | 0.1  | 0.1  |      |     |     |     | 0.03 |
| 2014     |     |     |        |    |    |      |      |      | 0.3  |    |      |      |      |     |     |     | 0.02 |
| Mean     |     |     |        |    |    | 0.04 | 0.04 | 0.04 | 0.03 |    | 0.03 | 0.03 | 0.01 |     |     |     | 0.02 |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4  | F5  | F6 | F7 | F8  | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|-----|-----|----|----|-----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |     |     |    |    |     |    |     |     |     |     |      |
| 2006   |     |     |        |    |    |    |     |     |    |    |     |    |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |     |     |    |    |     |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |     |     |    |    |     |    |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |     |     |    |    |     |    |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |     |     |    |    | 1   |    |     |     |     |     | 1    |
| 2011   |     |     |        |    |    |    |     |     |    |    |     |    |     |     |     |     |      |
| 2012   |     |     |        |    |    |    | 1   |     |    |    |     |    |     |     |     |     | 1    |
| 2013   |     |     |        |    |    |    |     |     |    |    |     |    |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |     | 1   |    |    |     |    |     |     |     |     | 1    |
| Mean   |     |     |        |    |    |    | 0.1 | 0.1 |    |    | 0.1 |    |     |     |     |     | 0.3  |

Despite the presence of at least one breeding pair annually at the Morgan Arboretum immediately adjacent to MBO, Pine Warbler is a rare species at MBO, with only 24 observations over a decade, and just 3 individuals banded. Records are scarcer in spring than fall, ranging from the end of April to late May. Fall observations have been from the second half of August to the end of September, except in 2007 when both sightings were in the first week of October.

**MYWA: Yellow-rumped (Myrtle) Warbler / Paruline à croupion jaune (*Setophaga coronata coronata*)**



| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 27 | May 26 | May 28 | 32   | 21 (36%) | 8    | 67    | Aug 2  | Oct 8  | Oct 15 | 75   | 42 (48%) | 44   | 516   |
| 2006     | Apr 25 | May 19 | Jun 2  | 39   | 28 (41%) | 18   | 205   | Aug 5  | Sep 25 | Oct 30 | 87   | 61 (67%) | 200  | 1545  |
| 2007     | Apr 23 | May 15 | Jun 1  | 40   | 24 (34%) | 34   | 152   | Aug 10 | Sep 27 | Oct 30 | 82   | 41 (45%) | 40   | 285   |
| 2008     | Apr 25 | May 15 | May 30 | 36   | 27 (39%) | 31   | 219   | Aug 10 | Oct 3  | Oct 27 | 79   | 42 (46%) | 324  | 3155  |
| 2009     | Apr 27 | May 18 | Jun 1  | 36   | 23 (33%) | 21   | 92    | Aug 7  | Oct 5  | Oct 21 | 76   | 39 (43%) | 55   | 347   |
| 2010     | Apr 21 | May 13 | May 18 | 28   | 17 (24%) | 33   | 130   | Aug 11 | Oct 4  | Oct 29 | 80   | 51 (56%) | 641  | 6345  |
| 2011     | Apr 27 | May 13 | May 25 | 29   | 28 (40%) | 104  | 595   | Aug 15 | Sep 28 | Oct 27 | 74   | 42 (46%) | 80   | 457   |
| 2012     | Apr 27 | May 9  | May 19 | 23   | 16 (23%) | 55   | 180   | Aug 5  | Oct 4  | Oct 23 | 80   | 48 (53%) | 191  | 975   |
| 2013     | Apr 29 | May 14 | May 25 | 27   | 22 (31%) | 30   | 152   | Aug 1  | Sep 27 | Oct 25 | 86   | 62 (68%) | 33   | 473   |
| 2014     | May 9  | May 13 | May 27 | 19   | 17 (25%) | 50   | 191   | Aug 6  | Oct 1  | Oct 30 | 86   | 48 (53%) | 63   | 743   |
| Mean     | Apr 27 | May 15 | May 26 | 31   | 22 (33%) | 38   | 198   | Aug 7  | Oct 1  | Oct 25 | 80   | 48 (52%) | 167  | 1484  |

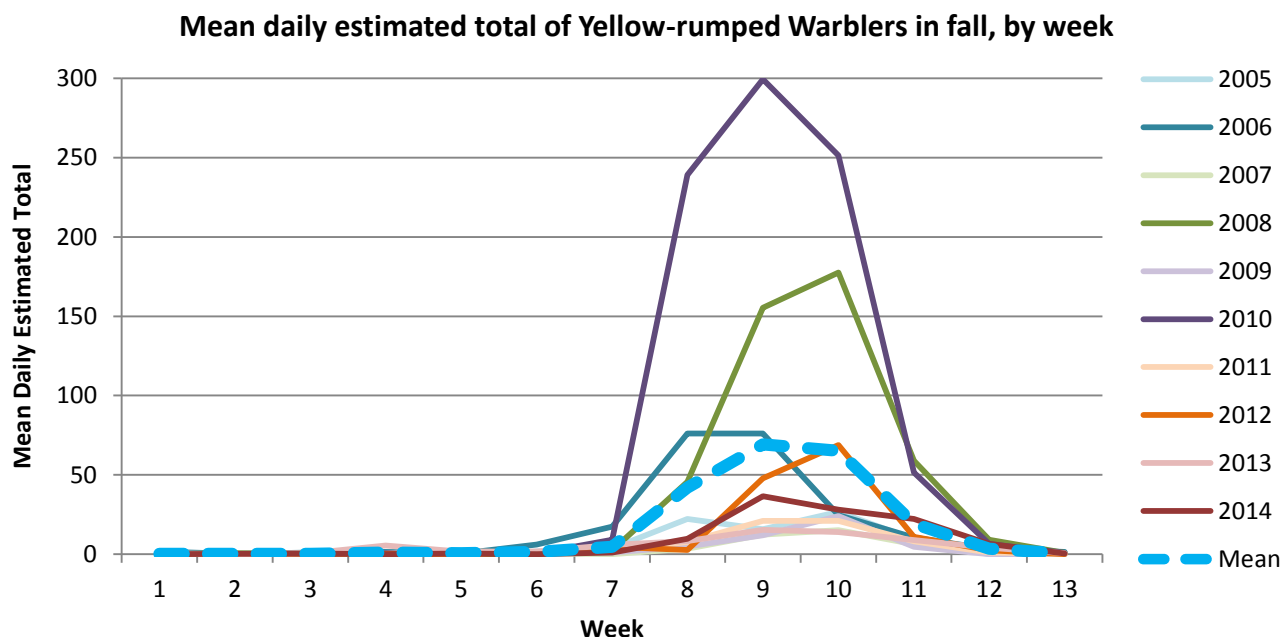
| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5  | S6   | S7   | S8   | S9  | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|----|----|----|------|-----|------|------|------|-----|-----|--------|
| 2005     |      |     |     |     |     |        |    |    |    |      | 1.1 | 1.4  | 2.3  | 1.9  | 2.9 |     | 1.1    |
| 2006     |      |     |     |     |     |        |    |    |    |      | 0.6 | 5.6  | 8.0  | 11.3 | 3.7 | 0.1 | 3.0    |
| 2007     |      |     |     |     |     |        |    |    |    | 0.1  | 0.6 | 4.4  | 8.9  | 5.9  | 1.7 | 0.1 | 2.2    |
| 2008     | 0.1  |     |     |     |     | 0.04   |    |    |    |      | 0.7 | 1.3  | 16.3 | 6.4  | 6.0 | 0.6 | 3.1    |
| 2009     |      |     |     |     |     |        |    |    |    |      | 0.1 | 1.6  | 2.1  | 7.6  | 1.3 | 0.4 | 1.3    |
| 2010     |      |     |     |     |     |        |    |    |    | 0.1  | 0.6 | 2.7  | 13.4 | 1.7  |     |     | 1.9    |
| 2011     |      |     |     |     |     |        |    |    |    |      | 7.9 | 18.4 | 29.3 | 25.7 | 3.7 |     | 8.5    |
| 2012     |      |     |     |     |     |        |    |    |    |      | 0.6 | 8.6  | 15.7 | 0.9  |     |     | 2.6    |
| 2013     |      |     |     |     |     |        |    |    |    |      | 0.6 | 1.9  | 11.7 | 7.3  | 0.3 |     | 2.2    |
| 2014     |      |     |     |     |     |        |    |    |    |      |     |      | 20.4 | 6.1  | 0.7 |     | 2.8    |
| Mean     | 0.01 |     |     |     |     | <0.01  |    |    |    | 0.03 | 1.3 | 4.6  | 12.8 | 7.5  | 2.0 | 0.1 | 2.9    |

| Observed | Jun  | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7   | F8    | F9    | F10   | F11  | F12 | F13 | Fall |
|----------|------|-----|--------|-----|-----|-----|-----|-----|-----|------|-------|-------|-------|------|-----|-----|------|
| 2005     |      |     |        | 0.4 |     |     | 1.3 | 0.1 | 1.6 | 3.7  | 22.3  | 15.7  | 26.7  | 9.3  |     |     | 5.9  |
| 2006     |      |     |        | 1.7 | 0.3 | 1.1 | 1.4 | 0.4 | 6.1 | 17.4 | 76.1  | 76.1  | 24.6  | 10.6 | 3.3 | 1.4 | 17.0 |
| 2007     | 0.1  |     | 0.08   |     | 0.4 |     | 0.3 | 1.0 | 0.4 |      | 3.4   | 12.4  | 15.1  | 6.3  | 1.0 | 0.3 | 3.1  |
| 2008     |      |     |        |     | 0.6 |     | 0.1 |     | 0.1 | 2.4  | 45.7  | 155.3 | 177.6 | 58.9 | 9.1 | 0.9 | 34.7 |
| 2009     |      |     |        | 0.1 | 0.1 | 0.4 | 0.4 |     | 1.7 | 1.0  | 4.9   | 12.0  | 24.0  | 4.7  | 0.1 |     | 3.8  |
| 2010     |      |     |        |     | 0.1 | 0.1 | 0.6 | 0.7 | 0.4 | 9.1  | 239.0 | 303.0 | 294.4 | 51.4 | 6.6 | 0.9 | 69.7 |
| 2011     |      |     |        |     |     | 0.6 | 0.3 | 1.9 | 1.0 | 2.1  | 7.7   | 21.1  | 21.0  | 8.1  | 1.1 | 0.3 | 5.0  |
| 2012     |      |     |        | 0.1 |     | 0.3 | 0.3 | 0.1 | 1.0 | 4.7  | 2.7   | 47.9  | 68.9  | 10.9 | 2.4 |     | 10.7 |
| 2013     |      |     |        | 0.6 |     | 0.6 | 5.6 | 1.7 | 1.7 | 6.0  | 8.3   | 15.4  | 14.0  | 8.9  | 4.1 | 0.7 | 5.2  |
| 2014     |      |     |        | 0.1 | 0.3 | 0.4 | 0.1 | 0.4 | 0.1 | 1.0  | 9.7   | 36.6  | 28.0  | 22.3 | 6.6 | 0.4 | 8.2  |
| Mean     | 0.02 |     | 0.01   | 0.3 | 0.2 | 0.4 | 1.0 | 0.6 | 1.4 | 4.8  | 42.0  | 70.3  | 70.0  | 19.3 | 3.4 | 0.5 | 16.4 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5  | S6  | S7   | S8   | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|-----|-----|------|------|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    | 3   | 2   | 1    | 8    | 11  |     | 25     |
| 2006   |     |     |     |     |     |        |    |    |    |    | 1   | 1   | 5    | 13   | 2   |     | 22     |
| 2007   |     |     |     |     |     |        |    |    |    |    |     |     | 19   | 6    | 7   |     | 32     |
| 2008   |     |     |     |     |     |        |    |    |    |    | 2   | 1   | 24   | 11   | 9   |     | 47     |
| 2009   |     |     |     |     |     |        |    |    |    |    |     |     | 5    | 26   | 6   |     | 37     |
| 2010   |     |     |     |     |     |        |    |    |    |    |     | 3   | 19   | 8    |     |     | 30     |
| 2011   |     |     |     |     |     |        |    |    |    |    | 4   | 26  | 22   | 48   | 2   |     | 102    |
| 2012   |     |     |     |     |     |        |    |    |    |    | 1   | 2   | 41   | 2    |     |     | 46     |
| 2013   |     |     |     |     |     |        |    |    |    |    |     | 1   | 15   | 5    | 2   |     | 23     |
| 2014   |     |     |     |     |     |        |    |    |    |    |     |     | 45   | 8    | 3   |     | 56     |
| Mean   |     |     |     |     |     |        |    |    |    |    | 1.1 | 3.6 | 19.6 | 13.5 | 4.2 |     | 42.0   |

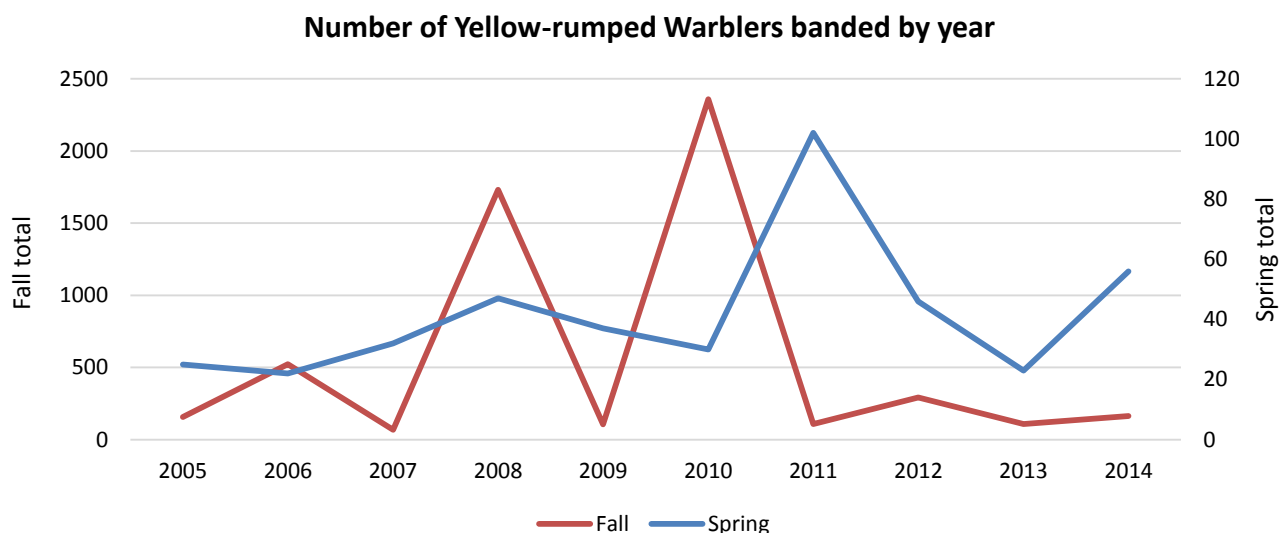
| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7   | F8    | F9    | F10   | F11  | F12 | F13 | Fall  |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|------|-------|-------|-------|------|-----|-----|-------|
| 2005   |     |     |        |     |     |     | 2   |     | 2   | 14   | 76    | 21    | 30    | 12   |     |     | 157   |
| 2006   |     |     |        |     |     |     | 2   |     | 8   | 49   | 169   | 241   | 40    | 6    | 6   | 1   | 522   |
| 2007   |     |     |        |     |     |     | 1   | 1   |     |      |       | 12    | 46    | 7    | 1   |     | 68    |
| 2008   |     |     |        |     |     |     |     |     |     | 4    | 170   | 688   | 650   | 209  | 11  |     | 1732  |
| 2009   |     |     |        |     | 1   |     |     |     | 2   | 3    | 6     | 21    | 70    | 2    | 1   |     | 106   |
| 2010   |     |     |        |     |     |     |     | 1   |     | 27   | 881   | 750   | 605   | 88   | 7   |     | 2359  |
| 2011   |     |     |        |     |     |     |     | 2   | 1   | 1    | 10    | 33    | 31    | 30   |     |     | 108   |
| 2012   |     |     |        | 1   |     | 1   |     | 1   | 4   | 6    | 2     | 84    | 170   | 21   | 2   |     | 292   |
| 2013   |     |     |        |     |     |     | 13  | 4   | 3   | 6    | 5     | 24    | 36    | 13   | 3   | 1   | 108   |
| 2014   |     |     |        |     |     |     |     |     |     | 1    | 12    | 84    | 34    | 29   | 4   |     | 164   |
| Mean   |     |     |        | 0.1 | 0.1 | 0.1 | 1.8 | 0.9 | 2.0 | 11.1 | 133.1 | 195.8 | 171.2 | 41.7 | 3.5 | 0.2 | 561.6 |

More Yellow-rumped Warblers have been banded at MBO than any other species, by a wide margin (5856, compared to 3875 White-throated Sparrows in second place). From 2005 through 2012, the first spring arrival was always between April 21 and 27, but has been later in the two most recent years, most notably May 9 in 2014; the peak is in week 7 in most years. Small numbers are recorded over the first six weeks of fall most years, before numbers build to a sharp peak in weeks 9 and 10. Spring numbers have varied modestly over the years, aside from a big spike in 2011, but fall counts have fluctuated more dramatically, with incredibly high and sustained peaks in both 2008 and 2010.



The figure above illustrates the degree to which Yellow-rumped Warbler numbers in fall 2008 and 2010 exceeded normal levels. Aside from high counts in those two years extending into week 11, the results show that the vast majority of Yellow-rumped Warblers pass through from weeks 8 through 10.

The figure below shows that the number of Yellow-rumped Warblers banded in fall has consistently shown a two-year cycle, with peaks in even-numbered years. However, the intensity of these peaks increased steadily from 2006 to 2010, then declined drastically in 2012 and by 2014 was barely detectable. For some species, intense fall peaks (or lows) have been followed by corresponding extremes the following spring, but for Yellow-rumped Warbler this appears to have happened only once, with the fall 2010 peak reflected by a record high in spring 2011.





**BTNW: Black-throated Green Warbler / Paruline à gorge noire (*Setophaga virens*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 11 | May 11 | May 30 | 20   | 6 (10%)  | 1    | 6     | Aug 6  | Sep 11 | Oct 9  | 65   | 33 (38%) | 10   | 67    |
| 2006     | May 11 | May 18 | Jun 2  | 23   | 14 (20%) | 10   | 33    | Aug 11 | Sep 25 | Oct 4  | 55   | 33 (36%) | 7    | 67    |
| 2007     | May 8  | May 14 | Jun 1  | 25   | 12 (17%) | 4    | 24    | Aug 26 | Sep 17 | Oct 3  | 39   | 10 (11%) | 4    | 18    |
| 2008     | May 6  | May 13 | May 27 | 22   | 13 (19%) | 5    | 27    | Aug 26 | Sep 6  | Oct 3  | 39   | 25 (27%) | 7    | 45    |
| 2009     | May 8  | May 10 | May 22 | 15   | 6 (9%)   | 3    | 10    | Aug 27 | Aug 31 | Oct 6  | 41   | 15 (16%) | 5    | 28    |
| 2010     | May 5  | May 10 | May 22 | 18   | 7 (10%)  | 3    | 12    | Aug 15 | Sep 7  | Oct 5  | 52   | 28 (31%) | 4    | 46    |
| 2011     | Apr 30 | May 13 | May 26 | 27   | 13 (19%) | 7    | 25    | Aug 13 | Aug 24 | Oct 7  | 56   | 23 (25%) | 5    | 56    |
| 2012     | May 5  | May 12 | May 28 | 24   | 10 (14%) | 6    | 26    | Aug 16 | Sep 14 | Sep 26 | 42   | 19 (21%) | 6    | 39    |
| 2013     | May 11 | May 22 | Jun 4  | 25   | 12 (17%) | 3    | 18    | Aug 7  | Sep 5  | Oct 4  | 59   | 21 (23%) | 3    | 33    |
| 2014     | May 10 | May 15 | May 27 | 18   | 12 (18%) | 3    | 18    | Aug 22 | Sep 4  | Oct 27 | 67   | 13 (14%) | 5    | 21    |
| Mean     | May 7  | May 13 | May 28 | 22   | 10 (15%) | 4    | 20    | Aug 16 | Sep 8  | Oct 6  | 52   | 22 (24%) | 6    | 42    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6  | S7  | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|------|-----|-----|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |      |     | 0.3 | 0.3 | 0.1 | 0.2  | 0.1    |
| 2006     |     |     |     |     |     |        |    |    |    |    |      |     | 0.4 | 2.7 | 1.3 | 0.3  | 0.5    |
| 2007     |     |     |     |     |     |        |    |    |    |    |      | 0.3 | 2.0 | 0.4 | 0.6 | 0.1  | 0.3    |
| 2008     |     |     |     |     |     |        |    |    |    |    |      | 0.4 | 2.3 | 1.0 | 0.1 |      | 0.4    |
| 2009     |     |     |     |     |     |        |    |    |    |    |      | 0.1 | 0.7 | 0.6 |     |      | 0.1    |
| 2010     |     |     |     |     |     |        |    |    |    |    |      | 0.1 | 0.6 | 1.0 |     |      | 0.2    |
| 2011     |     |     |     |     |     |        |    |    |    |    | 0.1  | 0.4 | 2.3 | 0.6 | 0.1 |      | 0.4    |
| 2012     |     |     |     |     |     |        |    |    |    |    |      | 0.7 | 1.7 | 1.0 | 0.3 |      | 0.4    |
| 2013     |     |     |     |     |     |        |    |    |    |    |      |     | 0.4 | 1.3 | 0.7 | 0.1  | 0.3    |
| 2014     |     |     |     |     |     |        |    |    |    |    |      |     | 1.4 | 0.7 | 0.4 |      | 0.3    |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.01 | 0.2 | 1.2 | 1.0 | 0.4 | 0.07 | 0.3    |

| Observed | Jun | Jul  | Summer | F1   | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11  | F12 | F13  | Fall |
|----------|-----|------|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|------|
| 2005     |     | 0.06 | 0.03   | 0.4  | 0.3 | 0.4 | 1.0 | 1.4 | 2.3 | 1.0 | 2.0 | 0.3 | 0.5 |      |     |      | 0.8  |
| 2006     |     | 0.3  | 0.2    |      | 0.7 | 0.4 | 0.7 | 1.6 | 1.1 | 1.6 | 2.7 | 0.6 | 0.1 |      |     |      | 0.7  |
| 2007     |     |      |        |      |     |     | 0.1 | 0.3 | 0.4 | 0.6 | 0.9 | 0.1 | 0.1 |      |     |      | 0.2  |
| 2008     |     |      |        |      |     |     | 0.1 | 0.7 | 2.0 | 0.9 | 1.3 | 1.3 | 0.1 |      |     |      | 0.5  |
| 2009     |     |      |        |      |     |     | 0.3 | 1.3 | 0.4 | 0.6 | 0.1 | 0.9 | 0.4 |      |     |      | 0.3  |
| 2010     |     |      |        |      |     | 0.6 | 0.4 | 1.1 | 1.0 | 1.7 | 1.0 | 0.6 | 0.1 |      |     |      | 0.5  |
| 2011     |     |      |        |      | 0.3 | 0.4 | 1.6 | 1.3 | 1.1 | 1.9 | 0.7 | 0.1 | 0.6 |      |     |      | 0.6  |
| 2012     |     |      |        |      |     | 0.1 | 0.4 | 0.9 | 0.4 | 3.1 | 0.4 | 0.1 |     |      |     |      | 0.4  |
| 2013     |     |      |        | 0.1  |     | 0.1 | 0.6 | 0.1 | 0.9 | 1.3 | 1.1 | 0.1 | 0.3 |      |     |      | 0.4  |
| 2014     |     |      |        |      |     |     | 0.7 | 0.7 |     | 0.7 | 0.4 |     | 0.1 | 0.1  |     | 0.1  | 0.2  |
| Mean     |     | 0.08 | 0.04   | 0.06 | 0.1 | 0.2 | 0.6 | 0.9 | 1.0 | 1.3 | 1.1 | 0.4 | 0.2 | 0.01 |     | 0.01 | 0.5  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     | 1   | 1      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |     |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |     |     | 1      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   |     | 1      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |     |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   | 1   |     | 2      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.4 | 0.2 | 0.1 | 0.7    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        | 2   |     | 1   | 2   | 4   | 6   | 1   | 7   |     | 1   |     |     |     | 24   |
| 2006   |     | 1   | 1      |     | 1   | 1   |     | 1   | 2   | 2   | 11  | 1   |     |     |     |     | 19   |
| 2007   |     |     |        |     |     |     |     |     |     | 1   | 2   |     |     |     |     |     | 3    |
| 2008   |     |     |        |     |     |     |     | 2   | 11  | 3   | 3   | 9   |     |     |     |     | 28   |
| 2009   |     |     |        |     |     |     | 1   | 2   | 1   | 1   |     | 2   |     |     |     |     | 7    |
| 2010   |     |     |        |     |     | 3   |     | 3   | 4   | 7   | 6   | 2   |     |     |     |     | 25   |
| 2011   |     |     |        |     |     |     | 5   | 4   | 5   | 2   | 2   | 1   | 2   |     |     |     | 21   |
| 2012   |     |     |        |     |     |     | 2   |     | 2   | 15  |     | 1   |     |     |     |     | 20   |
| 2013   |     |     |        | 1   |     |     |     | 1   |     | 4   | 3   | 1   | 2   |     |     |     | 12   |
| 2014   |     |     |        |     |     |     | 4   |     |     |     | 2   |     |     |     |     | 1   | 7    |
| Mean   |     | 0.1 | 0.1    | 0.3 | 0.1 | 0.5 | 1.4 | 1.7 | 3.1 | 3.6 | 3.6 | 1.7 | 0.5 |     |     | 0.1 | 16.6 |

Black-throated Green Warbler is an uncommon spring and fall migrant at MBO, although more than 20 times as many have been banded in fall compared to spring. The first arrival of spring was on May 10 or 11 in 2005 and 2006, and again in 2013 and 2014; in between it was always between May 5 and 8, aside from an exceptionally early arrival on April 30 in 2011. Although the overall spring peak is in week 7, no individuals have ever been banded before week 8. In fall, numbers typically start building in late August and peak between weeks 6 and 8. The last sighting of the year has been between October 3 and 9 in eight of ten years. Spring numbers have remained relatively consistent, but fall results have declined somewhat over time.

**CAWA: Canada Warbler / Paruline du Canada (*Cardellina canadensis*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     |        |        |        |      |         |      |       | Aug 12 | Aug 17 | Sep 15 | 35   | 10 (11%) | 4    | 17    |
| 2006     | May 25 | May 28 | May 29 | 5    | 3 (4%)  | 2    | 5     | Aug 10 | Aug 14 | Sep 12 | 34   | 12 (13%) | 5    | 21    |
| 2007     | May 17 | May 27 | Jun 1  | 16   | 6 (9%)  | 3    | 9     | Aug 12 | Aug 26 | Sep 4  | 24   | 6 (7%)   | 4    | 11    |
| 2008     | May 21 | May 24 | Jun 1  | 12   | 8 (11%) | 3    | 11    | Aug 9  | Aug 19 | Sep 10 | 33   | 16 (18%) | 6    | 36    |
| 2009     | May 2  | May 18 | May 29 | 28   | 7 (10%) | 3    | 9     | Aug 3  | Aug 31 | Aug 31 | 29   | 10 (11%) | 4    | 19    |
| 2010     | May 18 | May 18 | May 30 | 13   | 2 (3%)  | 1    | 2     | Aug 5  | Aug 18 | Sep 18 | 45   | 25 (27%) | 8    | 49    |
| 2011     | May 21 | May 25 | May 31 | 11   | 7 (10%) | 4    | 12    | Aug 11 | Aug 19 | Sep 14 | 35   | 21 (23%) | 4    | 34    |
| 2012     | May 21 | May 24 | May 27 | 7    | 7 (10%) | 5    | 11    | Aug 7  | Aug 14 | Sep 7  | 32   | 11 (12%) | 3    | 17    |
| 2013     | May 19 | May 22 | May 27 | 9    | 4 (6%)  | 4    | 9     | Aug 11 | Aug 13 | Sep 13 | 34   | 17 (19%) | 4    | 27    |
| 2014     | May 14 | May 28 | May 28 | 15   | 6 (9%)  | 4    | 10    | Aug 9  | Aug 16 | Sep 14 | 37   | 15 (16%) | 3    | 28    |
| Mean     | May 17 | May 23 | May 29 | 13   | 6 (8%)  | 3    | 7.8   | Aug 8  | Aug 18 | Sep 10 | 34   | 14 (16%) | 4    | 26    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7   | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|------|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |      |     |     |      |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |      |     | 0.7 |      | 0.07   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.6 | 0.6 | 0.1  | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.1 | 1.1 | 0.3  | 0.2    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.1  | 0.7 | 0.3 |      | 0.1    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.1 |     | 0.1  | 0.03   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.4 | 1.1 | 0.1  | 0.2    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.3 | 1.3 |      | 0.2    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.7 | 0.6 |      | 0.1    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  | 0.3 | 1.0 |      | 0.1    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.01 | 0.03 | 0.3 | 0.7 | 0.07 | 0.1    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|------|
| 2005     |     |     |        |     | 0.1 | 0.9 | 0.6 | 0.6 | 0.1 | 0.1 |    |    |     |     |     |     | 0.2  |
| 2006     |     |     |        |     | 1.1 | 0.9 | 0.1 | 0.6 | 0.1 | 0.1 |    |    |     |     |     |     | 0.2  |
| 2007     |     |     |        |     | 0.3 | 0.3 | 0.9 | 0.1 |     |     |    |    |     |     |     |     | 0.1  |
| 2008     |     |     |        |     | 1.6 | 2.4 |     | 0.6 | 0.6 |     |    |    |     |     |     |     | 0.4  |
| 2009     |     |     |        | 0.1 |     | 1.1 | 0.6 | 0.9 |     |     |    |    |     |     |     |     | 0.2  |
| 2010     |     |     |        | 0.6 | 0.9 | 2.9 | 1.1 | 0.7 | 0.7 | 0.1 |    |    |     |     |     |     | 0.5  |
| 2011     |     |     |        |     | 0.6 | 1.4 | 0.7 | 0.9 | 0.9 | 0.4 |    |    |     |     |     |     | 0.4  |
| 2012     |     |     |        | 0.3 | 1.3 | 0.4 | 0.3 |     | 0.1 |     |    |    |     |     |     |     | 0.2  |
| 2013     |     |     |        |     | 1.0 | 1.6 | 1.0 |     | 0.1 | 0.1 |    |    |     |     |     |     | 0.3  |
| 2014     |     |     |        |     | 0.4 | 1.1 | 1.1 | 0.7 |     | 0.6 |    |    |     |     |     |     | 0.3  |
| Mean     |     |     |        | 0.1 | 0.7 | 1.3 | 0.6 | 0.5 | 0.3 | 0.2 |    |    |     |     |     |     | 0.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 2   |     | 2      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    | 3   | 1   | 1   | 5      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 3   | 1   | 4      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |     |     | 1      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |     | 1   | 2      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    | 2   | 7   | 1   | 10     |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   | 4   |     | 5      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    | 5   | 4   |     | 9      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   | 6   |     | 7      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1.4 | 2.7 | 0.4 | 4.5    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     | 1   | 6   | 2   | 4   | 1   | 1   |    |    |     |     |     |     | 15   |
| 2006   |     |     |        |     | 6   | 4   | 1   | 1   | 1   |     |    |    |     |     |     |     | 13   |
| 2007   |     |     |        |     | 2   | 2   | 4   | 1   |     |     |    |    |     |     |     |     | 9    |
| 2008   |     |     |        |     | 10  | 9   |     | 2   | 3   |     |    |    |     |     |     |     | 24   |
| 2009   |     |     |        | 1   |     | 6   | 3   | 4   |     |     |    |    |     |     |     |     | 14   |
| 2010   |     |     |        | 4   | 4   | 16  | 4   | 5   | 2   |     |    |    |     |     |     |     | 35   |
| 2011   |     |     |        |     | 3   | 3   | 4   | 2   | 2   | 3   |    |    |     |     |     |     | 17   |
| 2012   |     |     |        | 2   | 7   | 2   | 2   |     | 1   |     |    |    |     |     |     |     | 14   |
| 2013   |     |     |        |     | 5   | 7   | 4   |     | 1   | 1   |    |    |     |     |     |     | 18   |
| 2014   |     |     |        |     | 2   | 5   | 7   | 5   |     | 4   |    |    |     |     |     |     | 23   |
| Mean   |     |     |        | 0.7 | 4.0 | 6.0 | 3.1 | 2.4 | 1.1 | 0.9 |    |    |     |     |     |     | 18.2 |

Canada Warbler is a rare to uncommon late spring and early fall migrant at MBO. Only twice have there been spring sightings before week 8; the peak is always in week 8 or 9, with few individuals lingering into the final week of the season. Nearly 60% of individuals recorded in spring and over 70% of those in fall were banded, reflecting the generally secretive inconspicuous nature of this species. Fall sightings are scarce in the first week of August, but peak later in the month before quickly tapering off in early September, with the last sighting of the year between September 10 and 15 in six of ten years, and just one later observation on September 18. Numbers have shown a weak increasing tendency over time in both spring and fall.

**WIWA: Wilson's Warbler / Paruline à calotte noire (*Cardellina pusilla*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 21 | May 30 | May 31 | 11   | 5 (8%)   | 2    | 6     | Aug 6  | Aug 29 | Sep 23 | 49   | 24 (27%) | 4    | 41    |
| 2006     | May 19 | May 27 | May 30 | 12   | 10 (14%) | 8    | 25    | Aug 10 | Sep 6  | Sep 16 | 38   | 19 (21%) | 8    | 52    |
| 2007     | May 19 | May 27 | Jun 1  | 14   | 9 (13%)  | 5    | 20    | Aug 21 | Sep 7  | Oct 3  | 44   | 24 (26%) | 8    | 60    |
| 2008     | May 15 | May 28 | Jun 3  | 20   | 12 (17%) | 11   | 46    | Aug 15 | Sep 3  | Sep 12 | 29   | 22 (24%) | 7    | 75    |
| 2009     | May 17 | May 21 | Jun 1  | 16   | 16 (23%) | 9    | 47    | Aug 23 | Aug 31 | Oct 1  | 40   | 15 (16%) | 2    | 17    |
| 2010     | May 16 | May 17 | May 24 | 9    | 6 (9%)   | 2    | 7     | Aug 15 | Sep 6  | Oct 3  | 50   | 26 (29%) | 7    | 55    |
| 2011     | May 22 | May 22 | May 31 | 10   | 7 (10%)  | 6    | 26    | Aug 29 | Sep 6  | Sep 25 | 28   | 21 (23%) | 8    | 81    |
| 2012     | May 12 | May 28 | Jun 2  | 22   | 17 (24%) | 8    | 50    | Aug 15 | Sep 8  | Sep 22 | 39   | 24 (26%) | 6    | 42    |
| 2013     | May 17 | May 27 | May 31 | 15   | 10 (14%) | 4    | 21    | Aug 21 | Sep 8  | Sep 24 | 35   | 19 (21%) | 4    | 38    |
| 2014     | May 14 | May 20 | Jun 1  | 19   | 16 (24%) | 10   | 66    | Aug 20 | Sep 14 | Oct 7  | 49   | 23 (25%) | 5    | 38    |
| Mean     | May 17 | May 24 | May 31 | 15   | 11 (16%) | 6    | 31    | Aug 17 | Sep 5  | Sep 25 | 40   | 22 (24%) | 6    | 50    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |     | 0.1 | 0.3 | 0.6 | 0.1    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |     | 0.7 | 2.7 | 0.1 | 0.4    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |     | 0.7 | 1.7 | 0.4 | 0.3    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 | 0.3 | 4.7 | 1.4 | 0.7    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |     | 3.1 | 2.7 | 0.9 | 0.7    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |     | 0.9 | 0.1 |     | 0.1    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |     | 0.9 | 2.6 | 0.3 | 0.4    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    | 0.3 | 1.4 | 4.6 | 0.9 | 0.7    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |     | 0.7 | 1.6 | 0.7 | 0.3    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    | 0.6 | 2.6 | 5.9 | 0.5 | 1.0    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 | 1.1 | 2.7 | 0.6 | 0.5    |

| Observed | Jun | Jul | Summer | F1   | F2   | F3  | F4  | F5  | F6  | F7  | F8  | F9   | F10  | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|------|------|-----|-----|-----|-----|-----|-----|------|------|-----|-----|-----|------|
| 2005     |     |     |        | 0.1  |      | 0.6 | 1.4 | 1.6 | 0.4 | 1.3 | 0.4 |      |      |     |     |     | 0.5  |
| 2006     |     |     |        |      | 0.1  | 0.6 | 2.0 | 2.0 | 2.6 | 0.1 |     |      |      |     |     |     | 0.6  |
| 2007     |     |     |        |      |      | 0.1 | 1.3 | 2.3 | 3.0 | 1.4 | 0.1 | 0.1  | 0.1  |     |     |     | 0.7  |
| 2008     |     |     |        |      |      | 1.0 | 1.0 | 4.4 | 4.0 | 0.3 |     |      |      |     |     |     | 0.8  |
| 2009     |     |     |        |      |      | 0.3 | 0.3 | 0.7 | 0.3 | 0.7 | 0.3 | 0.1  |      |     |     |     | 0.2  |
| 2010     |     |     |        |      |      | 0.4 | 1.1 | 1.1 | 3.4 | 1.4 | 0.1 |      | 0.1  |     |     |     | 0.6  |
| 2011     |     |     |        |      |      |     |     | 3.6 | 5.0 | 2.0 | 1.0 |      |      |     |     |     | 0.9  |
| 2012     |     |     |        |      |      | 0.1 | 0.9 | 1.3 | 2.3 | 1.3 | 0.1 |      |      |     |     |     | 0.5  |
| 2013     |     |     |        |      |      | 0.1 | 0.4 | 0.9 | 2.6 | 1.1 | 0.3 |      |      |     |     |     | 0.4  |
| 2014     |     |     |        |      |      | 0.1 | 0.6 | 0.4 | 0.3 | 2.6 | 0.7 | 0.4  | 0.3  |     |     |     | 0.4  |
| Mean     |     |     |        | 0.01 | 0.01 | 0.3 | 0.9 | 1.8 | 2.4 | 1.2 | 0.3 | 0.07 | 0.06 |     |     |     | 0.6  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9   | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|------|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 2    | 2   | 5      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     | 2   | 12   | 1   | 15     |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 7    | 1   | 9      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   | 19   | 4   | 24     |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     | 15  | 9    | 4   | 28     |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     | 5   | 1    |     | 6      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     | 4   | 8    | 2   | 14     |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 4   | 16   | 4   | 25     |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     | 4   | 9    | 4   | 17     |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 7   | 24   | 3   | 35     |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.2 | 4.4 | 10.7 | 2.5 | 17.8   |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6   | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        | 1   |     | 3   | 3   | 9   | 2    | 7   | 2   |     |     |     |     |     | 27   |
| 2006   |     |     |        |     | 1   | 3   | 9   | 6   | 9    | 1   |     |     |     |     |     |     | 29   |
| 2007   |     |     |        |     |     |     | 8   | 9   | 17   | 5   | 1   | 1   |     |     |     |     | 41   |
| 2008   |     |     |        |     |     | 4   | 6   | 22  | 20   | 1   |     |     |     |     |     |     | 53   |
| 2009   |     |     |        |     |     |     | 2   | 5   | 2    | 3   | 1   | 1   |     |     |     |     | 14   |
| 2010   |     |     |        |     |     | 3   | 5   | 5   | 18   | 7   | 1   |     |     |     |     |     | 39   |
| 2011   |     |     |        |     |     |     |     | 15  | 18   | 8   | 5   |     |     |     |     |     | 46   |
| 2012   |     |     |        |     |     | 1   | 4   | 5   | 14   | 5   | 1   |     |     |     |     |     | 30   |
| 2013   |     |     |        |     |     | 1   | 2   | 5   | 11   | 5   | 1   |     |     |     |     |     | 25   |
| 2014   |     |     |        |     |     |     | 4   | 1   | 2    | 12  | 3   | 3   |     |     |     |     | 25   |
| Mean   |     |     |        | 0.1 | 0.1 | 1.5 | 4.3 | 8.2 | 11.3 | 5.4 | 1.5 | 0.5 |     |     |     |     | 32.9 |

Wilson's Warbler is among the latest of spring migrants, with the earliest arrival ever on May 12, and no observations until week 8 in seven of ten years. There is typically a distinct peak in week 9, although in 2009 and 2010 it was shifted earlier. Spring numbers have been relatively consistent, aside from record highs in 2014. There have been only two records in the first two weeks of fall, and observations beyond week 8 in just four years, but Wilson's Warbler is generally regular in the intervening weeks, with a peak most years in week 6. Fall numbers have been relatively steady over the years, although consistently a bit below average since 2012.

**EATO: Eastern Towhee / Tohi à flancs roux (*Pipilo erythrophthalmus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     | May 11 | May 11 | May 11 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |        |      |       | Aug 2  | Aug 2  | Aug 30 | 29   | 2 (2%) | 1    | 2     |
| 2010     |        |        |        |      |        |      |       | Aug 12 | Aug 12 | Aug 12 | 1    | 1 (1%) | 1    | 1     |
| 2011     | Jun 2  | Jun 2  | Jun 2  | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       | Oct 16 | Oct 16 | Oct 16 | 1    | 1 (1%) | 1    | 1     |
| Mean     | May 22 | May 22 | May 22 | 1    | 1 (1%) | 1    | 0.2   | Aug 30 | Aug 30 | Sep 8  | 10   | 1 (1%) | 1    | 0.4   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7   | S8 | S9 | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|------|----|----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    | 0.1  |    |    |      | 0.01   |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    | 0.1  | 0.01   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |      |    |    |      |        |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    | 0.01 |    |    | 0.01 | <0.01  |

| Observed | Jun | Jul | Summer | F1   | F2   | F3 | F4 | F5   | F6 | F7 | F8 | F9 | F10 | F11  | F12 | F13 | Fall  |
|----------|-----|-----|--------|------|------|----|----|------|----|----|----|----|-----|------|-----|-----|-------|
| 2005     |     |     |        |      |      |    |    |      |    |    |    |    |     |      |     |     |       |
| 2006     |     |     |        |      |      |    |    |      |    |    |    |    |     |      |     |     |       |
| 2007     |     |     |        |      |      |    |    |      |    |    |    |    |     |      |     |     |       |
| 2008     |     |     |        |      |      |    |    |      |    |    |    |    |     |      |     |     |       |
| 2009     |     |     |        | 0.1  |      |    |    | 0.1  |    |    |    |    |     |      |     |     | 0.02  |
| 2010     |     |     |        |      | 0.1  |    |    |      |    |    |    |    |     |      |     |     | 0.01  |
| 2011     |     |     |        |      |      |    |    |      |    |    |    |    |     |      |     |     |       |
| 2012     |     |     |        |      |      |    |    |      |    |    |    |    |     |      |     |     |       |
| 2013     |     |     |        |      |      |    |    |      |    |    |    |    |     |      |     |     |       |
| 2014     |     |     |        |      |      |    |    |      |    |    |    |    |     | 0.1  |     |     | 0.01  |
| Mean     |     |     |        | 0.01 | 0.01 |    |    | 0.01 |    |    |    |    |     | 0.01 |     |     | <0.01 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |    |    |     | 1      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |     |    |    |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 0.1 |    |    |     | 0.1    |

Eastern Towhee is a rare species at MBO, with only two spring and four fall observations, only one of which was banded (a female in May 2007). Too few observations have been recorded to identify any clear patterns, although it is notable that three of the four fall sightings have been in August.

**ATSP: American Tree Sparrow / Bruant hudsonien (*Spizelloides arborea*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 6  | May 10 | 36   | 17 (29%) | 9    | 52    | Oct 13 | Oct 28 | Oct 30 | 18   | 15 (17%) | 12   | 81    |
| 2006     | Mar 28 | Apr 3  | Apr 30 | 34   | 24 (35%) | 12   | 110   | Oct 11 | Oct 28 | Oct 30 | 20   | 13 (14%) | 17   | 96    |
| 2007     | Mar 28 | Apr 19 | Apr 23 | 27   | 20 (29%) | 7    | 54    | Oct 1  | Oct 25 | Oct 30 | 30   | 20 (22%) | 15   | 108   |
| 2008     | Apr 1  | Apr 9  | Apr 20 | 20   | 11 (16%) | 12   | 50    | Oct 7  | Oct 18 | Oct 30 | 24   | 12 (13%) | 19   | 37    |
| 2009     | Mar 29 | Apr 9  | Apr 23 | 26   | 16 (23%) | 15   | 83    | Oct 12 | Oct 30 | Oct 30 | 19   | 13 (14%) | 45   | 137   |
| 2010     | Mar 28 | Mar 29 | Apr 17 | 21   | 8 (11%)  | 21   | 47    | Oct 11 | Oct 27 | Oct 30 | 20   | 15 (16%) | 30   | 117   |
| 2011     | Mar 28 | Mar 30 | May 2  | 36   | 28 (40%) | 19   | 118   | Oct 9  | Oct 30 | Oct 30 | 22   | 10 (11%) | 13   | 57    |
| 2012     | Apr 2  | Apr 15 | Apr 26 | 25   | 10 (14%) | 9    | 39    | Oct 15 | Oct 27 | Oct 30 | 16   | 16 (18%) | 9    | 75    |
| 2013     | Mar 28 | Apr 10 | Apr 27 | 31   | 23 (33%) | 25   | 136   | Oct 15 | Oct 30 | Oct 30 | 16   | 10 (11%) | 7    | 23    |
| 2014     | Mar 29 | Apr 1  | May 6  | 39   | 28 (41%) | 14   | 118   | Oct 12 | Oct 29 | Oct 30 | 19   | 13 (14%) | 38   | 260   |
| Mean     | Mar 29 | Apr 6  | Apr 27 | 30   | 18 (27%) | 14   | 81    | Oct 10 | Oct 27 | Oct 30 | 20   | 14 (15%) | 20   | 99    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1  | S2  | S3  | S4  | S5  | S6   | S7   | S8 | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|------|------|----|----|-----|--------|
| 2005     | 1.3 | 3.5 |     | 1.3 | 5.0 | 2.6    |     | 4.5 | 1.9 | 0.7 | 0.9 | 0.1  | 0.1  |    |    |     | 0.9    |
| 2006     | 0.8 | 0.6 | 1.8 | 2.0 | 4.1 | 1.8    | 6.7 | 6.3 | 2.3 | 1.0 | 0.3 |      |      |    |    |     | 1.6    |
| 2007     | 3.0 | 2.7 | 4.3 | 6.5 | 4.2 | 3.8    | 2.9 | 1.3 | 1.6 | 2.0 |     |      |      |    |    |     | 0.8    |
| 2008     | 1.0 |     |     |     |     | 0.3    | 0.3 | 2.1 | 3.6 | 1.1 |     |      |      |    |    |     | 0.7    |
| 2009     | 0.9 | 0.5 | 1.8 | 1.6 | 2.4 | 1.7    | 5.1 | 5.7 | 1.6 | 0.3 |     |      |      |    |    |     | 1.2    |
| 2010     | 3.3 | 1.8 | 3.3 | 5.0 | 8.5 | 4.5    | 6.6 |     | 0.1 |     |     |      |      |    |    |     | 0.7    |
| 2011     | 4.4 | 1.0 | 3.6 | 1.0 | 2.8 | 3.1    | 6.9 | 2.4 | 1.4 | 3.7 | 2.3 | 0.1  |      |    |    |     | 1.7    |
| 2012     | 4.4 | 2.5 | 0.3 | 2.3 | 9.0 | 4.3    | 0.6 | 0.9 | 1.9 | 1.6 | 0.7 |      |      |    |    |     | 0.6    |
| 2013     | 1.6 | 3.9 | 1.7 | 2.2 | 4.1 | 2.8    | 1.9 | 8.9 | 4.1 | 4.0 | 0.6 |      |      |    |    |     | 1.9    |
| 2014     | 2.0 | 1.8 | 0.3 | 2.4 | 4.4 | 2.1    | 4.2 | 4.1 | 3.1 | 4.1 | 1.4 | 0.4  |      |    |    |     | 1.7    |
| Mean     | 2.5 | 1.8 | 2.2 | 2.6 | 4.7 | 2.8    | 3.9 | 3.5 | 2.2 | 1.9 | 0.6 | 0.07 | 0.01 |    |    |     | 1.2    |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9   | F10  | F11 | F12  | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|------|------|-----|------|-----|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |      |      | 0.2 | 5.3  | 6.1 | 0.9  |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |      |      | 0.4 | 4.4  | 8.9 | 1.1  |
| 2007     |     |     |        |    |    |    |    |    |    |    |    | 0.1  | 0.1  | 3.4 | 5.3  | 6.4 | 1.2  |
| 2008     |     |     |        |    |    |    |    |    |    |    |    | 0.4  | 0.1  | 3.6 | 1.1  | 0.4 |      |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |      | 0.3  | 2.9 | 16.4 | 1.5 |      |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |      | 0.7  | 4.3 | 11.7 | 1.3 |      |
| 2011     |     |     |        |    |    |    |    |    |    |    |    | 0.1  |      | 1.1 | 6.9  | 0.6 |      |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |      | 0.4  | 4.6 | 5.7  | 0.8 |      |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |      | 0.3  | 0.4 | 2.6  | 0.3 |      |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |      | 0.1  | 7.4 | 29.6 | 2.9 |      |
| Mean     |     |     |        |    |    |    |    |    |    |    |    | 0.01 | 0.07 | 0.6 | 3.9  | 9.5 | 1.1  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3  | S4  | S5  | S6  | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|-----|-----|-----|-----|-----|----|----|----|-----|--------|
| 2005   | 3   | 2   |     | 3   | 1   | 9      |    | 2   |     | 1   |     |     |    |    |    |     | 3      |
| 2006   | 5   | 2   | 2   | 1   | 1   | 11     |    | 2   | 4   | 1   |     |     |    |    |    |     | 7      |
| 2007   |     | 2   |     |     | 5   | 7      |    |     |     | 2   |     |     |    |    |    |     | 2      |
| 2008   |     |     |     |     |     |        |    |     |     | 2   |     |     |    |    |    |     | 2      |
| 2009   |     |     |     |     | 2   | 2      |    |     |     |     |     |     |    |    |    |     |        |
| 2010   | 8   | 3   | 2   | 2   | 23  | 38     |    |     |     |     |     |     |    |    |    |     |        |
| 2011   | 21  |     |     |     | 4   | 25     |    |     |     | 6   | 9   |     |    |    |    |     | 15     |
| 2012   | 25  | 2   |     | 2   | 27  | 56     |    |     |     | 2   |     |     |    |    |    |     | 2      |
| 2013   | 4   | 13  |     | 1   | 6   | 24     |    |     |     | 5   | 1   |     |    |    |    |     | 6      |
| 2014   | 3   | 1   |     |     |     | 4      |    |     |     | 5   | 2   | 2   |    |    |    |     | 9      |
| Mean   | 8.6 | 3.6 | 1.3 | 1.5 | 8.6 | 19.6   |    | 2.0 | 2.0 | 2.4 | 1.2 | 0.2 |    |    |    |     | 4.6    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9  | F10 | F11  | F12  | F13  | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|------|------|------|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |     |     | 1    | 9    | 15   | 25   |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |     |     |      | 14   | 15   | 29   |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |     |     | 10   | 16   | 8    | 34   |
| 2008   |     |     |        |    |    |    |    |    |    |    |    | 1   | 1   | 5    | 6    | 13   | 13   |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |     | 1   | 7    | 54   | 62   |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |     | 3   | 13   | 37   | 53   |      |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |     |     | 6    | 32   | 38   |      |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |     | 2   | 12   | 19   | 33   |      |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |     | 2   | 3    | 8    | 13   |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |     |     |      | 23   | 80   | 103  |
| Mean   |     |     |        |    |    |    |    |    |    |    |    | 0.1 | 2.0 | 10.8 | 27.4 | 40.3 |      |

American Tree Sparrow is fairly common at MBO from early-mid October to late April or early May. Fall numbers almost always peak in week 13, although often continue in similar or even greater abundance into early November. A small subset of the migrants overwinters at MBO annually, including several individuals that have been recaptured in multiple winters. Spring numbers taper off steadily from the start of the season, with a few remaining until mid-April each year, and into May three years out of ten. In all seasons, numbers are relatively consistent from year to year, except for unusually few in winter 2008 and spring 2010, and particularly many in fall 2014.

**CHSP: Chipping Sparrow / Bruant familier (*Spizella passerina*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 10 | May 11 | Jun 3  | 55   | 21 (36%) | 6    | 36    | Aug 1  | Sep 13 | Oct 28 | 89   | 30 (34%) | 12   | 88    |
| 2006     | Apr 20 | Apr 30 | Jun 3  | 45   | 29 (42%) | 5    | 52    | Aug 4  | Aug 12 | Oct 9  | 67   | 19 (21%) | 4    | 37    |
| 2007     | Apr 24 | May 26 | Jun 1  | 39   | 21 (30%) | 5    | 29    | Aug 3  | Oct 15 | Oct 18 | 77   | 25 (27%) | 7    | 55    |
| 2008     | Apr 22 | May 8  | Jun 1  | 41   | 35 (50%) | 5    | 61    | Aug 3  | Oct 10 | Oct 17 | 76   | 15 (16%) | 4    | 25    |
| 2009     | Apr 18 | May 10 | May 30 | 43   | 26 (38%) | 4    | 45    | Aug 1  | Oct 2  | Oct 21 | 82   | 12 (13%) | 4    | 18    |
| 2010     | Apr 20 | May 5  | Jun 1  | 43   | 33 (47%) | 4    | 51    | Aug 17 | Sep 22 | Oct 10 | 55   | 9 (10%)  | 3    | 13    |
| 2011     | Apr 28 | May 3  | May 29 | 32   | 18 (26%) | 4    | 25    | Aug 1  | Sep 28 | Oct 21 | 82   | 27 (30%) | 16   | 97    |
| 2012     | Apr 9  | May 15 | Jun 3  | 56   | 39 (56%) | 7    | 103   | Aug 1  | Sep 14 | Oct 21 | 82   | 42 (46%) | 10   | 130   |
| 2013     | Apr 16 | May 16 | Jun 3  | 49   | 42 (60%) | 12   | 155   | Aug 1  | Sep 17 | Oct 11 | 72   | 18 (20%) | 4    | 29    |
| 2014     | Apr 18 | May 19 | Jun 2  | 46   | 36 (53%) | 5    | 87    | Aug 1  | Oct 11 | Oct 27 | 88   | 42 (46%) | 8    | 123   |
| Mean     | Apr 18 | May 11 | Jun 1  | 45   | 30 (44%) | 6    | 64    | Aug 3  | Sep 23 | Oct 18 | 77   | 24 (26%) | 7    | 62    |

| Observed | Nov  | Dec | Jan | Feb  | Mar | Winter | S1 | S2   | S3   | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|------|-----|-----|------|-----|--------|----|------|------|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |      |     |     |      |     |        |    | 0.2  |      | 0.7 | 0.1 | 1.1 | 2.1 | 0.6 |     | 0.6 | 0.6    |
| 2006     |      |     |     |      |     |        |    |      |      | 0.4 | 1.0 | 1.3 | 1.3 | 1.0 | 1.3 | 1.1 | 0.8    |
| 2007     |      |     |     |      |     |        |    |      |      | 0.3 | 0.1 | 0.4 | 1.1 | 0.6 | 1.3 | 0.3 | 0.4    |
| 2008     |      |     |     |      |     |        |    |      |      | 0.4 | 1.4 | 1.7 | 1.7 | 1.7 | 1.1 | 0.6 | 0.9    |
| 2009     |      |     |     |      |     |        |    |      |      | 0.1 | 0.4 | 0.9 | 2.6 | 1.6 | 0.7 | 0.1 | 0.7    |
| 2010     |      |     |     |      |     |        |    |      |      | 0.3 | 0.6 | 2.1 | 1.4 | 1.4 | 0.9 | 0.6 | 0.7    |
| 2011     |      |     |     |      |     |        |    |      |      |     | 0.9 | 1.3 | 0.7 | 0.3 | 0.4 |     | 0.4    |
| 2012     |      |     |     | 0.3  |     | 0.04   |    | 0.1  | 0.3  | 0.4 | 0.7 | 2.6 | 3.7 | 3.3 | 2.7 | 0.9 | 1.5    |
| 2013     | 0.3  |     |     |      |     | 0.04   |    |      | 0.1  | 0.3 | 2.0 | 5.6 | 3.7 | 4.9 | 3.9 | 1.7 | 2.2    |
| 2014     |      |     |     |      |     |        |    |      |      | 1.4 | 0.9 | 1.6 | 1.6 | 2.3 | 3.3 | 1.7 | 1.3    |
| Mean     | 0.02 |     |     | 0.01 |     | 0.01   |    | 0.03 | 0.04 | 0.4 | 0.8 | 1.9 | 2.0 | 1.8 | 1.6 | 0.7 | 0.9    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     | 0.3 | 0.6 | 0.5    | 0.6 |     |     | 0.3 | 0.1 | 1.9 | 2.6 | 3.1 | 2.3 | 2.0 | 0.2 |     | 0.1 | 1.0  |
| 2006     | 0.6 | 0.2 | 0.4    | 0.7 | 1.1 | 0.1 | 0.6 |     | 0.4 | 0.3 | 0.6 | 0.7 | 0.7 |     |     |     | 0.4  |
| 2007     | 0.3 | 0.2 | 0.2    | 0.1 | 0.4 | 0.3 |     | 0.6 | 0.1 | 1.1 | 1.3 | 0.4 | 1.7 | 1.6 | 0.1 |     | 0.6  |
| 2008     | 0.2 |     | 0.1    | 0.1 |     |     |     |     | 0.1 | 0.1 | 0.7 | 0.4 | 1.1 | 0.6 | 0.3 |     | 0.3  |
| 2009     |     |     |        | 0.4 | 0.1 | 0.1 |     |     | 0.1 | 0.1 |     | 0.6 | 0.3 | 0.3 | 0.4 |     | 0.2  |
| 2010     |     | 0.2 | 0.1    |     |     | 0.1 |     |     |     |     | 0.9 | 0.3 | 0.4 | 0.1 |     |     | 0.1  |
| 2011     | 0.3 | 0.5 | 0.4    | 0.1 |     |     | 0.4 | 0.3 | 0.1 | 1.4 | 3.0 | 5.1 | 2.0 | 1.0 | 0.3 |     | 1.1  |
| 2012     | 0.5 | 0.8 | 0.6    | 0.7 | 0.3 | 0.1 | 1.7 | 2.9 | 1.7 | 4.7 | 1.4 | 0.9 | 3.4 |     | 0.7 |     | 1.4  |
| 2013     | 0.3 |     | 0.1    | 0.9 | 0.1 | 0.3 |     | 0.3 |     | 0.7 | 0.7 | 0.4 | 0.6 | 0.1 |     |     | 0.3  |
| 2014     | 1.0 | 0.3 | 0.6    | 0.6 | 0.7 |     | 0.3 | 0.3 | 0.4 |     | 0.4 | 2.7 | 3.7 | 4.1 | 2.9 | 1.4 | 1.4  |
| Mean     | 0.4 | 0.3 | 0.3    | 0.4 | 0.3 | 0.1 | 0.3 | 0.4 | 0.5 | 1.1 | 1.2 | 1.4 | 1.6 | 0.8 | 0.5 | 0.2 | 0.7  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    | 1   |    |     |     |     |     | 2   | 3      |
| 2006   |     |     |     |     |     |        |    |    |    |     |    |     |     |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |     |    |     | 1   |     |     | 1   | 2      |
| 2008   |     |     |     |     |     |        |    |    |    |     |    |     | 3   | 3   |     |     | 6      |
| 2009   |     |     |     |     |     |        |    |    |    |     |    |     | 2   |     |     |     | 2      |
| 2010   |     |     |     |     |     |        |    |    |    |     |    |     | 2   |     |     | 1   | 3      |
| 2011   |     |     |     |     |     |        |    |    |    |     |    |     |     |     |     |     |        |
| 2012   |     |     |     | 1   |     | 1      |    |    |    |     |    | 2   | 1   |     | 1   | 1   | 5      |
| 2013   | 2   |     |     |     |     | 2      |    |    |    |     |    | 2   | 4   | 4   | 1   |     | 11     |
| 2014   |     |     |     |     |     |        |    |    |    |     |    | 1   | 1   | 2   | 1   |     | 5      |
| Mean   | 0.3 |     |     | 0.2 |     | 0.3    |    |    |    | 0.1 |    | 0.5 | 1.4 | 0.9 | 0.3 | 0.5 | 3.7    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     |     | 1   |     |     | 4   | 12  | 1   | 1   | 1   |     | 1   | 21   |
| 2006   |     |     |        | 1   | 1   |     |     |     |     | 1   |     |     | 2   |     |     |     | 5    |
| 2007   |     |     |        |     |     |     |     |     |     | 4   | 1   | 2   | 3   | 2   |     |     | 12   |
| 2008   |     |     |        |     |     |     |     |     |     | 1   |     | 3   | 6   | 1   |     |     | 11   |
| 2009   |     |     |        | 1   |     |     |     |     |     | 1   |     | 3   | 1   | 1   | 3   |     | 10   |
| 2010   |     |     |        |     |     | 1   |     |     |     |     | 3   | 1   | 1   |     |     |     | 6    |
| 2011   |     |     |        | 1   |     |     | 2   |     | 1   | 1   | 11  | 12  | 4   | 1   |     |     | 33   |
| 2012   |     | 2   | 2      | 3   | 2   | 1   | 1   | 8   | 2   | 9   | 1   |     | 5   |     | 1   |     | 33   |
| 2013   |     |     |        | 2   |     |     |     | 1   |     |     | 1   |     |     |     |     |     | 5    |
| 2014   |     |     |        |     |     |     |     |     | 1   |     |     | 3   | 5   | 2   | 2   |     | 13   |
| Mean   |     | 0.2 | 0.2    | 0.8 | 0.3 | 0.2 | 0.4 | 0.9 | 0.4 | 2.1 | 2.9 | 2.6 | 2.8 | 0.8 | 0.6 | 0.1 | 14.9 |

Chipping Sparrow is a generally uncommon spring and fall migrant and breeder, with winter observations limited to two late fall migrants in November 2012 and an unexpected mid-winter visitor in February 2012. Spring numbers typically peak in week 6 or 7, but as late as week 9 in two years; overall spring counts have been higher since 2012 than in all previous years. Somewhat similarly, fall numbers were well above average in 2011, 2012, and 2014, though near record low levels in 2013. The fall peak consistently falls between weeks 7 and 10.

**CCSP: Clay-colored Sparrow / Bruant des plaines (*Spizella pallida*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |        |      |       | Sep 17 | Sep 24 | Sep 24 | 8    | 2 (2%) | 2    | 3     |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |        |        |        |      |        |      |       | Oct 18 | Oct 18 | Oct 18 | 1    | 1 (1%) | 1    | 1     |
| 2012     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |        |        |        |      |        |      |       | Sep 17 | Sep 17 | Sep 17 | 1    | 1 (1%) | 1    | 1     |
| 2014     | May 17 | May 17 | May 17 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| Mean     | May 17 | May 17 | May 17 | 1    | 1 (1%) | 1    | 0.1   | Sep 27 | Sep 29 | Sep 29 | 3    | 1 (1%) | 1    | 0.5   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8   | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|------|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |    |    |      |    |     |        |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1  |    |     | 0.01   |
| Mean     |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.01 |    |     | <0.01  |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7   | F8   | F9 | F10 | F11 | F12  | F13 | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|------|------|----|-----|-----|------|-----|-------|
| 2005     |     |     |        |    |    |    |    |    |    |      |      |    |     |     |      |     |       |
| 2006     |     |     |        |    |    |    |    |    |    |      |      |    |     |     |      |     |       |
| 2007     |     |     |        |    |    |    |    |    |    |      |      |    |     |     |      |     |       |
| 2008     |     |     |        |    |    |    |    |    |    |      |      |    |     |     |      |     |       |
| 2009     |     |     |        |    |    |    |    |    |    | 0.1  | 0.3  |    |     |     |      |     | 0.03  |
| 2010     |     |     |        |    |    |    |    |    |    |      |      |    |     |     |      |     |       |
| 2011     |     |     |        |    |    |    |    |    |    |      |      |    |     |     | 0.1  |     | 0.01  |
| 2012     |     |     |        |    |    |    |    |    |    |      |      |    |     |     |      |     |       |
| 2013     |     |     |        |    |    |    |    |    |    | 0.1  |      |    |     |     |      |     | 0.01  |
| 2014     |     |     |        |    |    |    |    |    |    |      |      |    |     |     |      |     |       |
| Mean     |     |     |        |    |    |    |    |    |    | 0.03 | 0.03 |    |     |     | 0.01 |     | <0.01 |

Clay-colored Sparrow is rare at MBO, with only one spring observation and four in fall, all since September 2009. Three of the four fall records were between September 17 and 24, but the other was almost one month later, on October 18. None have yet been banded.



**FISP: Field Sparrow / Bruant des champs (*Spizella pusilla*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       | Aug 3  | Aug 3  | Oct 5  | 64   | 6 (7%) | 1    | 6     |
| 2006     | May 19 | May 19 | May 21 | 3    | 2 (3%) | 1    | 2     |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       | Sep 21 | Sep 21 | Sep 21 | 1    | 1 (1%) | 2    | 2     |
| 2008     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2009     | May 26 | May 26 | May 26 | 1    | 1 (1%) | 1    | 1     | Oct 18 | Oct 18 | Oct 18 | 1    | 1 (1%) | 1    | 1     |
| 2010     |        |        |        |      |        |      |       | Sep 23 | Sep 23 | Sep 23 | 1    | 1 (1%) | 2    | 2     |
| 2011     |        |        |        |      |        |      |       | Sep 18 | Sep 18 | Sep 18 | 1    | 1 (1%) | 1    | 1     |
| 2012     |        |        |        |      |        |      |       | Oct 3  | Oct 3  | Oct 3  | 1    | 1 (1%) | 1    | 1     |
| 2013     | Apr 19 | Apr 19 | May 18 | 30   | 3 (4%) | 1    | 3     | Sep 15 | Sep 15 | Sep 15 | 1    | 1 (1%) | 1    | 1     |
| 2014     | Apr 19 | Apr 19 | Apr 19 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| Mean     | May 5  | May 5  | May 13 | 9    | 2 (3%) | 1    | 0.7   | Sep 18 | Sep 18 | Sep 27 | 10   | 2 (2%) | 1    | 1.4   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5 | S6 | S7 | S8   | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|----|----|----|------|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |     |        |
| 2006     |     |     |     |     |     |        |    |    |    |      |    |    |    | 0.3  |      |     | 0.03   |
| 2007     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |     |        |
| 2008     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |     |        |
| 2009     |     |     |     |     |     |        |    |    |    |      |    |    |    |      | 0.1  |     | 0.01   |
| 2010     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |     |        |
| 2011     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |     |        |
| 2012     |     |     |     |     |     |        |    |    |    |      |    |    |    |      |      |     |        |
| 2013     |     |     |     |     |     |        |    |    |    | 0.3  |    |    |    | 0.1  |      |     | 0.04   |
| 2014     |     |     |     |     |     |        |    |    |    | 0.1  |    |    |    |      |      |     | 0.01   |
| Mean     |     |     |     |     |     |        |    |    |    | 0.04 |    |    |    | 0.04 | 0.01 |     | 0.01   |

| Observed | Jun  | Jul | Summer | F1   | F2 | F3 | F4 | F5 | F6   | F7   | F8   | F9   | F10  | F11 | F12  | F13 | Fall |
|----------|------|-----|--------|------|----|----|----|----|------|------|------|------|------|-----|------|-----|------|
| 2005     | 0.06 |     | 0.03   | 0.1  |    |    |    |    | 0.1  |      |      | 0.3  | 0.3  |     |      |     | 0.07 |
| 2006     |      |     |        |      |    |    |    |    |      |      |      |      |      |     |      |     |      |
| 2007     |      |     |        |      |    |    |    |    |      |      | 0.3  |      |      |     |      |     | 0.02 |
| 2008     |      |     |        |      |    |    |    |    |      |      |      |      |      |     |      |     |      |
| 2009     |      |     |        |      |    |    |    |    |      |      |      |      |      |     | 0.1  |     | 0.01 |
| 2010     |      |     |        |      |    |    |    |    |      |      | 0.3  |      |      |     |      |     | 0.02 |
| 2011     |      |     |        |      |    |    |    |    |      | 0.1  |      |      |      |     |      |     | 0.01 |
| 2012     |      |     |        |      |    |    |    |    |      |      |      |      | 0.1  |     |      |     | 0.01 |
| 2013     |      |     |        |      |    |    |    |    |      | 0.1  |      |      |      |     |      |     | 0.01 |
| 2014     |      |     |        |      |    |    |    |    |      |      |      |      |      |     |      |     |      |
| Mean     | 0.02 |     | 0.01   | 0.01 |    |    |    |    | 0.01 | 0.03 | 0.06 | 0.03 | 0.04 |     | 0.01 |     | 0.02 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5 | S6 | S7 | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|----|----|----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     |    |    |    |     |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |     |    |    |    | 1   |    |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |     |    |    |    |     |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |     |    |    |    |     |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |     |    |    |    |     |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |     |    |    |    |     |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |     |    |    |    |     |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |     |    |    |    |     |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |     |    |    |    |     |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    | 1   |    |    |    |     |    |     | 1      |
| Mean   |     |     |     |     |     |        |    |    |    | 0.1 |    |    |    | 0.1 |    |     | 0.2    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |    | 1   |     |     |     | 1    |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        |    |    |    |    |    |    |    |    |    | 0.1 |     |     |     | 0.1  |

Field Sparrow is a rare migrant at MBO with seven spring records over four seasons, and fourteen fall observations in seven years; only two have been banded in spring, and one in fall. Although records are too scarce for proper analysis of seasonal occurrence, three of the spring sightings have come in week 4, while the rest have been in week 8 or 9; the slightly more frequent fall records have all been between week 6 and 12 except for the first one in 2005, which was in week 1.

**VESP: Vesper Sparrow / Bruant vespéral (*Poocetes gramineus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First | Peak | Last | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|-------|------|------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2007     | Apr 24 | Apr 24 | May 6  | 13   | 2 (3%) | 2    | 3     |       |      |      |      |        |      |       |
| 2008     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2009     | May 31 | May 31 | May 31 | 1    | 1 (1%) | 1    | 1     |       |      |      |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2011     | Apr 24 | Apr 24 | Apr 25 | 2    | 2 (3%) | 2    | 3     |       |      |      |      |        |      |       |
| 2012     | Apr 22 | Apr 22 | May 5  | 14   | 2 (3%) | 1    | 2     |       |      |      |      |        |      |       |
| 2013     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |       |      |      |      |        |      |       |
| Mean     | May 2  | May 2  | May 9  | 8    | 2 (3%) | 2    | 0.9   |       |      |      |      |        |      |       |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4   | S5   | S6   | S7 | S8 | S9 | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|------|------|------|----|----|----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    |      |        |
| 2006     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    |      |        |
| 2007     |     |     |     |     |     |        |    |    |    | 0.3  |      | 0.1  |    |    |    |      | 0.04   |
| 2008     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    |      |        |
| 2009     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    | 0.1  | 0.01   |
| 2010     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    |      |        |
| 2011     |     |     |     |     |     |        |    |    |    | 0.3  | 0.1  |      |    |    |    |      | 0.04   |
| 2012     |     |     |     |     |     |        |    |    |    | 0.1  |      | 0.1  |    |    |    |      | 0.03   |
| 2013     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    |      |        |
| 2014     |     |     |     |     |     |        |    |    |    |      |      |      |    |    |    |      |        |
| Mean     |     |     |     |     |     |        |    |    |    | 0.07 | 0.01 | 0.03 |    |    |    | 0.01 | 0.01   |

Vesper Sparrow is a rare spring migrant at MBO, with sightings in just four of ten years, most recently in 2012. Except for a late migrant in week 10 of 2009, all other sightings have been in mid-spring, between weeks 4 and 6.

**SAVS: Savannah Sparrow / Bruant des prés (*Passerculus sandwichensis*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     | Apr 24 | Apr 30 | Jun 3  | 41   | 15 (25%) | 3    | 20    | Sep 28 | Sep 28 | Sep 28 | 1    | 1 (1%) | 1    | 1     |
| 2006     | Apr 19 | Apr 20 | Jun 5  | 48   | 13 (19%) | 3    | 19    | Sep 13 | Sep 13 | Sep 30 | 18   | 2 (2%) | 1    | 2     |
| 2007     | Apr 23 | May 5  | May 28 | 36   | 32 (46%) | 6    | 80    | Sep 14 | Sep 14 | Sep 14 | 1    | 1 (1%) | 2    | 2     |
| 2008     | Apr 18 | Apr 24 | Jun 4  | 48   | 36 (51%) | 7    | 146   | Aug 4  | Sep 27 | Oct 23 | 81   | 8 (9%) | 3    | 15    |
| 2009     | Apr 18 | May 4  | Jun 5  | 49   | 29 (42%) | 3    | 47    |        |        |        |      |        |      |       |
| 2010     | Apr 29 | Apr 29 | May 31 | 33   | 4 (6%)   | 1    | 4     | Oct 6  | Oct 6  | Oct 6  | 1    | 1 (1%) | 1    | 1     |
| 2011     | Apr 24 | Apr 24 | Apr 28 | 5    | 3 (4%)   | 1    | 3     |        |        |        |      |        |      |       |
| 2012     | Apr 20 | Apr 20 | May 6  | 17   | 3 (4%)   | 1    | 3     |        |        |        |      |        |      |       |
| 2013     | Apr 28 | May 4  | May 17 | 20   | 5 (7%)   | 2    | 6     | Sep 29 | Sep 29 | Oct 19 | 21   | 3 (3%) | 1    | 3     |
| 2014     | May 7  | May 27 | Jun 3  | 28   | 6 (9%)   | 2    | 7     | Oct 3  | Oct 3  | Oct 3  | 1    | 1 (1%) | 1    | 1     |
| Mean     | Apr 24 | Apr 30 | May 25 | 32   | 15 (21%) | 3    | 34    | Sep 18 | Sep 25 | Oct 4  | 18   | 2 (3%) | 1    | 2.5   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    | 0.2 | 0.7 | 0.7 | 0.6 | 0.3 | 0.1 | 0.4 | 0.3    |
| 2006     |     |     |     |     |     |        |    |    |    | 0.9 |     | 0.7 | 0.3 | 0.4 | 0.3 | 0.1 | 0.3    |
| 2007     |     |     |     |     |     |        |    |    |    | 0.6 | 1.4 | 3.9 | 2.7 | 2.0 | 0.9 |     | 1.1    |
| 2008     |     |     |     |     |     |        |    |    |    | 3.1 | 4.7 | 5.3 | 4.6 | 2.9 | 0.1 | 0.1 | 2.1    |
| 2009     |     |     |     |     |     |        |    |    |    | 0.9 | 1.1 | 1.3 | 1.3 | 1.0 | 1.0 | 0.1 | 0.7    |
| 2010     |     |     |     |     |     |        |    |    |    |     | 0.3 |     |     |     | 0.1 | 0.1 | 0.06   |
| 2011     |     |     |     |     |     |        |    |    |    | 0.1 | 0.3 |     |     |     |     |     | 0.04   |
| 2012     |     |     |     |     |     |        |    |    |    | 0.1 |     | 0.3 |     |     |     |     | 0.04   |
| 2013     |     |     |     |     |     |        |    |    |    |     | 0.1 | 0.3 | 0.1 | 0.3 |     |     | 0.09   |
| 2014     |     |     |     |     |     |        |    |    |    |     | 0.1 | 0.3 | 0.1 | 0.3 | 0.2 | 0.1 | 0.1    |
| Mean     |     |     |     |     |     |        |    |    |    | 0.6 | 0.9 | 1.3 | 1.0 | 0.7 | 0.3 | 0.1 | 0.5    |

| Observed | Jun  | Jul  | Summer | F1   | F2 | F3 | F4 | F5 | F6 | F7   | F8 | F9  | F10  | F11  | F12  | F13 | Fall |
|----------|------|------|--------|------|----|----|----|----|----|------|----|-----|------|------|------|-----|------|
| 2005     |      | 0.06 | 0.03   |      |    |    |    |    |    |      |    | 0.2 |      |      |      |     | 0.01 |
| 2006     |      | 0.08 | 0.05   |      |    |    |    |    |    | 0.1  |    | 0.1 |      |      |      |     | 0.02 |
| 2007     | 0.1  | 0.2  | 0.2    |      |    |    |    |    |    | 0.3  |    |     |      |      |      |     | 0.02 |
| 2008     |      | 0.8  | 0.4    | 0.1  |    |    |    |    |    |      |    | 0.7 | 0.3  | 0.7  | 0.3  |     | 0.2  |
| 2009     |      |      |        |      |    |    |    |    |    |      |    |     |      |      |      |     |      |
| 2010     |      |      |        |      |    |    |    |    |    |      |    |     | 0.1  |      |      |     | 0.01 |
| 2011     |      |      |        |      |    |    |    |    |    |      |    |     |      |      |      |     |      |
| 2012     |      |      |        |      |    |    |    |    |    |      |    |     |      |      |      |     |      |
| 2013     |      |      |        |      |    |    |    |    |    |      |    | 0.1 |      | 0.1  | 0.1  |     | 0.03 |
| 2014     |      |      |        |      |    |    |    |    |    |      |    |     | 0.1  |      |      |     | 0.01 |
| Mean     | 0.02 | 0.1  | 0.07   | 0.01 |    |    |    |    |    | 0.04 |    | 0.1 | 0.06 | 0.09 | 0.04 |     | 0.03 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     |    |     |     |     |     |     |        |
| 2006   |     |     |     |     |     |        |    |    |    | 1   |    | 1   |     |     |     |     | 2      |
| 2007   |     |     |     |     |     |        |    |    |    |     |    | 2   | 1   |     | 2   |     | 5      |
| 2008   |     |     |     |     |     |        |    |    |    | 1   |    | 1   |     |     |     |     | 2      |
| 2009   |     |     |     |     |     |        |    |    |    |     |    |     |     |     |     |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |     |    |     |     |     |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |     |    |     |     |     |     |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |     |    |     |     |     |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |     |    |     | 1   | 1   |     |     | 2      |
| 2014   |     |     |     |     |     |        |    |    |    |     |    |     |     |     |     |     |        |
| Mean   |     |     |     |     |     |        |    |    |    | 0.2 |    | 0.4 | 0.2 | 0.1 | 0.2 |     | 1.1    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7  | F8 | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|-----|----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| 2006   |     |     |        |    |    |    |    |    |    | 1   |    | 1   |     |     |     |     | 2    |
| 2007   |     |     |        |    |    |    |    |    |    | 2   |    |     |     |     |     |     | 2    |
| 2008   |     |     |        |    |    |    |    |    |    |     |    | 3   | 2   | 3   | 1   |     | 9    |
| 2009   |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |    |    |    |     |    |     |     |     |     |     |      |
| 2013   |     |     |        |    |    |    |    |    |    |     |    |     |     | 1   | 1   |     | 2    |
| 2014   |     |     |        |    |    |    |    |    |    |     |    |     | 1   |     |     |     | 1    |
| Mean   |     |     |        |    |    |    |    |    |    | 0.3 |    | 0.4 | 0.3 | 0.4 | 0.2 |     | 1.6  |

Savannah Sparrow is most regularly observed at MBO in spring, but also occurs in some years in summer and fall. Overall, the species has been significantly less numerous since 2010, with 93% of spring, 100% of summer, and 80% of fall sightings over the past decade coming between 2005 and 2009. This appears to be a function of habitat availability, as the field immediately adjacent to MBO has not been hay since 2008. Spring migration peaks between weeks 4 and 7, most commonly around the end of April. Fall migrants generally show up in the second half of the season, most commonly between weeks 9 and 11. In several years, individuals have been observed in the adjacent McGill meadow, but not banded.

**FOSP: Fox Sparrow / Bruant fauve (*Passerella iliaca*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 7  | Apr 18 | May 3  | 27   | 14 (24%) | 5    | 26    | Oct 11 | Oct 28 | Oct 30 | 20   | 18 (20%) | 25   | 135   |
| 2006     | Apr 2  | Apr 16 | May 1  | 30   | 27 (39%) | 13   | 131   | Oct 5  | Oct 21 | Oct 28 | 24   | 10 (11%) | 8    | 20    |
| 2007     |        |        |        |      |          |      |       | Oct 8  | Oct 13 | Oct 30 | 23   | 21 (23%) | 7    | 60    |
| 2008     | Apr 10 | Apr 21 | Apr 28 | 19   | 16 (23%) | 22   | 119   | Oct 4  | Oct 14 | Oct 28 | 25   | 10 (11%) | 2    | 13    |
| 2009     | Apr 10 | Apr 22 | Apr 27 | 18   | 10 (14%) | 7    | 25    | Oct 6  | Oct 25 | Oct 30 | 25   | 18 (20%) | 13   | 82    |
| 2010     | Apr 6  | Apr 19 | Apr 30 | 25   | 15 (21%) | 14   | 81    | Oct 1  | Oct 27 | Oct 30 | 30   | 24 (26%) | 15   | 120   |
| 2011     | Apr 12 | Apr 19 | May 9  | 28   | 26 (37%) | 15   | 93    | Oct 4  | Oct 21 | Oct 29 | 26   | 10 (11%) | 3    | 15    |
| 2012     | Apr 18 | Apr 24 | May 9  | 22   | 13 (19%) | 4    | 23    | Oct 4  | Oct 20 | Oct 29 | 26   | 23 (25%) | 23   | 125   |
| 2013     | Apr 16 | Apr 19 | May 6  | 21   | 18 (26%) | 32   | 217   | Sep 26 | Oct 15 | Oct 30 | 35   | 20 (22%) | 7    | 47    |
| 2014     | Apr 14 | Apr 17 | May 6  | 23   | 23 (34%) | 21   | 167   | Sep 23 | Oct 29 | Oct 30 | 38   | 26 (29%) | 34   | 169   |
| Mean     | Apr 10 | Apr 19 | May 3  | 24   | 18 (26%) | 15   | 88    | Oct 3  | Oct 21 | Oct 29 | 27   | 18 (20%) | 14   | 79    |

| Observed | Nov  | Dec  | Jan | Feb | Mar  | Winter | S1   | S2  | S3  | S4  | S5   | S6  | S7   | S8  | S9 | S10 | Spring |
|----------|------|------|-----|-----|------|--------|------|-----|-----|-----|------|-----|------|-----|----|-----|--------|
| 2005     |      |      |     |     |      |        |      | 0.2 | 0.7 | 1.5 | 1.1  | 0.4 |      |     |    |     | 0.4    |
| 2006     | 1.4  |      |     |     |      |        | 0.3  | 0.3 | 3.7 | 5.3 | 7.1  | 2.9 |      |     |    |     | 1.9    |
| 2007     | 0.06 |      |     |     |      |        | 0.02 |     |     |     |      |     |      |     |    |     |        |
| 2008     | 0.3  |      |     |     |      |        | 0.08 |     | 0.1 | 1.1 | 14.0 | 1.7 |      |     |    |     | 1.7    |
| 2009     |      |      |     |     |      |        |      |     | 0.5 | 0.1 | 2.9  | 0.1 |      |     |    |     | 0.4    |
| 2010     | 2.1  |      |     |     |      |        | 0.6  |     | 0.1 | 2.9 | 8.0  | 0.6 |      |     |    |     | 1.2    |
| 2011     | 1.0  |      |     |     |      |        | 0.3  |     |     | 1.7 | 7.3  | 2.9 | 1.3  | 0.1 |    |     | 1.3    |
| 2012     | 0.9  | 0.3  |     |     | 0.4  |        | 0.5  |     |     | 1.3 | 1.6  | 0.3 | 0.1  |     |    |     | 0.3    |
| 2013     | 0.5  |      |     |     |      |        | 0.08 |     |     | 1.1 | 19.9 | 9.7 | 0.3  |     |    |     | 3.1    |
| 2014     |      |      |     |     |      |        |      |     |     | 3.6 | 12.9 | 5.9 | 1.6  |     |    |     | 2.5    |
| Mean     | 0.8  | 0.02 |     |     | 0.02 | 0.2    | 0.03 | 0.4 | 1.7 | 7.6 | 2.6  | 0.4 | 0.03 |     |    |     | 1.3    |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8   | F9   | F10 | F11 | F12 | F13  | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|------|------|-----|-----|-----|------|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |      |      |     | 2.0 | 5.7 | 11.9 | 1.5  |
| 2006     |     |     |        |    |    |    |    |    |    |    |      |      | 0.6 | 0.3 | 1.9 | 0.1  | 0.2  |
| 2007     |     |     |        |    |    |    |    |    |    |    |      |      | 0.4 | 2.3 | 3.1 | 2.7  | 0.7  |
| 2008     |     |     |        |    |    |    |    |    |    |    |      |      | 0.3 | 0.4 | 0.7 | 0.4  | 0.1  |
| 2009     |     |     |        |    |    |    |    |    |    |    |      |      | 1.0 | 0.6 | 2.3 | 7.9  | 0.9  |
| 2010     |     |     |        |    |    |    |    |    |    |    |      | 0.3  | 1.1 | 4.3 | 4.3 | 7.1  | 1.3  |
| 2011     |     |     |        |    |    |    |    |    |    |    |      |      | 0.4 | 0.1 | 1.1 | 0.4  | 0.2  |
| 2012     |     |     |        |    |    |    |    |    |    |    |      |      | 0.9 | 3.0 | 8.7 | 5.3  | 1.4  |
| 2013     |     |     |        |    |    |    |    |    |    |    |      | 0.4  | 0.3 | 3.4 | 2.0 | 0.6  | 0.5  |
| 2014     |     |     |        |    |    |    |    |    |    |    | 0.1  | 0.1  | 0.4 | 4.6 | 4.6 | 14.3 | 1.9  |
| Mean     |     |     |        |    |    |    |    |    |    |    | 0.01 | 0.09 | 0.6 | 2.1 | 3.4 | 5.1  | 0.9  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3  | S4   | S5  | S6  | S7  | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|-----|-----|------|-----|-----|-----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |     |     | 4    | 3   | 1   |     |    |    |     | 8      |
| 2006   | 1   |     |     |     |     | 1      |    | 1   | 5   | 3    |     |     |     |    |    |     | 9      |
| 2007   |     |     |     |     |     |        |    |     |     |      |     |     |     |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |     |     | 23   |     |     |     |    |    |     | 23     |
| 2009   |     |     |     |     |     |        |    |     |     | 1    | 1   |     |     |    |    |     | 2      |
| 2010   | 7   |     |     |     |     | 7      |    |     |     | 16   |     |     |     |    |    |     | 16     |
| 2011   | 6   |     |     |     |     | 6      |    |     |     | 12   | 4   | 1   | 1   |    |    |     | 18     |
| 2012   | 2   |     |     |     |     | 2      |    |     |     | 2    | 4   |     |     |    |    |     | 6      |
| 2013   |     |     |     |     |     |        |    |     |     | 32   | 10  |     |     |    |    |     | 42     |
| 2014   |     |     |     |     |     |        |    |     |     | 28   | 6   |     |     |    |    |     | 34     |
| Mean   | 2.0 |     |     |     |     | 1.8    |    | 0.5 | 2.5 | 12.1 | 2.8 | 0.2 | 0.1 |    |    |     | 15.8   |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |     |     | 1   | 5   | 20  | 26   |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |     | 3   |     | 2   |     | 5    |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |     | 2   | 10  | 9   | 5   | 26   |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |     | 1   | 3   | 1   | 3   | 8    |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |     | 5   | 1   | 9   | 17  | 32   |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |     | 4   | 13  | 12  | 22  | 51   |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |     | 1   |     | 3   | 1   | 5    |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |     | 4   | 12  | 25  | 10  | 51   |
| 2013   |     |     |        |    |    |    |    |    |    |    |    | 2   |     | 11  | 2   | 1   | 16   |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |     | 1   | 9   | 15  | 19  | 44   |
| Mean   |     |     |        |    |    |    |    |    |    |    |    | 0.2 | 2.1 | 6.0 | 8.3 | 9.8 | 26.4 |

Fox Sparrow is a fairly common early spring and late fall migrant, generally continuing in small numbers into early winter. Abundance varies considerably from year to year, with none at all observed in spring 2007 and unusually low numbers also in 2005, 2009, and 2012, but particularly many in 2008, 2013, and 2014. The spring lows were preceded by distinctly below average fall numbers in 2006, 2008, and 2011, but of the three fall seasons with the highest number of observations (2005, 2010, and 2012), only one was followed by a high spring. There is usually a sharp peak to spring migration in week 4, while the fall peak is more spread out over weeks 11 to 13.

**SOSP: Song Sparrow / Bruant chanteur (*Melospiza melodia*)**

| Observed | First  | Peak   | Last  | Span | # days    | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|-----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 9  | Jun 3 | 60   | 59 (100%) | 25   | 842   | Aug 1 | Sep 28 | Oct 30 | 91   | 87 (99%) | 36   | 974   |
| 2006     | Mar 29 | Apr 19 | Jun 5 | 69   | 68 (99%)  | 35   | 963   | Aug 1 | Aug 11 | Oct 29 | 90   | 90 (99%) | 60   | 1933  |
| 2007     | Mar 28 | Apr 24 | Jun 5 | 70   | 69 (99%)  | 35   | 796   | Aug 1 | Aug 3  | Oct 30 | 91   | 90 (99%) | 32   | 923   |
| 2008     | Apr 1  | Apr 18 | Jun 5 | 66   | 65 (93%)  | 25   | 712   | Aug 1 | Oct 17 | Oct 30 | 91   | 88 (97%) | 29   | 881   |
| 2009     | Mar 28 | Apr 20 | Jun 5 | 70   | 69 (100%) | 27   | 711   | Aug 1 | Sep 26 | Oct 30 | 91   | 90 (99%) | 40   | 1062  |
| 2010     | Mar 28 | Apr 6  | Jun 5 | 70   | 70 (100%) | 16   | 638   | Aug 1 | Aug 2  | Oct 30 | 91   | 89 (98%) | 26   | 773   |
| 2011     | Mar 29 | Apr 24 | Jun 5 | 69   | 69 (99%)  | 24   | 538   | Aug 1 | Aug 19 | Oct 29 | 90   | 87 (96%) | 43   | 773   |
| 2012     | Mar 28 | Apr 18 | Jun 5 | 70   | 70 (100%) | 24   | 794   | Aug 1 | Aug 24 | Oct 29 | 90   | 88 (97%) | 29   | 876   |
| 2013     | Apr 4  | Apr 19 | Jun 5 | 63   | 62 (89%)  | 42   | 789   | Aug 1 | Aug 3  | Oct 29 | 90   | 86 (95%) | 50   | 1229  |
| 2014     | Apr 1  | Apr 24 | Jun 4 | 65   | 64 (94%)  | 36   | 878   | Aug 1 | Oct 11 | Oct 30 | 91   | 90 (99%) | 21   | 737   |
| Mean     | Mar 30 | Apr 18 | Jun 4 | 67   | 66 (97%)  | 29   | 766   | Aug 1 | Sep 1  | Oct 29 | 91   | 88 (98%) | 37   | 1016  |

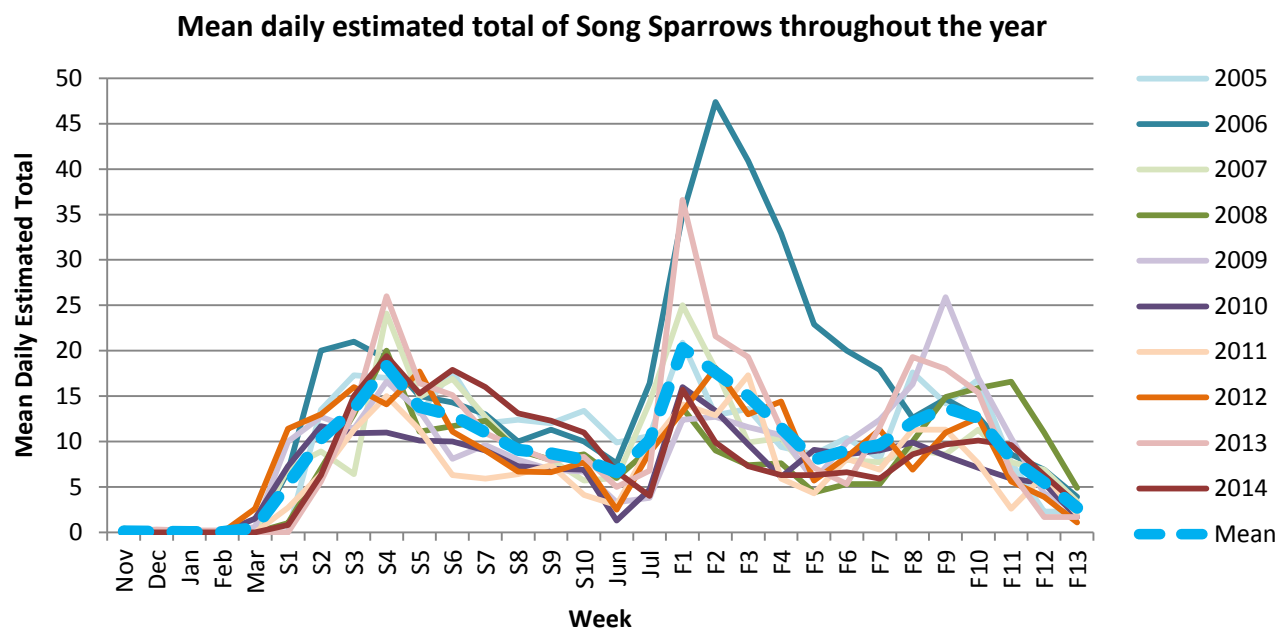
| Observed | Nov | Dec  | Jan  | Feb  | Mar | Winter | S1   | S2   | S3   | S4   | S5   | S6   | S7   | S8   | S9   | S10  | Spring |
|----------|-----|------|------|------|-----|--------|------|------|------|------|------|------|------|------|------|------|--------|
| 2005     |     |      |      |      |     |        |      | 13.5 | 17.3 | 17.0 | 13.1 | 17.7 | 12.0 | 12.4 | 12.0 | 13.4 | 14.3   |
| 2006     |     |      |      |      |     |        | 6.7  | 20.0 | 21.0 | 19.1 | 15.0 | 14.3 | 13.0 | 10.0 | 11.3 | 10.0 | 14.0   |
| 2007     | 0.1 | 0.1  |      |      | 0.1 | 0.09   | 7.0  | 8.9  | 6.4  | 24.1 | 14.9 | 16.9 | 12.7 | 9.1  | 8.0  | 5.7  | 11.4   |
| 2008     | 0.4 |      |      |      |     | 0.1    | 1.0  | 7.0  | 13.0 | 20.0 | 11.1 | 11.7 | 12.3 | 9.0  | 8.0  | 8.6  | 10.2   |
| 2009     |     |      |      |      | 0.6 | 0.2    | 10.0 | 12.7 | 11.4 | 16.6 | 13.4 | 8.1  | 9.6  | 8.0  | 6.9  | 6.7  | 10.3   |
| 2010     | 0.3 |      |      |      | 1.5 | 0.4    | 7.3  | 11.7 | 10.9 | 11.0 | 10.1 | 10.0 | 9.0  | 7.3  | 7.0  | 6.9  | 9.1    |
| 2011     | 0.1 |      |      |      |     | 0.03   | 2.7  | 6.4  | 11.3 | 15.0 | 11.3 | 6.3  | 5.9  | 6.4  | 7.4  | 4.1  | 7.7    |
| 2012     | 0.2 |      |      |      | 2.6 | 0.6    | 11.4 | 13.0 | 16.0 | 14.1 | 17.7 | 11.1 | 9.0  | 6.7  | 6.6  | 7.7  | 11.3   |
| 2013     | 0.1 | 0.3  | 0.2  | 0.2  |     | 0.1    |      | 5.6  | 13.3 | 26.0 | 16.4 | 15.1 | 10.9 | 9.3  | 7.9  | 8.3  | 11.3   |
| 2014     |     |      |      |      |     |        | 0.8  | 6.3  | 15.0 | 19.4 | 15.3 | 17.9 | 16.0 | 13.1 | 12.3 | 11.0 | 12.9   |
| Mean     | 0.1 | 0.06 | 0.04 | 0.01 | 0.5 | 0.2    | 5.3  | 10.3 | 13.6 | 18.3 | 13.8 | 12.9 | 11.0 | 9.1  | 8.7  | 8.0  | 11.2   |

| Observed | Jun | Jul  | Summer | F1   | F2   | F3   | F4   | F5   | F6   | F7   | F8   | F9   | F10  | F11  | F12  | F13 | Fall |
|----------|-----|------|--------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|
| 2005     | 9.9 | 10.6 | 10.2   | 20.9 | 12.9 | 13.6 | 9.4  | 8.6  | 10.4 | 8.1  | 17.6 | 14.2 | 16.8 | 7.7  | 2.3  | 2.3 | 11.1 |
| 2006     | 7.6 | 16.4 | 12.4   | 35.0 | 47.4 | 40.9 | 32.9 | 22.9 | 20.0 | 17.9 | 12.6 | 14.7 | 12.7 | 8.6  | 6.9  | 3.9 | 21.2 |
| 2007     | 6.0 | 14.3 | 9.8    | 25.0 | 18.0 | 9.9  | 10.4 | 5.9  | 8.0  | 7.7  | 9.1  | 8.6  | 11.3 | 7.7  | 6.9  | 3.4 | 10.1 |
| 2008     | 6.0 | 9.2  | 7.6    | 13.7 | 9.0  | 7.4  | 7.6  | 4.4  | 5.3  | 5.3  | 10.0 | 14.9 | 15.9 | 16.6 | 11.0 | 4.9 | 9.7  |
| 2009     | 3.3 | 3.8  | 3.6    | 12.4 | 12.7 | 11.6 | 10.7 | 5.7  | 9.9  | 12.4 | 16.3 | 25.9 | 17.0 | 10.4 | 4.3  | 2.4 | 11.7 |
| 2010     | 1.3 | 4.7  | 3.6    | 16.0 | 13.4 | 9.7  | 6.1  | 9.1  | 8.6  | 9.0  | 9.9  | 8.4  | 7.1  | 5.9  | 5.4  | 1.7 | 8.5  |
| 2011     | 3.0 | 9.5  | 6.7    | 14.1 | 12.9 | 17.3 | 5.9  | 4.3  | 8.1  | 6.9  | 11.3 | 11.3 | 7.6  | 2.6  | 6.3  | 2.0 | 8.5  |
| 2012     | 2.5 | 8.8  | 5.6    | 13.3 | 18.1 | 13.0 | 14.4 | 5.7  | 8.3  | 11.3 | 6.9  | 11.0 | 12.6 | 5.6  | 3.9  | 1.1 | 9.6  |
| 2013     | 5.0 | 6.8  | 6.0    | 36.6 | 21.6 | 19.3 | 11.4 | 7.1  | 5.3  | 11.6 | 19.3 | 18.0 | 15.4 | 6.6  | 1.7  | 1.7 | 13.5 |
| 2014     | 6.7 | 4.0  | 5.1    | 15.7 | 9.9  | 7.3  | 6.3  | 6.3  | 6.6  | 5.9  | 8.6  | 9.7  | 10.1 | 9.6  | 6.3  | 3.1 | 8.1  |
| Mean     | 6.6 | 10.1 | 8.5    | 20.3 | 17.6 | 15.0 | 11.5 | 8.0  | 9.0  | 9.6  | 12.1 | 13.7 | 12.6 | 8.1  | 5.5  | 2.7 | 11.2 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    | 5   | 3   | 7   | 7   | 2   |     | 2   | 3   | 1   | 30     |
| 2006   |     |     |     |     |     |        |    | 2   | 5   | 7   |     | 1   | 2   | 1   | 1   | 1   | 20     |
| 2007   |     |     |     |     | 1   | 1      |    |     |     | 9   |     |     | 3   |     | 2   |     | 14     |
| 2008   |     |     |     |     |     |        |    |     |     | 8   | 2   |     | 1   | 1   | 2   | 1   | 15     |
| 2009   |     |     |     |     |     |        |    |     |     | 1   | 6   | 2   | 1   |     | 2   | 1   | 13     |
| 2010   |     |     |     |     | 3   | 3      |    |     |     | 14  | 1   | 2   |     | 5   | 4   | 1   | 27     |
| 2011   | 1   |     |     |     |     | 1      |    |     |     | 3   | 1   |     | 1   | 1   | 1   |     | 7      |
| 2012   |     |     |     |     | 2   | 2      |    |     |     | 10  | 4   | 2   | 4   | 2   | 1   |     | 23     |
| 2013   | 1   | 1   |     |     |     | 2      |    |     |     | 9   | 2   | 5   |     | 1   |     | 2   | 19     |
| 2014   |     |     |     |     |     |        |    |     |     | 10  | 6   | 3   | 2   |     | 2   | 2   | 25     |
| Mean   | 0.3 | 0.1 |     |     | 0.8 | 1.0    |    | 3.5 | 4.0 | 7.8 | 2.9 | 1.7 | 1.4 | 1.3 | 1.8 | 0.9 | 19.3   |

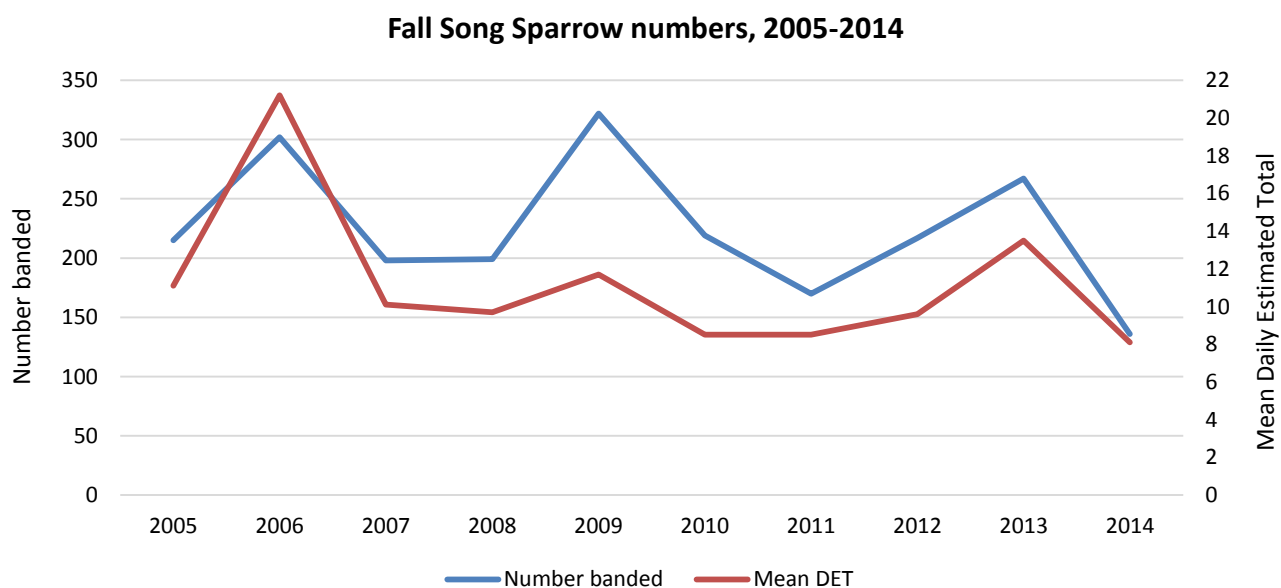
| Banded | Jun | Jul  | Summer | F1   | F2   | F3   | F4   | F5  | F6   | F7   | F8   | F9   | F10  | F11  | F12  | F13 | Fall  |
|--------|-----|------|--------|------|------|------|------|-----|------|------|------|------|------|------|------|-----|-------|
| 2005   |     | 4    | 4      | 17   | 17   | 23   | 13   | 24  | 13   | 23   | 27   | 18   | 25   | 9    | 5    | 1   | 215   |
| 2006   |     | 10   | 10     | 34   | 78   | 49   | 27   | 16  | 21   | 16   | 10   | 13   | 11   | 6    | 13   | 8   | 302   |
| 2007   |     | 3    | 3      | 57   | 20   | 9    | 9    | 6   | 7    | 9    | 11   | 15   | 18   | 17   | 16   | 4   | 198   |
| 2008   |     |      |        | 21   | 12   | 11   | 8    | 7   | 11   | 10   | 13   | 24   | 32   | 32   | 13   | 5   | 199   |
| 2009   | 3   | 7    | 10     | 25   | 32   | 37   | 30   | 10  | 10   | 34   | 28   | 50   | 33   | 12   | 12   | 9   | 322   |
| 2010   | 2   | 18   | 20     | 34   | 49   | 27   | 10   | 16  | 10   | 6    | 16   | 9    | 10   | 15   | 16   | 1   | 219   |
| 2011   | 1   | 17   | 18     | 31   | 16   | 22   | 9    | 5   | 4    | 6    | 10   | 30   | 12   | 6    | 15   | 4   | 170   |
| 2012   | 1   | 25   | 26     | 56   | 37   | 14   | 16   | 2   | 14   | 13   | 9    | 19   | 19   | 8    | 8    | 2   | 217   |
| 2013   | 4   | 25   | 29     | 95   | 33   | 22   | 17   | 8   | 4    | 7    | 19   | 21   | 22   | 12   | 3    | 4   | 267   |
| 2014   | 2   | 5    | 7      | 26   | 20   | 8    | 13   | 5   | 6    | 5    | 5    | 14   | 8    | 7    | 11   | 8   | 136   |
| Mean   | 2.2 | 12.7 | 14.1   | 39.6 | 31.4 | 22.2 | 15.2 | 9.9 | 10.0 | 12.9 | 14.8 | 21.3 | 19.0 | 12.4 | 11.2 | 4.6 | 224.5 |

Song Sparrow is among the most common species at MBO from early spring through late fall, but there are only scattered mid-winter records. Spring migration most commonly peaks in week 4, but as early as week 2 or as late as week 6. Spring numbers declined from 2005 to 2011, but have rebounded since then. More Song Sparrows have been banded in summer than any other species, with a high of 29 in 2013. Fall numbers generally are highest in early August, although there is a second wave of migration that peaks around late September. Fall numbers were exceptionally high in 2006, and were lowest in 2014.



The figure above shows the unusual pattern of abundance of Song Sparrows, with three distinct peaks in early spring, mid-summer / early fall, and mid-fall. Based on banding data, the spike centered around the first week of August is overwhelmingly driven by juveniles. While some of these are the offspring of pairs breeding at MBO, the numbers in some years indicate that there must also be some local dispersal occurring. Numbers typically drop over the course of August before starting to increase again throughout September; the second peak presumably represents migrants coming from farther north, and includes a mix of adults and juveniles. The figure above also illustrates the exceptionally high numbers recorded in 2006, as well as an unusually large “secondary peak” in 2009.

The figure below shows that there is generally good correlation between the number of Song Sparrows banded and observed at MBO in fall, although fluctuations are more noticeable among numbers banded. Overall there is a slight declining trend over the ten years, although this is influenced heavily by the peak in 2006, and the low in 2014.



**LISP: Lincoln's Sparrow / Bruant de Lincoln (*Melospiza lincolni*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 12 | May 12 | May 20 | 9    | 4 (7%)  | 1    | 4     | Sep 11 | Sep 21 | Oct 24 | 44   | 11 (12%) | 4    | 17    |
| 2006     | May 6  | May 16 | May 19 | 14   | 5 (7%)  | 2    | 7     | Aug 30 | Sep 10 | Oct 21 | 53   | 25 (27%) | 6    | 45    |
| 2007     | May 12 | May 13 | May 31 | 20   | 6 (9%)  | 2    | 8     | Sep 1  | Sep 24 | Oct 13 | 43   | 18 (20%) | 3    | 27    |
| 2008     | May 6  | May 12 | May 28 | 23   | 9 (13%) | 3    | 12    | Aug 29 | Sep 27 | Oct 12 | 45   | 19 (21%) | 7    | 33    |
| 2009     | May 3  | May 3  | May 23 | 21   | 5 (7%)  | 1    | 5     | Sep 14 | Sep 20 | Oct 13 | 30   | 24 (26%) | 5    | 41    |
| 2010     | May 13 | May 13 | May 15 | 3    | 2 (3%)  | 1    | 2     | Aug 24 | Sep 16 | Oct 17 | 55   | 18 (20%) | 2    | 21    |
| 2011     | May 12 | May 13 | May 28 | 17   | 6 (9%)  | 4    | 12    | Sep 12 | Sep 25 | Oct 3  | 22   | 9 (10%)  | 3    | 13    |
| 2012     | May 9  | May 13 | May 31 | 23   | 6 (9%)  | 3    | 10    | Aug 29 | Oct 4  | Oct 17 | 50   | 19 (21%) | 13   | 44    |
| 2013     | May 19 | May 19 | May 27 | 9    | 5 (7%)  | 3    | 8     | Sep 9  | Sep 9  | Oct 19 | 41   | 10 (11%) | 1    | 10    |
| 2014     | May 5  | May 5  | May 24 | 20   | 7 (10%) | 6    | 14    | Sep 8  | Sep 15 | Oct 27 | 50   | 21 (23%) | 3    | 35    |
| Mean     | May 9  | May 11 | May 24 | 16   | 6 (8%)  | 3    | 8.2   | Sep 4  | Sep 20 | Oct 16 | 43   | 17 (19%) | 5    | 29    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|------|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |     | 0.1 | 0.4 |     |      | 0.07   |
| 2006     |     |     |     |     |     |        |    |    |    |    |    | 0.1 |     | 0.9 |     |      | 0.1    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |     | 0.7 | 0.3 |     | 0.1  | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    | 0.3 | 0.7 | 0.4 | 0.3 |      | 0.2    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.3 | 0.1 | 0.1 | 0.1 |      | 0.07   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |     | 0.3 |     |     |      | 0.03   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |     | 1.0 | 0.4 | 0.3 |      | 0.2    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |     | 1.0 | 0.1 | 0.1 | 0.1  | 0.1    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |     |     | 0.7 | 0.4 |      | 0.1    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    | 0.9 | 0.9 | 0.1 | 0.1 |      | 0.2    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.2 | 0.5 | 0.4 | 0.1 | 0.03 | 0.1    |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4   | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13  | Fall |
|----------|-----|-----|--------|----|----|----|------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 2005     |     |     |        |    |    |    |      |     | 0.1 | 0.4 | 1.1 |     |     | 0.5 | 0.1 | 0.1  | 0.2  |
| 2006     |     |     |        |    |    |    |      | 0.6 | 2.9 | 0.6 | 1.1 | 0.4 | 0.1 | 0.4 | 0.3 |      | 0.5  |
| 2007     |     |     |        |    |    |    |      | 0.1 | 0.6 | 0.9 | 0.6 | 0.6 | 0.9 | 0.3 |     |      | 0.3  |
| 2008     |     |     |        |    |    |    |      | 0.3 | 0.9 | 0.3 | 0.9 | 1.9 | 0.3 | 0.3 |     |      | 0.4  |
| 2009     |     |     |        |    |    |    |      |     |     | 1.1 | 2.3 | 0.9 | 0.9 | 0.7 |     |      | 0.5  |
| 2010     |     |     |        |    |    |    | 0.1  |     | 0.3 | 0.7 | 0.3 | 0.3 | 0.9 | 0.3 | 0.1 |      | 0.2  |
| 2011     |     |     |        |    |    |    |      |     |     | 0.7 | 1.0 |     | 0.1 |     |     |      | 0.1  |
| 2012     |     |     |        |    |    |    |      | 0.1 | 0.1 | 0.9 | 1.0 | 0.4 | 3.6 |     | 0.1 |      | 0.5  |
| 2013     |     |     |        |    |    |    |      |     | 0.1 | 0.1 | 0.6 | 0.1 | 0.1 | 0.1 | 0.1 |      | 0.1  |
| 2014     |     |     |        |    |    |    |      |     | 0.3 | 1.3 | 1.3 | 0.3 | 0.7 | 0.9 | 0.1 | 0.1  | 0.4  |
| Mean     |     |     |        |    |    |    | 0.01 | 0.1 | 0.5 | 0.7 | 1.0 | 0.5 | 0.8 | 0.3 | 0.1 | 0.03 | 0.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |     | 1   | 1   |     |     | 2      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    | 1   |     | 4   |     |     | 5      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |     | 4   | 1   |     | 1   | 6      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    | 2   | 2   | 3   | 2   |     | 9      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    | 1   | 1   | 1   | 1   |     | 4      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |     | 2   |     |     |     | 2      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |     | 5   | 3   | 2   |     | 10     |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |     | 6   | 1   | 1   | 1   | 9      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |     |     | 5   | 2   |     | 7      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |     | 5   | 1   | 1   |     | 7      |
| Mean   |     |     |     |     |     |        |    |    |    |    |    | 0.4 | 2.6 | 2.0 | 0.9 | 0.2 | 6.1    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |     |     |     | 4   | 7   |     |     |     |     |     | 11   |
| 2006   |     |     |        |    |    |    |     | 1   | 6   | 1   | 5   | 2   | 1   | 1   |     |     | 17   |
| 2007   |     |     |        |    |    |    |     | 1   | 4   | 2   | 3   | 4   | 4   | 2   |     |     | 20   |
| 2008   |     |     |        |    |    |    |     | 1   | 3   | 2   | 2   | 5   | 1   | 1   |     |     | 15   |
| 2009   |     |     |        |    |    |    |     |     |     | 5   | 4   | 2   | 2   | 2   |     |     | 15   |
| 2010   |     |     |        |    |    |    | 1   |     | 1   | 2   | 1   | 1   | 3   | 2   |     |     | 11   |
| 2011   |     |     |        |    |    |    |     |     |     | 2   | 3   |     |     |     |     |     | 5    |
| 2012   |     |     |        |    |    |    |     | 1   | 1   | 2   | 4   | 2   | 11  |     | 1   |     | 22   |
| 2013   |     |     |        |    |    |    |     |     | 1   |     | 1   |     |     | 1   |     |     | 3    |
| 2014   |     |     |        |    |    |    |     |     | 1   | 2   | 3   | 2   | 1   |     | 1   | 1   | 11   |
| Mean   |     |     |        |    |    |    | 0.1 | 0.4 | 1.7 | 2.2 | 3.3 | 1.8 | 2.3 | 0.9 | 0.2 | 0.1 | 13.0 |

Lincoln's Sparrow is a regular but uncommon spring and fall migrant. Most years the first spring migrants arrive between May 5 and 13, peaking shortly thereafter in week 7 or 8, and the migration window spans only two to three weeks. A few early fall migrants occasionally arrive in late August or early September, but the peak of migration is usually somewhere between weeks 6 and 10. Fall numbers have been relatively consistent over time except for unusually low counts in 2011 and 2013.



**SWSP: Swamp Sparrow / Bruant des marais (*Melospiza georgiana*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 9  | Apr 26 | Jun 3 | 56   | 54 (92%) | 9    | 164   | Aug 1 | Sep 25 | Oct 24 | 85   | 59 (67%) | 8    | 152   |
| 2006     | Apr 10 | Apr 25 | Jun 5 | 57   | 54 (78%) | 9    | 152   | Aug 1 | Aug 2  | Oct 23 | 84   | 52 (57%) | 6    | 115   |
| 2007     | Apr 21 | Apr 28 | Jun 4 | 45   | 21 (30%) | 3    | 34    | Aug 1 | Sep 24 | Oct 30 | 91   | 57 (63%) | 6    | 137   |
| 2008     | Apr 20 | May 7  | Jun 4 | 46   | 42 (60%) | 6    | 133   | Aug 1 | Sep 23 | Oct 23 | 84   | 50 (55%) | 6    | 101   |
| 2009     | Apr 19 | Apr 27 | Jun 4 | 47   | 45 (65%) | 8    | 117   | Aug 1 | Oct 10 | Oct 29 | 90   | 53 (58%) | 15   | 122   |
| 2010     | Apr 7  | May 1  | Jun 5 | 60   | 47 (67%) | 12   | 107   | Aug 1 | Sep 23 | Oct 29 | 90   | 48 (53%) | 5    | 81    |
| 2011     | Apr 12 | May 3  | Jun 1 | 51   | 38 (54%) | 8    | 131   | Aug 1 | Aug 3  | Oct 25 | 86   | 41 (45%) | 4    | 74    |
| 2012     | Apr 17 | May 2  | Jun 5 | 50   | 44 (63%) | 8    | 126   | Aug 1 | Oct 5  | Oct 28 | 89   | 52 (57%) | 5    | 105   |
| 2013     | Apr 12 | Apr 21 | Jun 5 | 55   | 50 (71%) | 8    | 177   | Aug 1 | Aug 2  | Oct 25 | 86   | 58 (64%) | 7    | 129   |
| 2014     | Apr 15 | May 9  | Jun 4 | 51   | 49 (72%) | 8    | 186   | Aug 1 | Oct 11 | Oct 29 | 90   | 59 (65%) | 7    | 124   |
| Mean     | Apr 14 | Apr 29 | Jun 4 | 52   | 44 (65%) | 8    | 133   | Aug 1 | Sep 12 | Oct 26 | 88   | 53 (58%) | 7    | 114   |

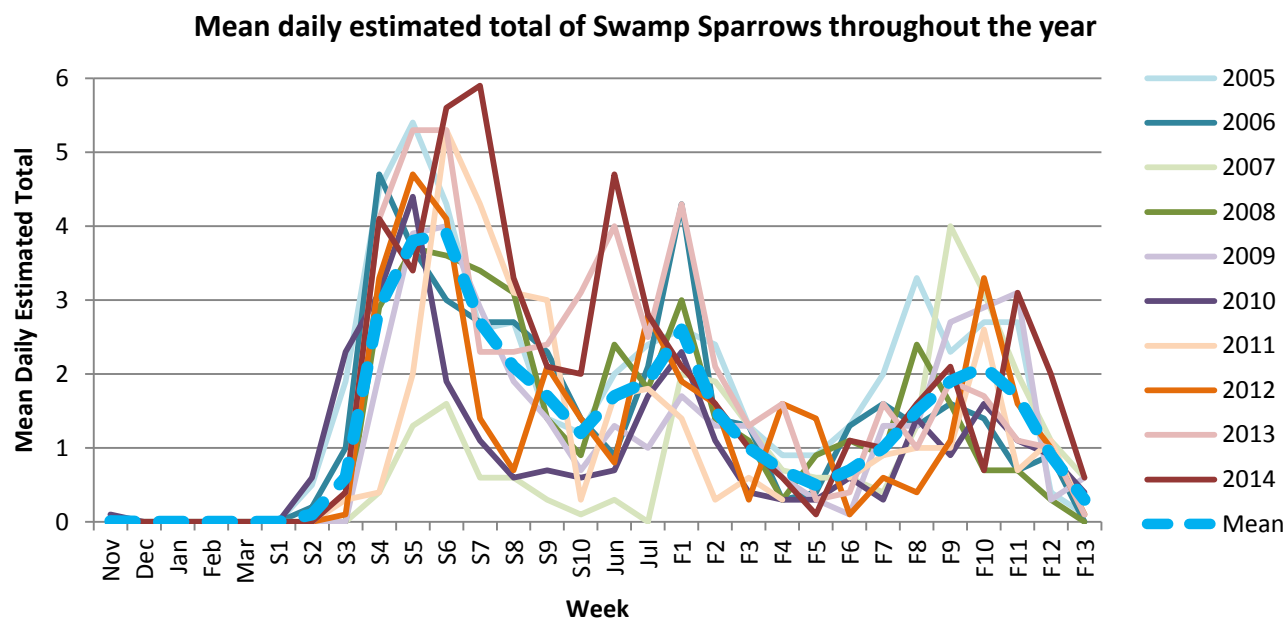
| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     |      |     |     |     |     |        |    | 0.5 | 1.9 | 4.5 | 5.4 | 4.3 | 2.6 | 2.7 | 1.4 | 1.2 | 2.8    |
| 2006     |      |     |     |     |     |        |    | 0.2 | 1.0 | 4.7 | 3.7 | 3.0 | 2.7 | 2.7 | 2.3 | 1.4 | 2.2    |
| 2007     |      |     |     |     |     |        |    |     |     | 0.4 | 1.3 | 1.6 | 0.6 | 0.6 | 0.3 | 0.1 | 0.5    |
| 2008     |      |     |     |     |     |        |    |     |     | 2.9 | 3.7 | 3.6 | 3.4 | 3.1 | 1.4 | 0.9 | 1.9    |
| 2009     |      |     |     |     |     |        |    |     |     | 2.0 | 3.9 | 4.0 | 2.9 | 1.9 | 1.4 | 0.7 | 1.7    |
| 2010     | 0.1  |     |     |     |     | 0.03   |    | 0.6 | 2.3 | 3.1 | 4.4 | 1.9 | 1.1 | 0.6 | 0.7 | 0.6 | 1.5    |
| 2011     |      |     |     |     |     |        |    |     | 0.3 | 0.4 | 2.0 | 5.3 | 4.3 | 3.1 | 3.0 | 0.3 | 1.9    |
| 2012     |      |     |     |     |     |        |    |     | 0.1 | 3.3 | 4.7 | 4.1 | 1.4 | 0.7 | 2.1 | 1.4 | 1.8    |
| 2013     |      |     |     |     |     |        |    |     | 0.4 | 4.1 | 5.3 | 5.3 | 2.3 | 2.3 | 2.4 | 3.1 | 2.5    |
| 2014     |      |     |     |     |     |        |    |     | 0.4 | 4.1 | 3.4 | 5.6 | 5.9 | 3.3 | 2.1 | 2.0 | 2.7    |
| Mean     | 0.02 |     |     |     |     | <0.01  |    | 0.1 | 0.6 | 2.9 | 3.8 | 3.9 | 2.7 | 2.1 | 1.7 | 1.2 | 1.9    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     | 2.0 | 2.4 | 2.2    | 2.6 | 2.4 | 1.3 | 0.9 | 0.9 | 1.3 | 2.0 | 3.3 | 2.3 | 2.7 | 2.7 | 0.4 | 0.1 | 1.7  |
| 2006     | 0.9 | 2.1 | 1.5    | 4.3 | 1.4 | 1.3 | 0.3 | 0.4 | 1.3 | 1.6 | 1.3 | 1.6 | 1.4 | 0.7 | 0.9 |     | 1.3  |
| 2007     | 0.3 |     | 0.2    | 2.0 | 1.9 | 1.3 | 0.7 | 0.6 | 0.6 | 0.4 | 1.3 | 4.0 | 3.1 | 2.0 | 1.1 | 0.6 | 1.5  |
| 2008     | 2.4 | 1.8 | 2.1    | 3.0 | 1.4 | 1.1 | 0.3 | 0.9 | 1.1 | 0.9 | 2.4 | 1.6 | 0.7 | 0.7 | 0.3 |     | 1.1  |
| 2009     | 1.3 | 1.0 | 1.1    | 1.7 | 1.3 | 1.3 | 0.6 | 0.3 | 0.1 | 1.3 | 1.3 | 2.7 | 2.9 | 3.1 | 0.3 | 0.6 | 1.3  |
| 2010     | 0.7 | 1.7 | 1.3    | 2.3 | 1.1 | 0.4 | 0.3 | 0.3 | 0.6 | 0.3 | 1.4 | 0.9 | 1.6 | 1.1 | 0.9 | 0.4 | 0.9  |
| 2011     | 1.7 | 1.8 | 1.7    | 1.4 | 0.3 | 0.6 | 0.3 |     | 0.6 | 0.9 | 1.0 | 1.0 | 2.6 | 0.7 | 1.1 | 0.1 | 0.8  |
| 2012     | 0.8 | 2.8 | 1.8    | 1.9 | 1.6 | 0.3 | 1.6 | 1.4 | 0.1 | 0.6 | 0.4 | 1.1 | 3.3 | 1.6 | 1.0 | 0.1 | 1.2  |
| 2013     | 4.0 | 2.5 | 3.1    | 4.3 | 2.1 | 1.3 | 1.6 | 0.3 | 0.4 | 1.6 | 1.0 | 1.9 | 1.7 | 1.1 | 1.0 | 0.1 | 1.4  |
| 2014     | 4.7 | 2.8 | 3.6    | 2.1 | 1.6 | 1.0 | 0.6 | 0.1 | 1.1 | 1.0 | 1.6 | 2.1 | 0.7 | 3.1 | 2.0 | 0.6 | 1.4  |
| Mean     | 1.7 | 1.9 | 1.8    | 2.6 | 1.5 | 1.0 | 0.7 | 0.5 | 0.7 | 1.0 | 1.5 | 1.9 | 2.1 | 1.7 | 0.9 | 0.3 | 1.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    | 1   | 1   | 4   | 4   | 4   | 1   | 3   | 1   |     | 19     |
| 2006   |     |     |     |     |     |        |    |     |     | 3   | 2   | 1   | 1   | 2   | 2   |     | 11     |
| 2007   |     |     |     |     |     |        |    |     |     | 2   |     |     |     | 1   |     |     | 3      |
| 2008   |     |     |     |     |     |        |    |     |     | 7   | 6   | 2   | 2   | 1   |     | 1   | 19     |
| 2009   |     |     |     |     |     |        |    |     |     | 1   | 6   | 1   |     | 2   |     | 1   | 11     |
| 2010   |     |     |     |     |     |        |    |     |     | 5   | 5   | 2   | 4   |     |     |     | 16     |
| 2011   |     |     |     |     |     |        |    |     |     | 1   | 1   | 7   | 1   | 2   |     |     | 12     |
| 2012   |     |     |     |     |     |        |    |     |     | 7   | 7   | 3   | 2   |     |     |     | 19     |
| 2013   |     |     |     |     |     |        |    |     |     | 5   | 10  | 7   | 1   |     | 2   | 1   | 26     |
| 2014   |     |     |     |     |     |        |    |     |     | 1   | 2   | 2   | 10  | 1   |     |     | 16     |
| Mean   |     |     |     |     |     |        |    | 0.5 | 0.5 | 3.6 | 4.3 | 2.9 | 2.2 | 1.2 | 0.5 | 0.3 | 15.2   |

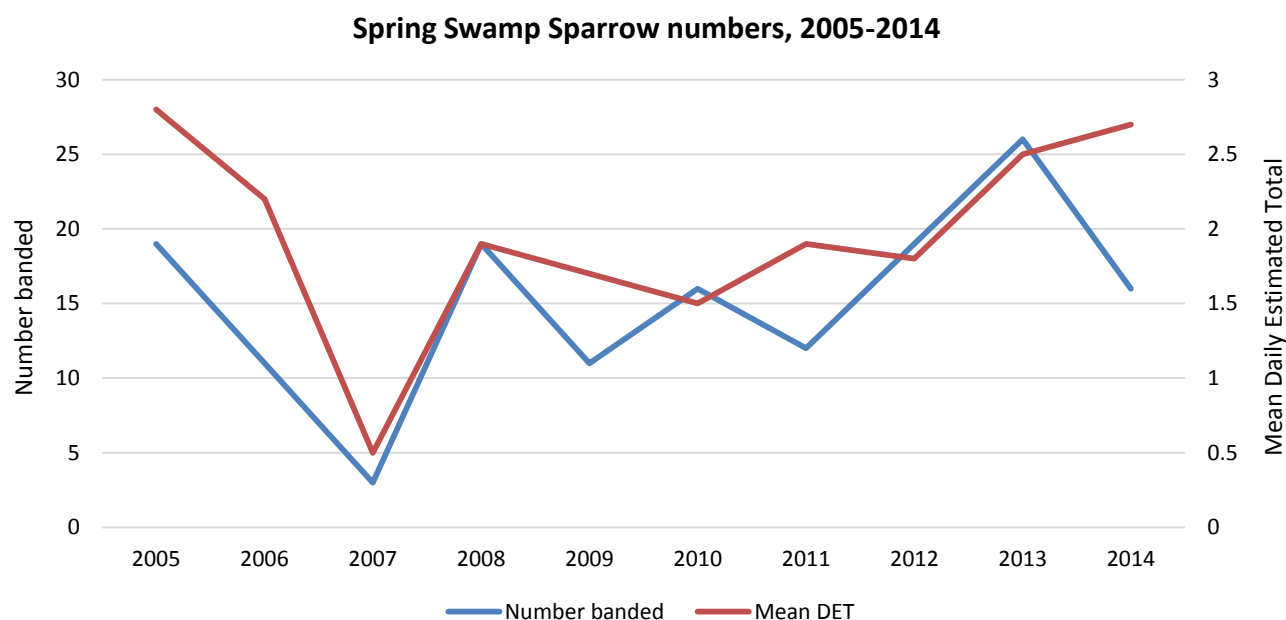
| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     | 2   | 2      | 4   | 6   | 3   | 2   | 2   |     | 8   | 5   | 2   | 12  | 5   | 2   | 1   | 52   |
| 2006   |     | 4   | 4      | 4   | 3   |     |     |     | 1   | 4   | 2   | 1   | 7   | 3   | 3   |     | 28   |
| 2007   |     |     |        | 10  | 3   | 3   | 1   | 2   |     | 2   | 7   | 13  | 10  | 5   | 4   | 2   | 62   |
| 2008   |     |     |        | 6   | 4   | 1   | 1   | 2   |     | 2   | 4   | 4   | 2   | 2   |     |     | 28   |
| 2009   |     | 2   | 2      | 4   | 2   | 1   |     | 1   | 1   | 7   | 6   | 8   | 9   | 6   | 1   | 3   | 49   |
| 2010   | 1   | 4   | 5      | 2   | 2   | 2   |     |     | 1   |     | 2   | 4   | 3   | 2   | 1   | 1   | 20   |
| 2011   | 2   | 1   | 3      | 4   | 1   |     | 1   |     | 1   | 2   | 2   | 3   | 5   | 5   | 3   | 1   | 28   |
| 2012   |     | 5   | 5      | 6   | 3   | 1   | 1   | 1   |     | 1   | 1   | 4   | 10  | 6   | 3   |     | 37   |
| 2013   | 1   | 1   | 2      | 6   | 3   | 2   | 1   |     | 1   | 2   | 1   | 7   | 7   | 2   |     |     | 32   |
| 2014   | 1   | 2   | 3      | 4   | 3   | 2   |     | 1   |     | 2   | 5   | 5   | 1   | 12  | 5   |     | 40   |
| Mean   | 0.8 | 2.3 | 2.9    | 5.0 | 3.0 | 1.5 | 0.7 | 0.9 | 0.5 | 3.0 | 3.5 | 5.1 | 6.6 | 4.8 | 2.2 | 0.8 | 37.6 |

With rare exceptions, Swamp Sparrow is present at MBO from mid-April through late October. The spring peak typically occurs in week 5 or 6, after which most observations are likely of residents breeding on site. The highest fall numbers occur on average in the first week of August and are influenced by the presence of local juveniles. Most years there is a strong secondary peak in fall centered around week 10. Spring numbers have fluctuated, but with a slight increase over time; fall results have been more consistent, aside from a two-year dip in 2010 and 2011. Only once has a late fall migrant lingered into early winter.



The figure above shows that Swamp Sparrow is one of relatively few species that is observed at MBO in larger numbers in spring than in fall. Similar to Song Sparrow, Swamp Sparrow shows three distinct peaks in abundance overall, in mid-spring, mid-summer / early fall, and mid-late fall. The low between the two fall peaks is even more pronounced than for Song Sparrow, with observations in late August and early September scarcer than at any other time between mid-April and late October. This suggests that the vast majority of local Swamp Sparrows migrate by the end of August, and that the secondary peak from mid-September into mid-October is likely to overwhelmingly comprise northern migrants.

The figure below shows that there was good correlation between the number of Swamp Sparrows banded and observed at MBO in spring from 2005 through 2008, but since then the link between the two data sources has been more unpredictable, diverging most notably in 2010 and 2014.



**WTSP: White-throated Sparrow / Bruant à gorge blanche (*Zonotrichia albicollis*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 17 | Apr 28 | May 26 | 40   | 31 (53%) | 70   | 263   | Aug 6 | Oct 8  | Oct 30 | 86   | 77 (88%) | 265  | 2528  |
| 2006     | Apr 9  | May 3  | Jun 3  | 56   | 46 (67%) | 40   | 384   | Aug 1 | Sep 30 | Oct 30 | 91   | 84 (92%) | 70   | 1233  |
| 2007     | Apr 13 | Apr 28 | May 26 | 44   | 21 (30%) | 31   | 142   | Aug 1 | Sep 28 | Oct 30 | 91   | 73 (80%) | 90   | 1751  |
| 2008     | Apr 17 | Apr 27 | Jun 2  | 47   | 38 (54%) | 50   | 419   | Aug 2 | Oct 8  | Oct 30 | 90   | 69 (76%) | 82   | 1230  |
| 2009     | Apr 19 | Apr 27 | May 28 | 40   | 24 (35%) | 27   | 117   | Aug 1 | Oct 12 | Oct 30 | 91   | 86 (95%) | 150  | 2534  |
| 2010     | Mar 28 | May 9  | May 16 | 50   | 33 (47%) | 18   | 144   | Aug 1 | Sep 30 | Oct 30 | 91   | 79 (87%) | 180  | 2636  |
| 2011     | Mar 30 | Apr 28 | May 23 | 55   | 34 (49%) | 51   | 433   | Aug 1 | Oct 4  | Oct 30 | 91   | 69 (76%) | 100  | 1135  |
| 2012     | Apr 12 | Apr 24 | Jun 1  | 51   | 33 (47%) | 102  | 487   | Aug 1 | Oct 6  | Oct 30 | 91   | 86 (95%) | 210  | 3333  |
| 2013     | Mar 30 | May 4  | Jun 1  | 64   | 44 (63%) | 34   | 340   | Aug 1 | Oct 12 | Oct 30 | 91   | 77 (85%) | 75   | 1414  |
| 2014     | Apr 14 | May 9  | Jun 3  | 51   | 40 (59%) | 50   | 305   | Aug 2 | Oct 11 | Oct 30 | 90   | 80 (88%) | 155  | 2784  |
| Mean     | Apr 9  | Apr 30 | May 28 | 50   | 34 (50%) | 47   | 303   | Aug 1 | Oct 5  | Oct 30 | 90   | 78 (86%) | 138  | 2058  |

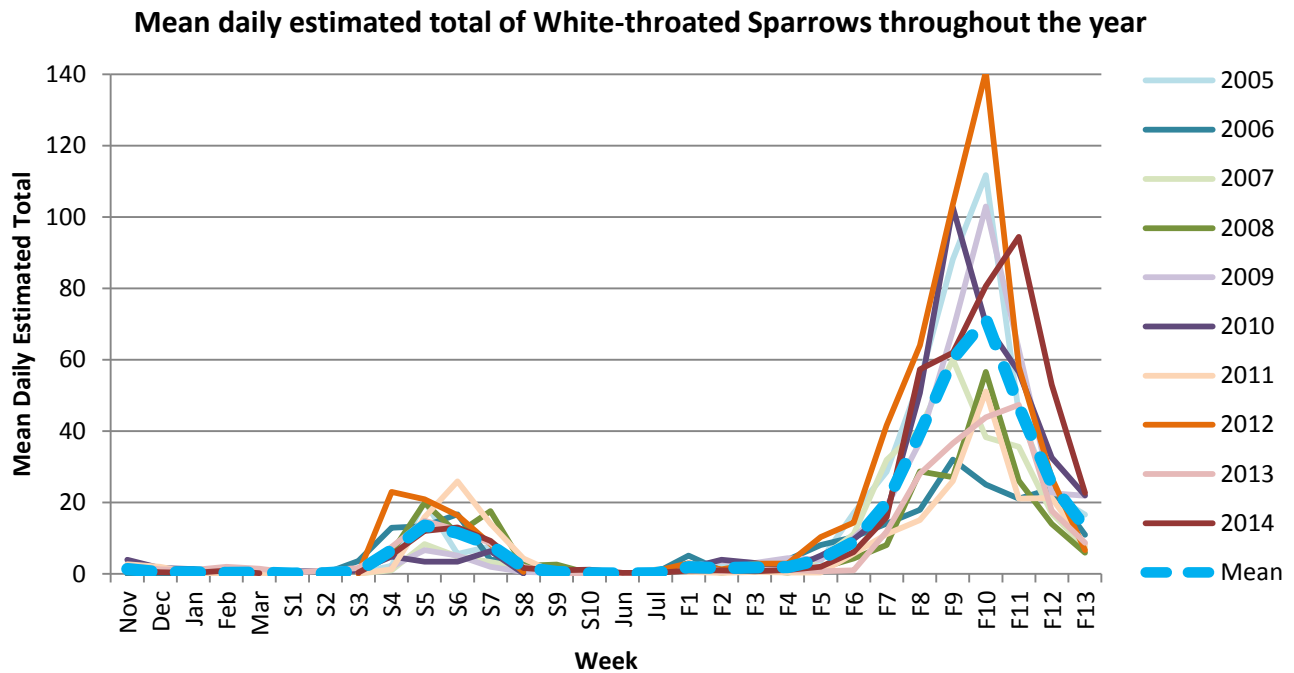
| Observed | Nov | Dec  | Jan  | Feb | Mar | Winter | S1   | S2  | S3  | S4  | S5   | S6   | S7   | S8   | S9  | S10 | Spring |
|----------|-----|------|------|-----|-----|--------|------|-----|-----|-----|------|------|------|------|-----|-----|--------|
| 2005     |     |      |      |     |     |        |      |     | 0.3 | 2.3 | 20.4 | 5.6  | 7.7  | 1.4  | 0.1 |     | 4.5    |
| 2006     | 0.4 | 0.07 | 0.08 |     |     |        | 0.1  |     | 0.2 | 3.6 | 12.9 | 13.4 | 16.7 | 4.0  | 3.4 | 0.4 | 5.6    |
| 2007     | 0.1 |      |      |     |     |        | 0.04 |     |     | 0.1 | 1.0  | 8.4  | 4.9  | 3.3  | 1.6 | 1.0 | 2.0    |
| 2008     | 0.8 |      |      |     |     |        | 0.2  |     |     | 0.1 | 6.0  | 19.9 | 11.3 | 17.6 | 2.3 | 2.6 | 6.0    |
| 2009     | 0.1 |      |      |     |     |        | 0.03 |     |     |     | 2.0  | 6.7  | 5.1  | 2.0  | 0.6 | 0.3 | 1.7    |
| 2010     | 4.0 | 1.6  | 1.4  | 0.3 | 0.9 |        | 1.9  | 0.7 | 0.7 | 0.9 | 4.9  | 3.4  | 3.4  | 6.4  | 0.1 |     | 2.1    |
| 2011     | 2.7 | 2.0  | 0.2  | 0.2 | 0.1 |        | 0.9  | 0.1 |     | 0.1 | 1.3  | 15.9 | 25.9 | 14.1 | 4.3 | 0.1 | 6.2    |
| 2012     | 0.5 |      |      |     |     |        | 0.2  |     |     | 0.1 | 23.0 | 20.9 | 16.4 | 8.4  | 0.6 | 0.1 | 7.0    |
| 2013     | 2.3 | 1.3  | 1.1  | 2.0 | 1.5 |        | 1.5  | 0.3 | 1.0 | 1.6 | 7.6  | 14.9 | 12.3 | 8.6  | 2.0 | 0.1 | 4.9    |
| 2014     | 1.2 | 0.5  | 0.3  | 0.9 | 0.2 |        | 0.6  |     |     | 0.4 | 5.3  | 12.0 | 13.0 | 9.3  | 1.6 | 1.0 | 4.5    |
| Mean     | 1.4 | 0.5  | 0.5  | 0.3 | 0.4 |        | 0.7  | 0.1 | 0.2 | 0.7 | 6.7  | 13.6 | 11.5 | 8.1  | 1.8 | 0.6 | 4.4    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5   | F6   | F7   | F8   | F9    | F10   | F11  | F12  | F13  | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|------|------|------|------|-------|-------|------|------|------|------|
| 2005     | 0.3 |     | 0.2    | 0.6 | 2.7 | 2.4 | 3.0 | 3.7  | 17.1 | 28.6 | 54.3 | 88.2  | 111.7 | 45.0 | 22.3 | 16.6 | 28.7 |
| 2006     |     | 0.3 | 0.2    | 5.1 | 0.9 | 2.6 | 4.0 | 8.1  | 10.3 | 14.1 | 18.0 | 32.0  | 25.0  | 21.1 | 23.9 | 11.0 | 13.5 |
| 2007     |     |     |        | 1.3 | 0.9 | 0.6 | 0.7 | 4.4  | 11.1 | 31.9 | 40.7 | 60.1  | 38.3  | 35.6 | 17.0 | 7.6  | 19.2 |
| 2008     |     | 0.2 | 0.1    | 1.3 | 0.4 | 1.1 | 0.4 | 1.6  | 4.3  | 8.1  | 28.7 | 27.1  | 56.6  | 26.1 | 14.0 | 5.9  | 13.5 |
| 2009     |     |     |        | 2.1 | 3.6 | 3.1 | 4.4 | 4.1  | 10.1 | 18.9 | 37.0 | 68.3  | 103.0 | 62.9 | 22.6 | 21.9 | 27.8 |
| 2010     |     | 0.3 | 0.2    | 1.6 | 4.0 | 3.1 | 1.1 | 5.1  | 9.7  | 17.1 | 50.7 | 102.7 | 70.1  | 56.6 | 32.6 | 22.0 | 29.0 |
| 2011     |     | 1.3 | 0.7    | 0.6 | 0.3 | 0.6 | 0.4 | 0.4  | 5.7  | 11.1 | 15.1 | 26.0  | 51.1  | 21.1 | 21.3 | 8.3  | 12.5 |
| 2012     |     | 0.8 | 0.4    | 3.0 | 1.3 | 2.9 | 2.9 | 10.3 | 14.4 | 41.6 | 64.0 | 103.6 | 140.7 | 58.0 | 26.9 | 6.7  | 36.6 |
| 2013     | 0.3 |     | 0.1    | 3.0 | 0.7 | 1.1 | 1.1 | 0.7  | 1.0  | 11.9 | 28.1 | 36.6  | 43.9  | 47.4 | 17.7 | 8.7  | 15.5 |
| 2014     | 0.3 | 0.3 | 0.3    | 0.9 | 1.0 | 0.7 | 1.1 | 2.0  | 6.1  | 15.9 | 57.3 | 62.0  | 80.6  | 94.4 | 53.0 | 22.7 | 30.6 |
| Mean     | 0.1 | 0.2 | 0.2    | 1.9 | 1.6 | 1.8 | 1.9 | 4.1  | 9.0  | 19.9 | 39.4 | 60.3  | 71.5  | 46.9 | 25.1 | 13.1 | 22.7 |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3  | S4  | S5  | S6   | S7  | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|-----|-----|-----|------|-----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |     | 2   | 16  | 5    | 6   |     |    |     | 29     |
| 2006   | 2   |     |     |     |     | 2      |    |    | 1   | 6   | 4   | 18   | 7   | 4   |    | 2   | 42     |
| 2007   |     |     |     |     |     |        |    |    |     |     |     | 7    | 5   | 1   |    |     | 13     |
| 2008   |     |     |     |     |     |        |    |    |     | 8   | 27  | 13   | 29  | 2   |    |     | 79     |
| 2009   |     |     |     |     |     |        |    |    |     | 2   | 7   | 16   | 7   | 2   |    |     | 34     |
| 2010   | 5   | 1   |     |     |     | 6      |    |    |     | 2   | 3   | 10   | 7   |     |    |     | 22     |
| 2011   | 11  |     |     |     | 1   | 12     |    |    |     | 3   | 8   | 30   | 7   | 3   |    |     | 51     |
| 2012   | 1   |     |     |     |     | 1      |    |    |     | 18  | 11  | 24   | 4   |     |    |     | 57     |
| 2013   | 6   |     |     | 1   | 1   | 8      |    |    |     | 5   | 12  | 10   | 9   | 3   |    | 1   | 40     |
| 2014   | 3   |     |     |     |     | 3      |    |    |     | 6   | 6   | 16   | 10  | 2   |    |     | 40     |
| Mean   | 3.5 | 0.1 |     | 0.2 | 0.3 | 3.6    |    |    | 0.5 | 5.2 | 9.4 | 14.9 | 9.1 | 1.7 |    | 0.3 | 40.7   |

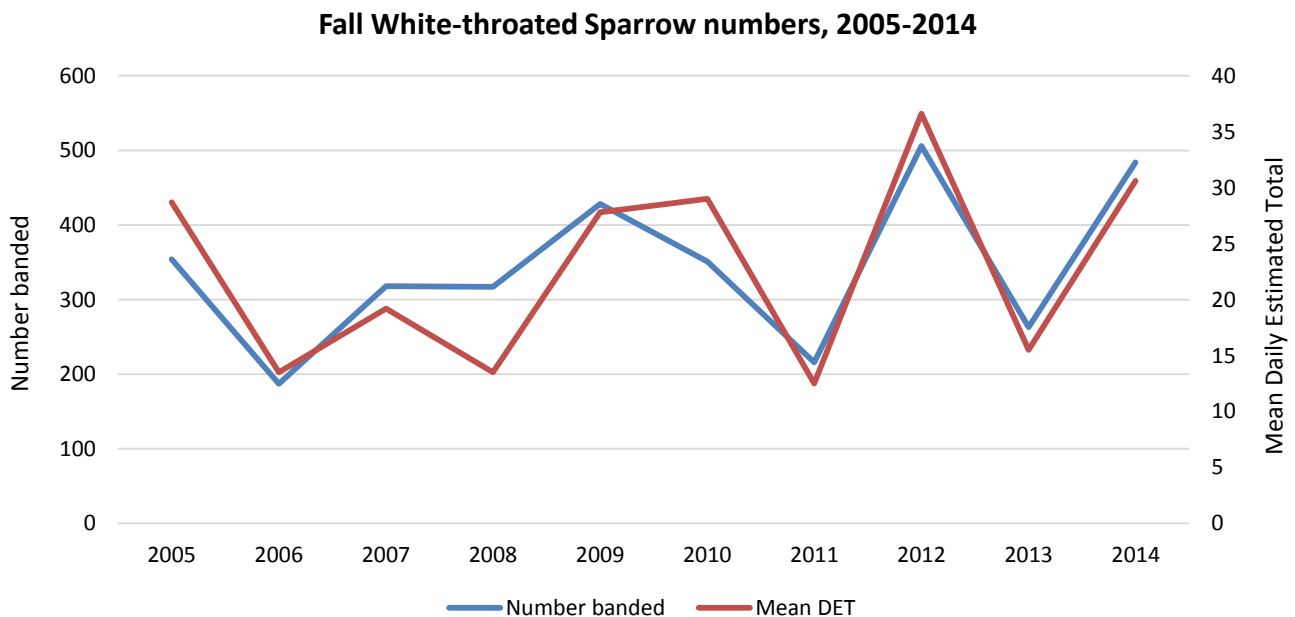
| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6   | F7   | F8   | F9   | F10  | F11  | F12  | F13  | Fall  |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|-------|
| 2005   |     |     |        | 3   | 6   | 4   | 3   | 1   | 18   | 44   | 86   | 104  | 67   | 10   | 3    | 5    | 354   |
| 2006   |     |     |        | 4   | 2   | 2   | 4   | 2   | 13   | 18   | 14   | 57   | 31   | 13   | 19   | 8    | 187   |
| 2007   |     |     |        | 2   | 3   |     |     | 2   | 21   | 32   | 60   | 96   | 54   | 25   | 21   | 2    | 318   |
| 2008   |     |     |        | 8   | 1   |     | 3   | 4   | 13   | 20   | 50   | 74   | 100  | 26   | 15   | 3    | 317   |
| 2009   |     |     |        | 11  | 11  | 1   |     | 2   | 18   | 31   | 62   | 100  | 103  | 32   | 35   | 22   | 428   |
| 2010   |     | 2   | 2      | 5   | 4   | 2   |     | 2   | 7    | 25   | 85   | 70   | 63   | 41   | 25   | 22   | 351   |
| 2011   |     | 2   | 2      | 3   | 1   | 1   | 1   | 2   | 9    | 13   | 15   | 49   | 64   | 21   | 27   | 10   | 216   |
| 2012   |     | 2   | 2      | 11  | 4   | 3   | 2   | 10  | 8    | 53   | 60   | 112  | 158  | 55   | 20   | 10   | 506   |
| 2013   |     |     |        | 3   | 2   |     | 2   | 1   | 1    | 15   | 23   | 55   | 78   | 61   | 15   | 7    | 263   |
| 2014   |     | 1   | 1      | 2   | 6   | 1   | 3   | 2   | 10   | 13   | 66   | 88   | 79   | 127  | 62   | 25   | 484   |
| Mean   |     | 0.8 | 0.8    | 5.2 | 4.0 | 1.4 | 1.8 | 2.8 | 11.8 | 26.4 | 52.1 | 80.5 | 79.7 | 41.1 | 24.2 | 11.4 | 342.4 |

White-throated Sparrow is among the most abundant species at MBO, with a strong migration in spring and especially in fall, plus small numbers observed most years in both summer and winter. The peak of spring migration is typically in late April or early May; in fall it is usually around early October, although slightly later the past two years. Spring numbers were low in 2007, 2009, and 2010, but otherwise have been relatively consistent. Conversely, mean daily totals in fall seem to fall into either low (12.5 to 19.2 per day, in 2006, 2007, 2008, 2011, and 2013) or high (27.8 to 36.6 per day in 2005, 2009, 2010, 2012, and 2014) categories. Late migrants usually trickle in to November, with small numbers overwintering at the feeders.



The figure above shows that the magnitude of fall migration is on average around five times greater than in spring, and numbers in winter, summer, and early fall are minimal in comparison. While the peak of fall migration varies between weeks 9 and 11, there is a sharp overall maximum in week 10.

The figure below illustrates the exceptionally tight correlation between the number of White-throated Sparrows banded and observed at MBO in fall, especially from 2005 to 2007 and 2011 to 2014.



**EWCS: (Eastern) White-crowned Sparrow / Bruant à couronne blanche (*Zonotrichia leucophrys leucophrys*)**


| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 11 | May 12 | May 28 | 18   | 8 (14%)  | 2    | 10    | Sep 21 | Oct 11 | Oct 27 | 37   | 25 (28%) | 13   | 114   |
| 2006     | May 4  | May 14 | May 30 | 27   | 17 (25%) | 7    | 54    | Sep 20 | Sep 30 | Oct 23 | 34   | 34 (37%) | 45   | 334   |
| 2007     | May 8  | May 10 | May 26 | 19   | 9 (13%)  | 5    | 22    | Sep 21 | Oct 8  | Oct 30 | 40   | 28 (31%) | 42   | 340   |
| 2008     | May 4  | May 9  | May 25 | 22   | 19 (27%) | 16   | 110   | Sep 21 | Oct 3  | Oct 27 | 37   | 28 (31%) | 20   | 166   |
| 2009     | Apr 26 | May 20 | May 23 | 28   | 12 (17%) | 11   | 40    | Sep 21 | Oct 10 | Oct 26 | 36   | 27 (30%) | 100  | 497   |
| 2010     | May 2  | May 15 | May 19 | 18   | 12 (17%) | 20   | 68    | Sep 13 | Oct 6  | Oct 30 | 48   | 31 (34%) | 25   | 167   |
| 2011     | Apr 27 | May 11 | May 22 | 26   | 12 (17%) | 6    | 35    | Sep 7  | Oct 3  | Oct 21 | 45   | 16 (18%) | 50   | 136   |
| 2012     | May 4  | May 12 | May 17 | 14   | 9 (13%)  | 10   | 27    | Sep 5  | Oct 4  | Oct 29 | 55   | 42 (46%) | 69   | 331   |
| 2013     | May 6  | May 10 | May 22 | 17   | 12 (17%) | 8    | 45    | Sep 23 | Sep 24 | Oct 22 | 30   | 25 (27%) | 13   | 129   |
| 2014     | Apr 27 | May 11 | May 30 | 34   | 13 (19%) | 10   | 49    | Sep 24 | Oct 11 | Oct 29 | 36   | 30 (33%) | 15   | 111   |
| Mean     | May 2  | May 12 | May 24 | 22   | 12 (18%) | 10   | 46    | Sep 17 | Oct 5  | Oct 26 | 40   | 29 (32%) | 39   | 233   |

| Observed | Nov  | Dec  | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6  | S7  | S8  | S9  | S10  | Spring |
|----------|------|------|-----|-----|-----|--------|----|----|----|----|------|-----|-----|-----|-----|------|--------|
| 2005     |      |      |     |     |     |        |    |    |    |    |      |     | 0.7 | 0.4 | 0.3 |      | 0.2    |
| 2006     | 0.07 |      |     |     |     | 0.02   |    |    |    |    |      | 1.3 | 3.6 | 2.4 | 0.3 | 0.1  | 0.8    |
| 2007     |      |      |     |     |     |        |    |    |    |    |      | 0.1 | 2.0 | 0.6 | 0.4 |      | 0.3    |
| 2008     |      |      |     |     |     |        |    |    |    |    |      | 3.4 | 8.1 | 3.4 | 0.7 |      | 1.6    |
| 2009     |      |      |     |     |     |        |    |    |    |    | 0.1  | 0.3 | 1.0 | 4.1 | 0.1 |      | 0.6    |
| 2010     | 0.05 | 0.4  |     |     |     | 0.06   |    |    |    |    |      | 1.4 | 6.6 | 1.7 |     |      | 1.0    |
| 2011     | 0.1  |      |     |     |     | 0.03   |    |    |    |    | 0.1  | 0.6 | 3.4 | 0.9 |     |      | 0.5    |
| 2012     | 0.1  |      |     |     |     | 0.04   |    |    |    |    |      | 0.4 | 3.3 | 0.1 |     |      | 0.4    |
| 2013     |      |      |     |     |     |        |    |    |    |    |      | 0.9 | 1.6 | 4.0 |     |      | 0.6    |
| 2014     |      |      |     |     |     |        |    |    |    |    | 0.1  | 0.7 | 5.0 | 0.9 | 0.1 | 0.2  | 0.7    |
| Mean     | 0.04 | 0.06 |     |     |     | 0.02   |    |    |    |    | 0.04 | 0.9 | 3.5 | 1.9 | 0.2 | 0.03 | 0.7    |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6  | F7   | F8  | F9   | F10  | F11  | F12 | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|-----|------|-----|------|------|------|-----|-----|------|
| 2005     |     |     |        |    |    |    |    |    |     |      | 0.4 | 5.0  | 5.7  | 5.8  | 1.4 | 0.3 | 1.3  |
| 2006     |     |     |        |    |    |    |    |    |     |      | 3.6 | 17.9 | 12.1 | 9.0  | 5.1 |     | 3.7  |
| 2007     |     |     |        |    |    |    |    |    |     |      | 0.6 | 10.9 | 20.3 | 15.0 | 1.4 | 0.4 | 3.7  |
| 2008     |     |     |        |    |    |    |    |    |     |      | 1.0 | 4.3  | 13.7 | 3.6  | 0.9 | 0.3 | 1.8  |
| 2009     |     |     |        |    |    |    |    |    |     |      | 0.9 | 8.7  | 42.9 | 17.6 | 0.7 | 0.3 | 5.5  |
| 2010     |     |     |        |    |    |    |    |    |     | 0.1  | 1.1 | 4.1  | 10.3 | 5.6  | 2.3 | 0.3 | 1.8  |
| 2011     |     |     |        |    |    |    |    |    | 0.6 |      |     | 4.4  | 13.4 | 0.3  | 0.7 |     | 1.5  |
| 2012     |     |     |        |    |    |    |    |    | 0.6 | 0.4  | 1.4 | 5.0  | 28.4 | 5.4  | 4.6 | 1.4 | 3.6  |
| 2013     |     |     |        |    |    |    |    |    |     |      | 2.7 | 8.0  | 5.4  | 1.6  | 0.7 |     | 1.4  |
| 2014     |     |     |        |    |    |    |    |    |     |      | 0.9 | 1.1  | 2.7  | 7.0  | 2.9 | 1.3 | 1.2  |
| Mean     |     |     |        |    |    |    |    |    | 0.1 | 0.06 | 1.3 | 7.0  | 15.6 | 7.1  | 2.1 | 0.4 | 2.6  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |     | 1   | 3   | 1   |     | 5      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    | 3   |     | 5   |     |     | 8      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |     | 3   |     |     |     | 6      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |     | 15  | 10  | 2   |     | 30     |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |     | 5   | 20  |     |     | 25     |
| 2010   |     |     |     |     |     |        |    |    |    |    |    | 4   | 11  | 6   |     |     | 21     |
| 2011   | 1   |     |     |     |     | 1      |    |    |    |    |    | 1   | 7   | 2   |     |     | 10     |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |     | 8   |     |     |     | 8      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    | 1   | 1   | 14  |     |     | 16     |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |     | 5   | 2   | 1   |     | 8      |
| Mean   | 0.1 |     |     |     |     | 0.1    |    |    |    |    |    | 1.2 | 5.6 | 6.5 | 0.4 |     | 13.7   |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7  | F8  | F9   | F10  | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|-----|-----|------|------|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |     | 2   | 6    | 4    | 7   | 1   |     | 20   |
| 2006   |     |     |        |    |    |    |    |    |    |     | 2   | 27   | 17   | 2   | 2   |     | 50   |
| 2007   |     |     |        |    |    |    |    |    |    |     | 2   | 22   | 35   | 18  | 3   |     | 80   |
| 2008   |     |     |        |    |    |    |    |    |    |     | 6   | 7    | 19   | 7   |     |     | 39   |
| 2009   |     |     |        |    |    |    |    |    |    |     | 1   | 14   | 46   | 9   |     | 1   | 71   |
| 2010   |     |     |        |    |    |    |    |    |    | 1   | 5   | 8    | 22   | 7   |     | 2   | 45   |
| 2011   |     |     |        |    |    |    |    |    |    |     |     | 4    | 10   | 1   |     |     | 15   |
| 2012   |     |     |        |    |    |    |    |    |    | 1   |     | 9    | 35   | 3   | 5   |     | 53   |
| 2013   |     |     |        |    |    |    |    |    |    |     | 3   | 5    | 3    | 1   |     |     | 12   |
| 2014   |     |     |        |    |    |    |    |    |    |     | 4   | 5    | 6    | 8   | 8   |     | 31   |
| Mean   |     |     |        |    |    |    |    |    |    | 0.2 | 2.5 | 10.7 | 19.7 | 6.3 | 1.9 | 0.3 | 41.6 |

White-crowned Sparrow is a fairly common spring and common fall migrant, occasionally lingering into early winter in small numbers. Spring migration is heavily concentrated in weeks 7 and 8; numbers observed have been relatively consistent across years, aside from spikes in 2008 and 2010 which followed the two best fall seasons in 2007 and 2009. Fall numbers are somewhat more variable, with counts of birds observed and banded in the high years (also including 2006 and 2012) two to three times higher than in others. The fall migration peak is also usually sharp and brief, typically centered on week 10. To date, only the eastern subspecies has been observed, although Gambel's is also expected eventually.

DEJU (SCJU): Dark-eyed (Slate-colored) Junco / Junco ardoisé (*Junco hyemalis hyemalis*)

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 5  | May 7  | 33   | 22 (37%) | 9    | 55    | Aug 29 | Oct 28 | Oct 30 | 63   | 43 (49%) | 180  | 1368  |
| 2006     | Mar 28 | Apr 27 | May 8  | 42   | 39 (57%) | 55   | 749   | Sep 28 | Oct 27 | Oct 30 | 33   | 25 (27%) | 25   | 199   |
| 2007     | Mar 28 | Mar 28 | May 2  | 36   | 22 (31%) | 11   | 81    | Sep 9  | Oct 6  | Oct 30 | 52   | 42 (46%) | 90   | 731   |
| 2008     | Mar 29 | Apr 22 | May 4  | 37   | 32 (46%) | 22   | 189   | Sep 16 | Oct 22 | Oct 30 | 45   | 39 (43%) | 90   | 837   |
| 2009     | Mar 28 | Apr 21 | May 9  | 43   | 25 (36%) | 24   | 205   | Sep 18 | Oct 25 | Oct 30 | 43   | 38 (42%) | 110  | 1171  |
| 2010     | Mar 29 | Apr 17 | May 6  | 39   | 21 (30%) | 23   | 120   | Sep 8  | Oct 8  | Oct 30 | 53   | 44 (48%) | 130  | 1956  |
| 2011     | Mar 28 | May 5  | May 12 | 46   | 40 (57%) | 65   | 739   | Aug 10 | Oct 25 | Oct 30 | 82   | 35 (38%) | 26   | 295   |
| 2012     | Mar 28 | Apr 6  | May 12 | 46   | 31 (44%) | 24   | 149   | Sep 11 | Oct 6  | Oct 30 | 50   | 38 (42%) | 130  | 1325  |
| 2013     | Mar 28 | Apr 16 | May 7  | 41   | 38 (54%) | 24   | 254   | Sep 24 | Oct 15 | Oct 30 | 37   | 33 (36%) | 51   | 387   |
| 2014     | Mar 29 | Apr 14 | May 12 | 45   | 36 (53%) | 18   | 191   | Sep 26 | Oct 18 | Oct 30 | 35   | 34 (37%) | 131  | 928   |
| Mean     | Mar 29 | Apr 16 | May 7  | 41   | 31 (45%) | 28   | 273   | Sep 11 | Oct 18 | Oct 30 | 49   | 37 (41%) | 96   | 920   |

| Observed | Nov  | Dec  | Jan  | Feb  | Mar  | Winter | S1   | S2   | S3   | S4   | S5   | S6   | S7  | S8 | S9 | S10 | Spring |
|----------|------|------|------|------|------|--------|------|------|------|------|------|------|-----|----|----|-----|--------|
| 2005     | 4.3  | 4.5  |      | 2.8  | 2.0  | 3.2    |      | 3.3  | 1.6  | 2.3  | 1.1  | 0.3  |     |    |    |     | 0.9    |
| 2006     | 9.4  | 13.5 | 13.7 | 5.6  | 7.3  | 10.1   | 12.0 | 20.0 | 22.6 | 24.4 | 24.7 | 6.1  |     |    |    |     | 10.9   |
| 2007     | 4.6  | 3.7  | 6.8  | 6.7  | 5.9  | 5.3    | 4.4  | 3.0  | 0.3  | 3.0  | 0.7  | 0.1  |     |    |    |     | 1.2    |
| 2008     | 3.6  | 1.5  |      | 1.7  |      | 2.0    | 4.1  | 2.6  | 4.9  | 11.4 | 3.4  | 0.6  |     |    |    |     | 2.7    |
| 2009     | 8.9  | 10.0 | 7.0  | 3.9  | 5.1  | 6.0    | 6.6  | 5.0  | 2.3  | 15.1 | 0.7  | 0.1  | 0.1 |    |    |     | 3.0    |
| 2010     | 25.3 | 8.4  | 9.5  | 8.5  | 5.2  | 13.1   | 3.4  | 0.4  | 4.3  | 7.1  | 1.4  | 0.4  |     |    |    |     | 1.7    |
| 2011     | 36.6 | 6.0  | 13.8 | 7.8  | 6.0  | 17.1   | 12.6 | 3.7  | 18.4 | 30.1 | 26.0 | 13.0 | 1.7 |    |    |     | 10.6   |
| 2012     | 11.0 | 5.0  | 9.0  | 3.7  | 3.4  | 7.4    | 2.3  | 7.9  | 5.1  | 4.4  | 1.0  | 0.4  | 0.1 |    |    |     | 2.1    |
| 2013     | 11.6 | 10.7 | 10.4 | 13.4 | 8.8  | 10.5   | 3.6  | 9.4  | 5.9  | 9.1  | 7.1  | 1.1  |     |    |    |     | 3.6    |
| 2014     | 13.4 | 22.0 | 16.3 | 15.1 | 10.4 | 15.2   | 5.3  | 6.3  | 9.3  | 4.1  | 2.1  | 0.4  | 0.4 |    |    |     | 2.8    |
| Mean     | 14.1 | 9.5  | 10.7 | 7.2  | 6.3  | 9.8    | 6.0  | 6.0  | 7.5  | 11.3 | 6.8  | 2.3  | 0.2 |    |    |     | 4.0    |

| Observed | Jun | Jul  | Summer | F1 | F2   | F3 | F4 | F5   | F6  | F7  | F8  | F9  | F10  | F11  | F12  | F13  | Fall |
|----------|-----|------|--------|----|------|----|----|------|-----|-----|-----|-----|------|------|------|------|------|
| 2005     |     |      |        |    |      |    |    | 0.3  | 0.7 | 1.0 | 1.3 | 5.2 | 29.0 | 49.3 | 57.4 | 63.1 | 15.5 |
| 2006     |     |      |        |    |      |    |    |      |     |     |     | 0.3 | 2.6  | 6.3  | 8.6  | 10.7 | 2.2  |
| 2007     |     |      |        |    |      |    |    |      | 0.4 | 1.0 | 1.0 | 4.1 | 29.3 | 22.4 | 36.6 | 9.6  | 8.0  |
| 2008     |     |      |        |    |      |    |    |      |     | 0.9 | 1.1 | 2.9 | 9.7  | 20.6 | 36.0 | 48.4 | 9.2  |
| 2009     |     |      |        |    |      |    |    |      |     | 0.3 | 0.9 | 1.9 | 22.3 | 33.7 | 37.1 | 71.1 | 12.9 |
| 2010     |     |      |        |    |      |    |    |      | 0.3 | 0.3 | 6.4 | 6.3 | 69.4 | 70.7 | 69.0 | 57.0 | 21.5 |
| 2011     |     | 0.3  | 0.1    |    | 0.1  |    |    |      |     |     | 0.1 | 2.6 | 4.1  | 4.9  | 13.6 | 16.7 | 3.2  |
| 2012     |     |      |        |    |      |    |    |      | 0.4 | 0.4 | 1.1 | 2.6 | 73.1 | 45.4 | 43.7 | 22.4 | 14.6 |
| 2013     |     |      |        |    |      |    |    |      |     |     | 0.1 | 4.3 | 10.9 | 18.9 | 13.4 | 7.7  | 4.3  |
| 2014     |     |      |        |    |      |    |    |      |     |     |     | 7.9 | 9.9  | 18.1 | 53.4 | 43.3 | 10.2 |
| Mean     |     | 0.02 | 0.01   |    | 0.01 |    |    | 0.03 | 0.2 | 0.4 | 1.2 | 3.8 | 26.0 | 28.7 | 36.9 | 35.0 | 10.1 |

| Banded | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3   | S4  | S5  | S6  | S7  | S8 | S9 | S10 | Spring |
|--------|------|-----|-----|-----|-----|--------|----|-----|------|-----|-----|-----|-----|----|----|-----|--------|
| 2005   | 13   | 3   |     | 2   | 2   | 20     |    |     | 1    |     | 3   | 1   |     |    |    |     | 5      |
| 2006   | 26   | 6   | 17  | 3   | 2   | 54     |    | 3   | 20   | 9   | 14  | 2   |     |    |    |     | 48     |
| 2007   | 10   | 3   | 1   |     | 6   | 20     |    |     |      |     |     |     |     |    |    |     |        |
| 2008   |      |     |     |     |     |        |    |     |      | 9   |     |     |     |    |    |     | 9      |
| 2009   |      |     |     |     |     |        |    |     |      | 8   | 1   | 1   |     |    |    |     | 10     |
| 2010   | 45   | 2   | 1   |     | 2   | 50     |    |     |      | 6   | 2   |     |     |    |    |     | 8      |
| 2011   | 147  |     |     |     | 3   | 150    |    |     |      | 24  | 10  | 1   | 1   |    |    |     | 36     |
| 2012   | 63   | 11  |     | 7   | 9   | 90     |    |     |      |     |     |     | 1   |    |    |     | 1      |
| 2013   | 24   | 6   |     | 6   | 6   | 42     |    |     |      | 9   | 2   | 1   |     |    |    |     | 12     |
| 2014   | 21   | 7   |     |     |     | 28     |    |     |      | 3   |     |     | 1   |    |    |     | 4      |
| Mean   | 43.6 | 5.4 | 6.3 | 3.0 | 3.8 | 50.4   |    | 1.5 | 10.5 | 6.8 | 3.2 | 0.6 | 0.3 |    |    |     | 13.3   |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5  | F6  | F7  | F8  | F9  | F10  | F11  | F12  | F13  | Fall  |
|--------|-----|-----|--------|----|----|----|----|-----|-----|-----|-----|-----|------|------|------|------|-------|
| 2005   |     |     |        |    |    |    |    | 2   |     | 2   | 3   | 17  | 34   | 32   | 22   | 79   | 191   |
| 2006   |     |     |        |    |    |    |    |     |     |     |     | 1   | 3    | 5    | 15   | 9    | 33    |
| 2007   |     |     |        |    |    |    |    |     | 2   | 3   | 1   | 6   | 44   | 29   | 38   | 4    | 127   |
| 2008   |     |     |        |    |    |    |    |     |     | 1   | 1   | 10  | 23   | 53   | 54   | 94   | 236   |
| 2009   |     |     |        |    |    |    |    |     |     |     | 3   | 7   | 21   | 46   | 109  | 175  | 361   |
| 2010   |     |     |        |    |    |    |    |     |     |     | 16  | 8   | 127  | 158  | 134  | 66   | 509   |
| 2011   |     |     |        |    |    |    |    |     |     |     |     | 6   | 7    | 9    | 24   | 12   | 58    |
| 2012   |     |     |        |    |    |    |    |     | 2   | 2   | 1   | 5   | 80   | 43   | 47   | 18   | 198   |
| 2013   |     |     |        |    |    |    |    |     |     |     | 1   | 10  | 19   | 21   | 6    | 3    | 60    |
| 2014   |     |     |        |    |    |    |    |     |     |     |     | 23  | 14   | 37   | 97   | 71   | 242   |
| Mean   |     |     |        |    |    |    |    | 0.2 | 0.4 | 0.8 | 2.6 | 9.3 | 37.2 | 43.3 | 54.6 | 53.1 | 201.5 |

Dark-eyed Junco is generally a fairly common winter resident and spring migrant, and common fall migrant at MBO. As one of the most numerous winter species at MBO, it has been banded in all but three winter study periods. Spring migration usually peaks in week 4, and extends in to early May, with a late date of May 12 reached three times in the past four years. Fall sightings are rare in August, regular but uncommon through most of September, then jump to a high level sustained for most of October; there is a modest overall peak in week 12. Fall numbers vary substantially, from highs in 2005 and 2010 to lows in 2006 and 2011. Spring numbers were particularly high in 2006 and 2011, following the two highest fall seasons, but lows were not similarly aligned.

**SCTA: Scarlet Tanager / Piranga écarlate (*Piranga olivacea*)**

| Observed | First  | Peak   | Last   | Span | # days  | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|---------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 18 | May 18 | Jun 1  | 15   | 6 (10%) | 1    | 6     | Sep 3  | Sep 11 | Sep 15 | 13   | 5 (6%)   | 4    | 8     |
| 2006     | May 19 | May 19 | May 24 | 6    | 2 (3%)  | 2    | 3     | Aug 9  | Sep 24 | Oct 3  | 56   | 9 (10%)  | 4    | 16    |
| 2007     | May 13 | May 13 | May 29 | 17   | 4 (6%)  | 1    | 4     | Aug 7  | Sep 2  | Sep 25 | 50   | 9 (10%)  | 2    | 10    |
| 2008     | May 15 | May 15 | May 23 | 9    | 2 (3%)  | 1    | 2     | Aug 17 | Aug 17 | Sep 1  | 16   | 3 (3%)   | 1    | 3     |
| 2009     | May 13 | Jun 1  | Jun 1  | 20   | 5 (7%)  | 2    | 6     | Aug 2  | Aug 21 | Sep 22 | 52   | 9 (10%)  | 2    | 11    |
| 2010     | May 16 | May 16 | Jun 4  | 20   | 4 (6%)  | 2    | 5     | Aug 20 | Aug 20 | Sep 1  | 13   | 3 (3%)   | 1    | 3     |
| 2011     | May 13 | May 13 | Jun 4  | 23   | 4 (6%)  | 1    | 4     | Aug 18 | Aug 18 | Oct 4  | 48   | 3 (3%)   | 1    | 3     |
| 2012     | May 4  | May 4  | May 30 | 27   | 6 (9%)  | 1    | 6     | Aug 3  | Aug 3  | Sep 25 | 54   | 10 (11%) | 3    | 12    |
| 2013     | May 27 | May 27 | Jun 1  | 6    | 2 (3%)  | 1    | 2     | Aug 6  | Aug 6  | Aug 20 | 15   | 3 (3%)   | 1    | 3     |
| 2014     | May 25 | May 25 | Jun 4  | 11   | 2 (3%)  | 1    | 2     | Aug 3  | Aug 12 | Sep 18 | 47   | 11 (12%) | 2    | 13    |
| Mean     | May 16 | May 18 | May 30 | 15   | 4 (5%)  | 1    | 4.0   | Aug 11 | Aug 22 | Sep 16 | 36   | 6 (7%)   | 2    | 8.2   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7   | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|------|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.3 | 0.3 | 0.4 | 0.1    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.3 | 0.1 |     | 0.04   |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  | 0.3 | 0.1 |     | 0.06   |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  |     | 0.1 |     | 0.03   |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  | 0.3 | 0.1 | 0.3 | 0.09   |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |      |      | 0.6 |     | 0.1 | 0.07   |
| 2011     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1  | 0.1 | 0.1 | 0.1 | 0.06   |
| 2012     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.1  | 0.1 | 0.3 | 0.1 | 0.09   |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |      |     | 0.1 | 0.1 | 0.03   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      |      |     | 0.1 | 0.2 | 0.03   |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.01 | 0.07 | 0.2 | 0.2 | 0.1 | 0.06   |

| Observed | Jun  | Jul  | Summer | F1  | F2   | F3  | F4  | F5  | F6  | F7   | F8  | F9 | F10  | F11 | F12 | F13 | Fall |
|----------|------|------|--------|-----|------|-----|-----|-----|-----|------|-----|----|------|-----|-----|-----|------|
| 2005     | 0.06 |      | 0.03   |     |      |     |     | 0.1 | 0.7 | 0.3  |     |    |      |     |     |     | 0.09 |
| 2006     | 0.1  |      | 0.05   |     | 0.1  | 0.1 |     | 0.1 | 0.1 |      | 1.6 |    | 0.1  |     |     |     | 0.2  |
| 2007     |      |      |        | 0.1 |      | 0.1 | 0.3 | 0.4 | 0.1 |      | 0.3 |    |      |     |     |     | 0.1  |
| 2008     | 0.2  |      | 0.1    |     |      | 0.3 |     | 0.1 |     |      |     |    |      |     |     |     | 0.03 |
| 2009     | 0.7  |      | 0.3    | 0.1 |      | 0.3 | 0.6 | 0.1 | 0.1 | 0.1  | 0.1 |    |      |     |     |     | 0.1  |
| 2010     |      |      |        |     |      | 0.1 | 0.1 | 0.1 |     |      |     |    |      |     |     |     | 0.03 |
| 2011     |      |      |        |     |      | 0.3 |     |     |     |      |     |    | 0.1  |     |     |     | 0.03 |
| 2012     |      |      |        | 0.6 | 0.3  | 0.4 |     | 0.3 |     |      | 0.1 |    |      |     |     |     | 0.1  |
| 2013     |      | 0.3  | 0.1    | 0.1 |      | 0.3 |     |     |     |      |     |    |      |     |     |     | 0.03 |
| 2014     |      |      |        | 0.3 | 0.3  |     | 0.3 | 0.6 | 0.1 | 0.3  |     |    |      |     |     |     | 0.1  |
| Mean     | 0.09 | 0.02 | 0.05   | 0.1 | 0.07 | 0.2 | 0.1 | 0.2 | 0.1 | 0.07 | 0.2 |    | 0.03 |     |     |     | 0.09 |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     |     |     |     | 3   | 1   |     |    |     |     |     |     | 4    |
| 2006   |     |     |        |     | 1   |     |     |     |     |     | 4   |    |     |     |     |     | 5    |
| 2007   |     |     |        | 1   |     |     | 1   |     | 1   |     |     |    |     |     |     |     | 3    |
| 2008   |     |     |        |     |     |     |     | 1   |     |     |     |    |     |     |     |     | 1    |
| 2009   |     |     |        | 1   |     |     | 1   |     |     |     |     |    |     |     |     |     | 2    |
| 2010   |     |     |        |     |     |     | 1   |     |     |     |     |    |     |     |     |     | 1    |
| 2011   |     |     |        |     |     | 1   |     |     |     |     |     |    |     |     |     |     | 1    |
| 2012   |     |     |        |     | 1   |     |     | 2   |     |     |     |    |     |     |     |     | 3    |
| 2013   |     |     |        | 1   |     |     |     |     |     |     |     |    |     |     |     |     | 1    |
| 2014   |     |     |        | 2   |     |     | 1   |     | 1   | 1   |     |    |     |     |     |     | 5    |
| Mean   |     |     |        | 0.5 | 0.2 | 0.1 | 0.4 | 0.3 | 0.5 | 0.2 | 0.4 |    |     |     |     |     | 2.6  |

Scarlet Tanager is an uncommon spring and fall migrant at MBO, with occasional summer sightings. Over the first seven years of the Spring Migration Monitoring Program, the first arrivals were always between May 13 and 19, but in 2012 the earliest one came much sooner on May 4, and in the two most recent years none were detected until the final week of May. Overall there is just a modest peak of migration around weeks 8 and 9. Fall migration is often spread over a longer period, with the peak ranging from as early as week 1 to as late as week 8, although most commonly between weeks 3 and 6. Both in spring and fall there has been relatively little change in numbers over time. Although at least one individual has been banded each fall, all have been hatch-year birds, and to date none have been banded in spring or summer.



# NOCA: Northern Cardinal / Cardinal rouge (*Cardinalis cardinalis*)

| Observed | First  | Peak   | Last  | Span | # days    | High | Total | First | Peak   | Last   | Span | # days    | High | Total |
|----------|--------|--------|-------|------|-----------|------|-------|-------|--------|--------|------|-----------|------|-------|
| 2005     | Apr 5  | Apr 25 | Jun 3 | 60   | 57 (97%)  | 5    | 126   | Aug 1 | Oct 23 | Oct 30 | 91   | 78 (89%)  | 12   | 249   |
| 2006     | Mar 28 | Apr 29 | Jun 5 | 70   | 69 (100%) | 12   | 406   | Aug 1 | Sep 5  | Oct 30 | 91   | 91 (100%) | 12   | 328   |
| 2007     | Mar 28 | Apr 10 | Jun 5 | 70   | 68 (97%)  | 9    | 269   | Aug 1 | Aug 17 | Oct 30 | 91   | 87 (96%)  | 8    | 261   |
| 2008     | Mar 28 | Mar 29 | Jun 5 | 70   | 67 (96%)  | 5    | 174   | Aug 1 | Oct 12 | Oct 30 | 91   | 79 (87%)  | 6    | 192   |
| 2009     | Mar 28 | Apr 20 | Jun 5 | 70   | 69 (100%) | 13   | 367   | Aug 1 | Aug 1  | Oct 30 | 91   | 78 (86%)  | 7    | 161   |
| 2010     | Mar 28 | Apr 2  | Jun 5 | 70   | 67 (96%)  | 7    | 235   | Aug 1 | Oct 13 | Oct 30 | 91   | 86 (95%)  | 11   | 325   |
| 2011     | Mar 28 | Apr 18 | Jun 5 | 70   | 66 (94%)  | 9    | 222   | Aug 1 | Oct 30 | Oct 30 | 91   | 85 (93%)  | 13   | 306   |
| 2012     | Mar 28 | May 1  | Jun 5 | 70   | 68 (97%)  | 12   | 326   | Aug 1 | Oct 27 | Oct 30 | 91   | 91 (100%) | 20   | 404   |
| 2013     | Mar 28 | Apr 22 | Jun 5 | 70   | 70 (100%) | 10   | 369   | Aug 1 | Aug 18 | Oct 30 | 91   | 90 (99%)  | 11   | 460   |
| 2014     | Mar 29 | Apr 15 | Jun 4 | 68   | 67 (99%)  | 11   | 342   | Aug 1 | Oct 7  | Oct 30 | 91   | 89 (98%)  | 10   | 380   |
| Mean     | Mar 28 | Apr 17 | Jun 4 | 69   | 67 (98%)  | 9    | 284   | Aug 1 | Sep 24 | Oct 30 | 91   | 85 (94%)  | 11   | 307   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005     | 2.8 | 1.5 |     | 1.0 | 1.3 | 1.6    |     | 1.2 | 1.9 | 1.7 | 2.4 | 3.0 | 2.7 | 2.1 | 2.1 | 1.8 | 2.1    |
| 2006     | 3.5 | 4.7 | 1.8 | 2.9 | 2.5 | 3.1    | 3.4 | 4.7 | 6.7 | 8.1 | 7.7 | 6.3 | 7.0 | 5.0 | 6.3 | 3.4 | 5.9    |
| 2007     | 4.4 | 4.6 | 3.3 | 0.2 | 3.8 | 3.6    | 3.7 | 3.6 | 3.0 | 5.1 | 3.7 | 4.7 | 4.6 | 3.3 | 3.9 | 2.9 | 3.8    |
| 2008     | 2.6 | 2.5 | 0.4 | 0.6 |     | 1.5    | 3.4 | 2.9 | 2.3 | 2.7 | 3.0 | 2.7 | 2.1 | 2.3 | 1.6 | 1.9 | 2.5    |
| 2009     | 2.7 | 4.0 | 1.5 | 2.1 | 5.0 | 3.4    | 6.6 | 5.3 | 3.9 | 6.4 | 6.4 | 5.9 | 4.4 | 4.9 | 4.9 | 4.6 | 5.3    |
| 2010     | 4.7 | 5.0 | 2.5 | 2.2 | 4.0 | 3.7    | 3.6 | 2.4 | 3.6 | 4.4 | 3.9 | 3.3 | 2.7 | 3.9 | 3.6 | 2.3 | 3.4    |
| 2011     | 3.0 | 1.0 | 0.3 | 3.0 | 3.6 | 2.2    | 3.3 | 2.1 | 2.3 | 4.6 | 4.0 | 4.3 | 3.7 | 3.1 | 2.1 | 2.1 | 3.2    |
| 2012     | 1.7 | 4.0 | 4.0 | 1.3 | 2.4 | 2.4    | 2.9 | 3.7 | 5.1 | 5.1 | 6.1 | 5.3 | 6.7 | 5.3 | 4.4 | 1.9 | 4.7    |
| 2013     | 2.8 | 3.3 | 3.7 | 4.4 | 4.4 | 3.8    | 5.9 | 5.7 | 4.6 | 7.1 | 5.4 | 6.0 | 4.3 | 5.6 | 3.9 | 4.3 | 5.3    |
| 2014     | 4.8 | 2.8 | 3.3 | 4.6 | 4.0 | 4.0    | 4.5 | 4.7 | 6.0 | 6.0 | 5.7 | 5.0 | 5.0 | 6.3 | 3.9 | 2.8 | 5.0    |
| Mean     | 3.5 | 4.0 | 2.3 | 2.4 | 3.8 | 3.2    | 4.1 | 3.6 | 3.9 | 5.2 | 4.8 | 4.6 | 4.3 | 4.2 | 3.7 | 2.8 | 4.1    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13  | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 2005     | 2.3 | 2.3 | 2.3    | 1.6 | 2.3 | 1.6 | 1.7 | 2.0 | 2.9 | 1.7 | 3.0 | 3.0 | 3.5 | 3.7 | 4.1 | 6.0  | 2.8  |
| 2006     | 3.4 | 3.7 | 3.5    | 4.1 | 3.0 | 3.6 | 5.0 | 4.4 | 4.7 | 3.9 | 3.4 | 2.6 | 2.3 | 3.1 | 3.4 | 3.3  | 3.6  |
| 2007     | 1.6 | 1.5 | 1.5    | 3.6 | 2.9 | 4.0 | 3.4 | 2.1 | 2.7 | 3.4 | 3.0 | 2.3 | 2.0 | 2.6 | 2.0 | 3.3  | 2.9  |
| 2008     | 1.8 | 2.0 | 1.9    | 2.1 | 2.4 | 2.0 | 2.0 | 2.1 | 2.0 | 1.1 | 2.1 | 2.1 | 1.3 | 3.1 | 2.4 | 2.4  | 2.1  |
| 2009     | 1.0 | 0.3 | 0.6    | 3.4 | 2.7 | 1.6 | 1.1 | 1.6 | 1.7 | 1.3 | 2.4 | 1.4 | 0.6 | 0.9 | 1.4 | 2.9  | 1.8  |
| 2010     | 2.3 | 1.3 | 1.7    | 4.9 | 5.9 | 3.6 | 2.6 | 1.4 | 3.4 | 3.1 | 2.0 | 2.4 | 2.3 | 3.7 | 4.4 | 6.7  | 3.6  |
| 2011     | 2.0 | 3.3 | 2.7    | 5.6 | 4.6 | 4.1 | 1.9 | 1.9 | 2.9 | 3.4 | 3.3 | 2.6 | 3.0 | 1.7 | 3.1 | 5.7  | 3.4  |
| 2012     | 1.0 | 2.8 | 1.9    | 4.3 | 3.1 | 3.4 | 3.6 | 3.4 | 5.3 | 4.6 | 3.6 | 3.6 | 2.9 | 4.0 | 5.6 | 10.4 | 4.4  |
| 2013     | 2.3 | 2.5 | 2.4    | 5.7 | 6.6 | 6.9 | 5.3 | 4.7 | 3.0 | 3.4 | 4.7 | 4.6 | 4.6 | 5.3 | 7.0 | 4.0  | 5.1  |
| 2014     | 2.7 | 3.5 | 3.1    | 4.9 | 3.7 | 2.4 | 4.0 | 4.7 | 3.4 | 5.1 | 5.6 | 2.7 | 4.0 | 5.1 | 3.4 | 5.1  | 4.2  |
| Mean     | 2.2 | 2.4 | 2.3    | 4.0 | 3.7 | 3.3 | 3.1 | 2.8 | 3.2 | 3.1 | 3.3 | 2.7 | 2.6 | 3.3 | 3.7 | 5.0  | 3.4  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   | 5   | 2   |     |     |     | 7      |    |    | 1   |     |     | 1   |     | 1   | 2   |     | 5      |
| 2006   | 1   | 1   | 1   | 1   |     | 4      |    |    | 1   |     | 1   | 2   |     |     |     |     | 4      |
| 2007   | 2   |     |     |     |     | 2      |    |    |     |     |     |     |     |     |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |     |     |     |     |     |     |     |     |        |
| 2009   |     |     |     |     | 1   | 1      |    |    |     | 3   |     | 1   |     |     |     |     | 4      |
| 2010   | 2   |     | 2   |     |     | 4      |    |    |     |     |     |     |     |     |     |     |        |
| 2011   | 3   |     |     |     | 2   | 5      |    |    |     | 2   | 1   |     |     |     |     |     | 3      |
| 2012   | 11  |     |     |     |     | 11     |    |    |     | 1   |     | 1   | 2   | 1   |     |     | 5      |
| 2013   | 4   | 2   |     |     | 3   | 9      |    |    |     | 2   |     | 2   | 1   |     |     |     | 5      |
| 2014   | 7   | 2   |     |     |     | 9      |    |    |     |     |     |     | 2   | 1   | 1   |     | 4      |
| Mean   | 4.4 | 1.0 | 1.0 | 0.2 | 0.8 | 5.8    |    |    | 1.0 | 0.8 | 0.2 | 0.7 | 0.5 | 0.3 | 0.3 |     | 3.0    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     | 1   |     | 1   |     |     | 1   |     | 1   | 1   | 2   | 1   | 1   | 9    |
| 2006   |     |     |        |     | 1   |     | 1   | 1   | 1   |     |     |     |     | 1   | 2   |     | 7    |
| 2007   |     |     |        | 1   | 1   |     |     |     |     |     |     |     | 1   | 2   |     | 2   | 7    |
| 2008   |     |     |        | 1   | 1   | 1   |     |     |     |     |     |     | 1   | 3   |     |     | 7    |
| 2009   | 1   |     | 1      | 1   |     | 1   |     |     | 1   |     |     | 1   |     |     | 1   | 2   | 7    |
| 2010   |     |     |        | 4   | 2   | 1   |     |     |     | 2   |     |     |     |     | 2   | 1   | 12   |
| 2011   |     |     |        | 3   | 1   | 2   |     | 1   | 1   |     |     | 1   |     | 1   | 1   | 3   | 14   |
| 2012   |     | 1   | 1      | 2   | 1   | 2   | 1   | 1   |     |     | 1   | 1   | 1   |     | 6   | 5   | 21   |
| 2013   |     | 3   | 3      | 2   | 1   |     | 1   | 2   |     |     | 2   |     | 2   |     | 1   |     | 11   |
| 2014   |     | 1   | 1      | 1   |     | 1   |     |     |     |     |     | 1   | 2   | 2   | 2   | 2   | 9    |
| Mean   | 0.2 | 0.6 | 0.7    | 1.5 | 0.9 | 0.8 | 0.4 | 0.5 | 0.3 | 0.3 | 0.3 | 0.4 | 0.7 | 1.1 | 1.6 | 1.6 | 10.4 |

Northern Cardinal is a common year-round resident that is one of just 3 species that has been observed in all study periods (along with American Crow and Black-capped Chickadee). Mean daily counts are relatively similar across seasons, although a bit higher in spring, perhaps because singing males are more readily detected. In fall, numbers sometimes are higher toward the end of the season. While spring counts have been fairly variable among years, fall counts have been considerably higher since 2010, with roughly 50% more individuals banded and 75% more individuals observed than on average from 2005 to 2009.

**RBGR: Rose-breasted Grosbeak / Cardinal à poitrine rose (*Pheucticus ludovicianus*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 7  | May 16 | Jun 3 | 28   | 26 (44%) | 8    | 79    | Aug 1 | Aug 15 | Oct 11 | 72   | 44 (50%) | 9    | 123   |
| 2006     | May 8  | May 31 | Jun 5 | 29   | 28 (41%) | 8    | 103   | Aug 1 | Aug 30 | Sep 25 | 56   | 48 (53%) | 13   | 213   |
| 2007     | May 8  | May 18 | Jun 5 | 29   | 26 (37%) | 9    | 100   | Aug 1 | Aug 7  | Oct 13 | 74   | 41 (45%) | 12   | 133   |
| 2008     | May 1  | May 20 | Jun 4 | 35   | 30 (43%) | 10   | 124   | Aug 1 | Aug 5  | Oct 12 | 73   | 43 (47%) | 15   | 137   |
| 2009     | May 3  | May 13 | Jun 4 | 33   | 22 (32%) | 7    | 58    | Aug 1 | Aug 16 | Oct 12 | 73   | 43 (47%) | 10   | 131   |
| 2010     | May 15 | May 25 | Jun 5 | 22   | 12 (17%) | 6    | 20    | Aug 1 | Aug 2  | Sep 22 | 53   | 43 (47%) | 10   | 117   |
| 2011     | May 2  | May 20 | Jun 5 | 35   | 26 (37%) | 11   | 69    | Aug 1 | Aug 7  | Sep 24 | 55   | 43 (47%) | 7    | 82    |
| 2012     | May 9  | May 10 | Jun 5 | 28   | 23 (33%) | 7    | 47    | Aug 1 | Aug 24 | Sep 28 | 59   | 43 (47%) | 14   | 122   |
| 2013     | May 11 | May 17 | Jun 1 | 22   | 12 (17%) | 6    | 20    | Aug 1 | Aug 9  | Oct 9  | 70   | 49 (54%) | 10   | 141   |
| 2014     | May 9  | May 11 | Jun 4 | 27   | 16 (24%) | 4    | 28    | Aug 1 | Aug 1  | Sep 29 | 60   | 50 (55%) | 11   | 162   |
| Mean     | May 7  | May 18 | Jun 4 | 29   | 22 (32%) | 8    | 65    | Aug 1 | Aug 11 | Oct 3  | 64   | 45 (49%) | 11   | 136   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5   | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|------|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |      | 0.3 | 2.6 | 3.9 | 2.1 | 3.4 | 1.3    |
| 2006     |     |     |     |     |     |        |    |    |    |    |      | 0.1 | 1.9 | 4.4 | 4.3 | 4.0 | 1.5    |
| 2007     |     |     |     |     |     |        |    |    |    |    |      | 0.4 | 4.9 | 5.4 | 2.6 | 1.0 | 1.4    |
| 2008     |     |     |     |     |     |        |    |    |    |    | 0.1  | 0.6 | 3.6 | 7.9 | 4.1 | 1.4 | 1.8    |
| 2009     |     |     |     |     |     |        |    |    |    |    |      | 0.1 | 3.9 | 1.1 | 2.1 | 1.0 | 0.8    |
| 2010     |     |     |     |     |     |        |    |    |    |    |      |     | 0.1 | 0.6 | 1.1 | 1.0 | 0.3    |
| 2011     |     |     |     |     |     |        |    |    |    |    |      | 0.3 | 2.0 | 2.9 | 3.6 | 1.1 | 1.0    |
| 2012     |     |     |     |     |     |        |    |    |    |    |      |     | 3.0 | 1.1 | 1.1 | 1.4 | 0.7    |
| 2013     |     |     |     |     |     |        |    |    |    |    |      |     | 0.3 | 1.6 | 0.9 | 0.1 | 0.3    |
| 2014     |     |     |     |     |     |        |    |    |    |    |      |     | 2.0 | 0.7 | 0.4 | 1.0 | 0.4    |
| Mean     |     |     |     |     |     |        |    |    |    |    | 0.01 | 0.2 | 2.4 | 3.0 | 2.2 | 1.5 | 0.9    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10  | F11  | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|------|
| 2005     | 1.6 | 1.5 | 1.5    | 3.4 | 4.6 | 3.0 | 2.0 | 1.6 | 1.6 | 0.6 | 0.4 | 0.2 | 0.2  | 0.2  |     |     | 1.4  |
| 2006     | 1.2 | 3.1 | 2.2    | 6.6 | 6.6 | 2.6 | 4.9 | 4.3 | 2.9 | 2.4 | 0.3 |     |      |      |     |     | 2.3  |
| 2007     | 0.9 | 2.7 | 1.7    | 5.1 | 4.1 | 3.6 | 1.4 | 2.9 | 0.7 | 0.9 | 0.1 |     |      | 0.1  |     |     | 1.5  |
| 2008     | 2.0 | 1.6 | 1.8    | 5.4 | 5.0 | 3.4 | 2.0 | 1.3 | 1.6 | 0.3 | 0.1 | 0.3 |      | 0.1  |     |     | 1.5  |
| 2009     | 1.0 | 1.3 | 1.1    | 5.0 | 3.9 | 4.3 | 0.9 | 1.3 | 1.9 | 0.6 | 0.6 | 0.3 |      | 0.1  |     |     | 1.4  |
| 2010     | 0.3 | 1.3 | 1.0    | 4.7 | 2.7 | 1.9 | 1.9 | 0.9 | 2.7 | 1.6 | 0.4 |     |      |      |     |     | 1.3  |
| 2011     | 0.7 |     | 0.3    | 2.3 | 1.9 | 1.9 | 1.6 | 1.6 | 1.1 | 0.9 | 0.6 |     |      |      |     |     | 0.9  |
| 2012     |     | 0.8 | 0.4    | 3.9 | 3.3 | 2.1 | 4.9 | 0.6 | 1.0 | 1.1 | 0.3 | 0.3 |      |      |     |     | 1.3  |
| 2013     | 1.3 | 0.8 | 1.0    | 3.1 | 2.1 | 4.4 | 3.3 | 1.6 | 2.4 | 1.7 | 1.3 |     | 0.1  |      |     |     | 1.5  |
| 2014     | 1.3 | 4.0 | 2.9    | 4.4 | 3.7 | 3.0 | 2.9 | 2.6 | 2.4 | 2.0 | 1.1 | 1.1 |      |      |     |     | 1.8  |
| Mean     | 1.2 | 1.8 | 1.5    | 4.4 | 3.8 | 3.0 | 2.6 | 1.8 | 1.8 | 1.2 | 0.5 | 0.2 | 0.03 | 0.06 |     |     | 1.5  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    | 3   | 9   |     |     | 12     |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    | 2   | 4   | 3   |     | 9      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 3   |     |     | 4      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    | 2   | 5   |     |     | 7      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    | 3   | 2   | 2   |     | 7      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    | 1   | 1   |     |     | 2      |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |     | 1   |     |     | 1      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    | 1   |     |     |     | 1      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |     |     |     |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    | 1.3 | 2.5 | 0.5 |     | 4.3    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     | 4   | 4      | 2   | 11  | 6   | 6   | 2   |     | 1   | 1   |     | 1   |     |     |     | 30   |
| 2006   |     | 3   | 3      | 8   | 17  | 2   | 4   | 5   | 7   | 2   |     |     |     |     |     |     | 45   |
| 2007   |     |     |        | 14  | 4   | 8   | 1   | 3   |     |     | 1   |     |     |     |     |     | 31   |
| 2008   |     |     |        | 15  | 8   |     | 4   | 1   | 1   |     |     | 1   |     |     |     |     | 30   |
| 2009   |     | 5   | 5      | 16  | 5   | 7   |     | 1   | 1   | 1   | 2   | 1   |     | 1   |     |     | 35   |
| 2010   |     | 5   | 5      | 13  | 4   | 2   | 3   | 3   | 5   | 3   |     |     |     |     |     |     | 33   |
| 2011   |     |     |        | 3   | 4   | 3   |     |     | 4   | 2   | 2   |     |     |     |     |     | 18   |
| 2012   |     | 1   | 1      | 6   | 5   | 2   | 15  |     | 1   | 1   |     |     |     |     |     |     | 30   |
| 2013   |     | 1   | 1      | 8   | 7   | 6   | 2   | 1   | 5   | 4   | 1   |     |     |     |     |     | 34   |
| 2014   |     | 8   | 8      | 7   | 6   | 2   | 7   | 5   | 3   | 4   | 1   | 1   |     |     |     |     | 36   |
| Mean   |     | 3.0 | 3.0    | 9.2 | 7.1 | 3.8 | 4.2 | 2.1 | 2.7 | 1.8 | 0.8 | 0.3 | 0.1 | 0.1 |     |     | 32.2 |

Rose-breasted Grosbeak is fairly common at MBO from around mid-May to mid-September. The first spring arrivals always appear in the first half of May, and migration most commonly peaks in week 8. One or two pairs breed at MBO in most years, and at least one individual has been banded in summer in seven of nine banding seasons. In most years, fall numbers peak in week 1 and steadily decline through to week 8, with scattered sightings continuing as late as the second week of October in four years. Mean daily counts and numbers banded in spring have both declined considerably over the past decade, but fall results have been remarkably consistent except for a high in 2006 and a low in 2011.

**INBU: Indigo Bunting / Passerin indigo (*Passerina cyanea*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 16 | May 30 | Jun 3 | 19   | 11 (19%) | 6    | 20    | Aug 1 | Aug 10 | Oct 4  | 65   | 43 (49%) | 10   | 97    |
| 2006     | May 20 | May 21 | Jun 2 | 14   | 6 (9%)   | 2    | 7     | Aug 1 | Aug 2  | Oct 27 | 88   | 36 (40%) | 5    | 76    |
| 2007     | May 17 | May 17 | Jun 1 | 16   | 6 (9%)   | 2    | 8     | Aug 3 | Sep 18 | Oct 3  | 62   | 23 (25%) | 6    | 43    |
| 2008     | May 18 | May 25 | Jun 2 | 16   | 13 (19%) | 4    | 22    | Aug 1 | Aug 6  | Oct 7  | 68   | 47 (52%) | 6    | 98    |
| 2009     | May 13 | May 18 | Jun 5 | 24   | 20 (29%) | 3    | 39    | Aug 1 | Sep 3  | Oct 8  | 69   | 59 (65%) | 8    | 197   |
| 2010     | May 5  | May 18 | Jun 5 | 32   | 26 (37%) | 5    | 61    | Aug 1 | Aug 4  | Oct 6  | 67   | 56 (62%) | 14   | 199   |
| 2011     | May 8  | May 29 | Jun 5 | 29   | 16 (23%) | 8    | 36    | Aug 1 | Aug 2  | Oct 1  | 62   | 50 (55%) | 14   | 158   |
| 2012     | May 14 | May 24 | Jun 5 | 23   | 22 (31%) | 6    | 73    | Aug 1 | Aug 11 | Sep 23 | 54   | 37 (41%) | 5    | 64    |
| 2013     | May 21 | Jun 1  | Jun 5 | 16   | 13 (19%) | 5    | 35    | Aug 1 | Aug 4  | Sep 30 | 61   | 52 (57%) | 8    | 170   |
| 2014     | May 15 | May 22 | Jun 4 | 21   | 17 (25%) | 8    | 54    | Aug 1 | Aug 3  | Oct 2  | 63   | 38 (42%) | 6    | 65    |
| Mean     | May 14 | May 23 | Jun 3 | 21   | 15 (22%) | 5    | 36    | Aug 1 | Aug 12 | Oct 5  | 66   | 44 (49%) | 8    | 117   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6   | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|------|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.1 | 1.1 | 2.2 | 0.3    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.6 | 0.3 | 0.1 | 0.1    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.4 | 0.3 | 0.4 | 0.1    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.6 | 2.1 | 0.4 | 0.3    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    |      | 0.3 | 1.6 | 1.9 | 1.9 | 0.6    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.7 | 2.6 | 3.0 | 2.3 | 0.9    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    | 0.1  | 0.4 | 0.7 | 2.1 | 1.7 | 0.5    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    |      | 0.7 | 2.9 | 4.0 | 2.9 | 1.0    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |      |     | 0.9 | 1.1 | 3.0 | 0.5    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |      | 0.1 | 2.3 | 3.7 | 1.8 | 0.8    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.03 | 0.2 | 1.3 | 2.0 | 1.7 | 0.5    |

| Observed | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13  | Fall |
|----------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 2005     | 0.3 | 0.6 | 0.5    | 2.3 | 3.6 | 1.3 | 0.7 | 1.7 | 0.1 | 1.6 | 1.3 | 1.3 | 0.2 |     |     |      | 1.1  |
| 2006     | 0.7 | 2.2 | 1.5    | 2.9 | 1.7 | 0.7 | 0.4 | 2.0 | 1.9 | 0.9 | 0.3 |     |     |     |     | 0.1  | 0.8  |
| 2007     | 0.6 | 0.5 | 0.5    | 0.4 | 0.3 | 0.1 |     | 0.3 | 0.4 | 1.6 | 1.3 | 1.3 | 0.4 |     |     |      | 0.5  |
| 2008     | 1.2 | 1.4 | 1.3    | 3.4 | 2.4 | 1.7 | 0.9 | 1.1 | 1.6 | 0.1 | 0.7 | 1.1 | 0.9 |     |     |      | 1.1  |
| 2009     | 0.7 | 0.8 | 0.7    | 4.1 | 4.0 | 2.4 | 1.7 | 2.1 | 3.0 | 3.3 | 4.6 | 2.4 | 0.4 |     |     |      | 2.2  |
| 2010     | 2.0 | 2.7 | 2.4    | 8.1 | 5.9 | 3.1 | 2.1 | 3.4 | 1.7 | 1.4 | 1.6 | 0.7 | 0.3 |     |     |      | 2.2  |
| 2011     | 0.7 | 2.3 | 1.6    | 5.9 | 2.4 | 1.4 | 2.1 | 2.1 | 2.1 | 2.9 | 3.1 | 0.4 |     |     |     |      | 1.7  |
| 2012     | 0.8 | 0.8 | 0.8    | 2.0 | 2.3 | 1.0 | 1.4 | 1.0 | 0.1 | 1.1 | 0.1 |     |     |     |     |      | 0.7  |
| 2013     | 0.3 | 0.3 | 0.3    | 6.6 | 4.1 | 3.6 | 1.9 | 2.1 | 2.1 | 2.3 | 0.7 | 0.9 |     |     |     |      | 1.9  |
| 2014     |     | 0.8 | 0.4    | 3.1 | 1.4 | 1.0 | 0.4 | 0.9 | 0.9 | 0.6 | 0.3 | 0.7 |     |     |     |      | 0.7  |
| Mean     | 0.6 | 1.2 | 1.0    | 3.9 | 2.8 | 1.6 | 1.2 | 1.7 | 1.4 | 1.6 | 1.4 | 0.9 | 0.2 |     |     | 0.01 | 1.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   | 2   |     | 3      |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     | 1   | 1      |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 4   |     | 4      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |     | 1   | 2      |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 2   |     | 2      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    |     | 1   | 2   | 3      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |     |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.2 | 1.0 | 0.4 | 1.6    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     | 13  | 3   |     | 8   |     | 7   | 5   | 2   | 1   |     |     |     | 39   |
| 2006   |     | 1   | 1      | 2   | 4   | 1   |     | 2   | 6   | 2   | 2   |     |     |     |     | 1   | 20   |
| 2007   |     | 1   | 1      |     |     |     |     | 2   | 2   | 2   |     | 5   |     |     |     |     | 13   |
| 2008   |     |     |        | 4   | 2   | 4   | 3   | 3   | 3   |     | 2   | 6   | 5   |     |     |     | 32   |
| 2009   |     |     |        | 4   | 3   | 2   | 5   | 5   | 6   | 10  | 10  | 6   |     |     |     |     | 51   |
| 2010   |     | 2   | 2      | 8   | 8   | 12  | 4   | 8   | 7   | 2   | 9   | 4   |     |     |     |     | 62   |
| 2011   |     | 2   | 2      | 7   |     | 1   | 9   | 7   | 9   | 10  | 5   |     |     |     |     |     | 48   |
| 2012   |     |     |        | 3   | 2   | 2   | 9   | 2   | 1   | 6   |     |     |     |     |     |     | 25   |
| 2013   |     |     |        | 4   | 2   | 5   | 7   | 7   | 8   | 6   | 3   |     |     |     |     |     | 42   |
| 2014   |     |     |        | 1   | 1   | 4   |     | 1   | 1   | 2   |     | 4   |     |     |     |     | 14   |
| Mean   |     | 0.7 | 0.7    | 3.3 | 3.5 | 3.4 | 3.7 | 4.5 | 4.3 | 4.7 | 3.8 | 2.7 | 0.6 |     |     | 0.1 | 34.6 |

Indigo Bunting is a fairly common species at MBO, generally present from around mid-May to early October. The first spring arrivals have been between May 13 and 21, except for earlier birds in 2010 and 2011; the peak is most often in week 9. Most years one or two pairs breed at MBO, with some occasionally banded in July. Fall counts are highest in early August and taper off over the next two months, although curiously the greatest number have been banded from early to mid-September. One exceptionally late migrant was banded in the final week of October in 2006. Numbers were particularly high in fall 2009 and 2010; otherwise they have fluctuated among years, but without any clear pattern.

**BOBO: Bobolink / Goglu des prés (*Dolichonyx oryzivorus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | May 12 | May 17 | Jun 3  | 23   | 13 (22%) | 3    | 20    | Aug 21 | Aug 21 | Aug 21 | 1    | 1 (1%)   | 1    | 1     |
| 2006     | May 13 | May 16 | May 26 | 14   | 7 (10%)  | 2    | 9     | Aug 3  | Aug 16 | Sep 16 | 45   | 30 (33%) | 45   | 331   |
| 2007     | May 6  | May 25 | Jun 5  | 31   | 24 (34%) | 8    | 97    | Aug 1  | Aug 26 | Aug 28 | 28   | 4 (4%)   | 3    | 6     |
| 2008     | May 5  | May 16 | Jun 5  | 32   | 30 (43%) | 7    | 113   | Sep 9  | Sep 9  | Sep 9  | 1    | 1 (1%)   | 1    | 1     |
| 2009     | May 5  | May 15 | May 28 | 24   | 11 (16%) | 3    | 13    |        |        |        |      |          |      |       |
| 2010     | May 13 | May 13 | Jun 2  | 21   | 6 (9%)   | 4    | 10    |        |        |        |      |          |      |       |
| 2011     | May 6  | May 18 | May 23 | 18   | 11 (16%) | 7    | 33    |        |        |        |      |          |      |       |
| 2012     | May 8  | May 13 | Jun 1  | 25   | 10 (14%) | 5    | 18    | Aug 3  | Aug 29 | Aug 29 | 27   | 3 (3%)   | 2    | 4     |
| 2013     | May 14 | May 19 | May 19 | 6    | 3 (4%)   | 2    | 4     | Aug 20 | Aug 20 | Sep 6  | 18   | 3 (3%)   | 15   | 23    |
| 2014     | May 14 | May 15 | May 29 | 16   | 6 (9%)   | 2    | 8     | Aug 21 | Aug 21 | Aug 21 | 1    | 1 (1%)   | 2    | 2     |
| Mean     | May 9  | May 16 | May 29 | 21   | 12 (18%) | 4    | 33    | Aug 15 | Aug 24 | Aug 31 | 17   | 6 (7%)   | 10   | 37    |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    | 0.1 | 0.6 | 0.6 | 0.6 | 1.4 | 0.3    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    |     | 0.3 | 0.7 | 0.3 |     | 0.1    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    | 0.1 | 1.9 | 3.9 | 5.3 | 2.7 | 1.4    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    | 1.3 | 3.4 | 5.4 | 4.0 | 2.0 | 1.6    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 0.1 | 1.0 | 0.6 | 0.1 |     | 0.2    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    |     | 0.9 | 0.4 |     | 0.1 | 0.1    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    | 0.3 | 1.0 | 3.3 | 0.1 |     | 0.5    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    | 0.3 | 1.6 | 0.4 | 0.1 | 0.1 | 0.3    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |     | 0.1 | 0.4 |     |     | 0.06   |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |     | 0.4 | 0.6 | 0.1 |     | 0.1    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 0.2 | 1.1 | 1.6 | 1.1 | 0.6 | 0.5    |

| Observed | Jun | Jul | Summer | F1   | F2  | F3   | F4   | F5  | F6  | F7   | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|------|-----|------|------|-----|-----|------|----|----|-----|-----|-----|-----|------|
| 2005     | 0.1 |     | 0.06   |      |     | 0.1  |      |     |     |      |    |    |     |     |     |     | 0.01 |
| 2006     |     |     |        | 0.1  | 8.7 | 15.3 | 11.6 | 8.6 | 2.4 | 0.6  |    |    |     |     |     |     | 3.6  |
| 2007     | 1.1 |     | 0.6    | 0.1  |     |      | 0.7  |     |     |      |    |    |     |     |     |     | 0.07 |
| 2008     |     |     |        |      |     |      |      |     | 0.1 |      |    |    |     |     |     |     | 0.01 |
| 2009     | 1.0 |     | 0.4    |      |     |      |      |     |     |      |    |    |     |     |     |     |      |
| 2010     |     | 1.3 | 0.9    |      |     |      |      |     |     |      |    |    |     |     |     |     |      |
| 2011     |     |     |        |      |     |      |      |     |     |      |    |    |     |     |     |     |      |
| 2012     |     |     |        | 0.3  |     |      |      | 0.3 |     |      |    |    |     |     |     |     | 0.04 |
| 2013     |     |     |        |      |     | 2.3  |      |     | 1.0 |      |    |    |     |     |     |     | 0.3  |
| 2014     |     |     |        |      |     | 0.3  |      |     |     |      |    |    |     |     |     |     | 0.02 |
| Mean     | 0.2 | 0.1 | 0.2    | 0.06 | 0.9 | 1.8  | 1.2  | 0.9 | 0.4 | 0.06 |    |    |     |     |     |     | 0.4  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    | 1   |    |     | 1      |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |     |    |     |        |
| Mean   |     |     |     |     |     |        |    |    |    |    |    |    |    | 0.1 |    |     | 0.1    |

Bobolink has been observed in every spring, as well as four summer and seven fall seasons. Spring arrivals were between May 5 and 8 in five years, and between May 12 and 14 in the five other years; the overall peak is in week 8. In 2007 and 2008, Bobolinks set up territories in the adjacent field, with sightings weekly through the second half of spring, and into June in 2007. In fall there were regular sightings throughout the first half of the season, including large numbers in the second half of August. However, no Bobolinks were observed in fall from 2009 to 2011, and only in small numbers on scattered dates in the other six years.

**RWBL: Red-winged Blackbird / Carouge à épaulettes (*Agelaius phoeniceus*)**

| Observed | First  | Peak   | Last  | Span | # days    | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|-----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 30 | Jun 3 | 60   | 59 (100%) | 55   | 1496  | Aug 1 | Oct 21 | Oct 30 | 91   | 62 (70%) | 175  | 2364  |
| 2006     | Mar 28 | Apr 16 | Jun 5 | 70   | 69 (100%) | 140  | 3011  | Aug 1 | Oct 20 | Oct 30 | 91   | 64 (70%) | 430  | 5024  |
| 2007     | Mar 28 | May 10 | Jun 5 | 70   | 70 (100%) | 225  | 4348  | Aug 1 | Oct 24 | Oct 30 | 91   | 69 (76%) | 2501 | 9375  |
| 2008     | Mar 28 | May 13 | Jun 5 | 70   | 70 (100%) | 95   | 3185  | Aug 1 | Oct 17 | Oct 30 | 91   | 66 (73%) | 550  | 5805  |
| 2009     | Mar 28 | Apr 27 | Jun 5 | 70   | 69 (100%) | 70   | 2373  | Aug 1 | Oct 27 | Oct 30 | 91   | 74 (81%) | 2500 | 7785  |
| 2010     | Mar 28 | Apr 21 | Jun 5 | 70   | 70 (100%) | 92   | 2593  | Aug 1 | Oct 30 | Oct 30 | 91   | 71 (78%) | 1100 | 10217 |
| 2011     | Mar 28 | Apr 19 | Jun 5 | 70   | 70 (100%) | 90   | 2989  | Aug 1 | Oct 27 | Oct 30 | 91   | 73 (80%) | 1200 | 10251 |
| 2012     | Mar 28 | Apr 29 | Jun 5 | 70   | 69 (99%)  | 180  | 3423  | Aug 1 | Oct 10 | Oct 30 | 91   | 76 (84%) | 1009 | 10557 |
| 2013     | Mar 28 | Apr 9  | Jun 5 | 70   | 70 (100%) | 110  | 3364  | Aug 1 | Oct 29 | Oct 30 | 91   | 71 (78%) | 850  | 5691  |
| 2014     | Mar 29 | Apr 20 | Jun 4 | 68   | 67 (99%)  | 100  | 3014  | Aug 2 | Oct 12 | Oct 30 | 90   | 78 (86%) | 450  | 5966  |
| Mean     | Mar 28 | Apr 25 | Jun 4 | 69   | 68 (100%) | 116  | 2980  | Aug 1 | Oct 21 | Oct 30 | 91   | 70 (78%) | 1076 | 7304  |

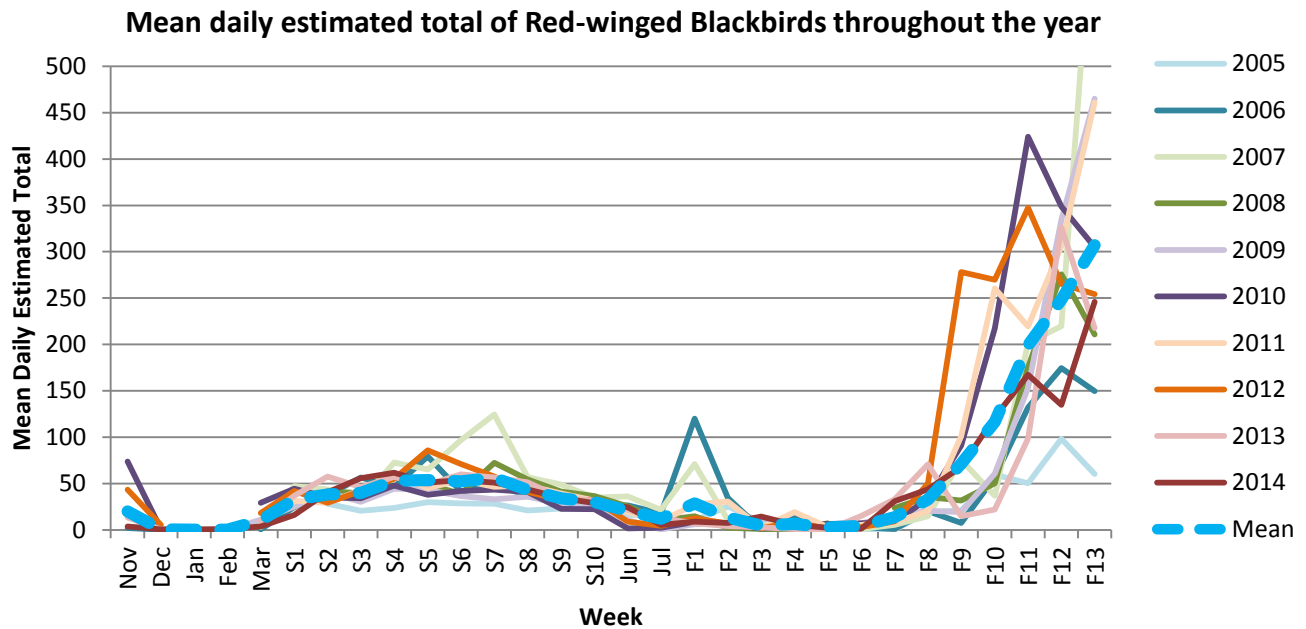
| Observed | Nov  | Dec | Jan  | Feb | Mar  | Winter | S1   | S2   | S3   | S4   | S5   | S6   | S7    | S8   | S9   | S10  | Spring |
|----------|------|-----|------|-----|------|--------|------|------|------|------|------|------|-------|------|------|------|--------|
| 2005     | 2.0  |     |      |     |      | 0.6    |      | 28.2 | 20.6 | 23.7 | 30.1 | 28.6 | 28.1  | 20.9 | 23.0 | 25.2 | 25.4   |
| 2006     | 1.9  | 0.1 | 0.08 |     | 0.7  | 0.6    | 24.6 | 37.5 | 56.6 | 46.1 | 79.3 | 41.4 | 49.6  | 36.4 | 37.6 | 26.4 | 43.6   |
| 2007     | 0.4  |     |      |     | 3.2  | 0.8    | 47.1 | 43.6 | 31.0 | 72.6 | 65.0 | 96.9 | 124.6 | 56.7 | 48.9 | 34.9 | 62.1   |
| 2008     | 3.6  |     |      |     |      | 1.2    | 24.3 | 41.6 | 39.6 | 57.3 | 49.0 | 38.9 | 72.3  | 54.4 | 41.3 | 36.4 | 45.5   |
| 2009     |      |     |      | 0.1 | 10.9 | 4.5    | 25.1 | 40.3 | 30.3 | 44.3 | 43.1 | 36.4 | 33.0  | 35.9 | 28.3 | 28.0 | 34.4   |
| 2010     | 73.8 | 0.8 |      |     | 29.2 | 28.4   | 44.3 | 35.0 | 34.0 | 47.9 | 38.0 | 41.9 | 43.4  | 40.9 | 22.7 | 22.4 | 37.0   |
| 2011     | 1.4  |     |      |     | 5.9  | 1.6    | 31.4 | 29.3 | 42.9 | 59.1 | 45.0 | 53.9 | 46.6  | 48.0 | 39.3 | 31.6 | 42.7   |
| 2012     | 43.5 | 5.5 |      |     | 18.2 | 21.9   | 42.1 | 29.1 | 42.1 | 55.0 | 86.0 | 71.0 | 57.6  | 41.1 | 32.4 | 32.4 | 48.9   |
| 2013     | 13.5 | 0.7 | 0.6  |     | 10.0 | 5.4    | 36.9 | 57.6 | 46.3 | 57.1 | 49.0 | 60.1 | 56.4  | 51.3 | 34.3 | 31.6 | 48.1   |
| 2014     | 3.6  | 0.5 | 0.7  | 1.0 | 3.6  | 1.8    | 16.3 | 40.6 | 55.7 | 61.7 | 51.1 | 53.7 | 51.0  | 43.6 | 34.3 | 29.0 | 44.3   |
| Mean     | 20.1 | 0.7 | 0.2  | 0.1 | 10.3 | 7.7    | 32.7 | 38.4 | 39.9 | 52.9 | 53.6 | 52.3 | 56.3  | 42.9 | 34.2 | 29.9 | 43.5   |

| Observed | Jun  | Jul  | Summer | F1    | F2   | F3   | F4   | F5  | F6   | F7   | F8   | F9    | F10   | F11   | F12   | F13   | Fall  |
|----------|------|------|--------|-------|------|------|------|-----|------|------|------|-------|-------|-------|-------|-------|-------|
| 2005     | 16.6 | 14.5 | 15.5   | 10.1  | 25.6 | 8.1  | 2.9  | 0.4 | 0.3  | 0.3  | 19.1 | 21.0  | 59.7  | 50.2  | 98.4  | 60.3  | 26.9  |
| 2006     | 26.5 | 17.8 | 21.7   | 120.1 | 34.6 | 0.7  | 16.7 | 0.6 | 3.0  | 1.1  | 20.3 | 7.6   | 57.0  | 132.0 | 174.4 | 149.6 | 55.2  |
| 2007     | 36.3 | 21.5 | 29.5   | 71.1  | 10.6 | 2.3  | 0.1  | 0.4 | 0.9  | 5.4  | 14.9 | 75.4  | 36.9  | 201.9 | 219.7 | 699.7 | 103.0 |
| 2008     | 25.6 | 10.2 | 17.9   | 14.7  | 2.4  | 0.9  | 0.4  | 7.3 |      | 23.9 | 35.6 | 31.6  | 50.3  | 175.7 | 275.7 | 210.9 | 63.8  |
| 2009     | 10.7 | 0.5  | 4.9    | 6.1   | 6.4  | 12.4 | 7.3  | 3.9 | 7.3  | 15.3 | 20.7 | 19.4  | 60.6  | 153.3 | 334.4 | 465.0 | 85.5  |
| 2010     | 1.7  | 2.5  | 2.2    | 8.6   | 4.7  | 1.6  | 2.7  | 6.6 | 7.0  | 8.9  | 33.3 | 91.0  | 217.4 | 424.0 | 348.7 | 305.1 | 112.3 |
| 2011     | 19.3 | 9.3  | 13.6   | 27.4  | 30.6 | 2.1  | 19.1 | 3.1 | 5.4  | 8.3  | 20.3 | 101.0 | 260.6 | 219.3 | 306.1 | 461.0 | 112.6 |
| 2012     | 8.8  | 4.5  | 6.6    | 12.6  | 6.9  | 2.0  | 8.3  | 1.3 | 3.0  | 9.1  | 50.0 | 278.0 | 269.9 | 347.3 | 265.4 | 254.4 | 116.0 |
| 2013     | 21.7 | 12.8 | 16.6   | 7.1   | 3.9  | 2.7  | 0.9  | 0.1 | 15.1 | 33.0 | 70.7 | 14.7  | 22.1  | 98.6  | 326.3 | 217.7 | 62.5  |
| 2014     | 24.3 | 5.5  | 13.6   | 9.0   | 7.4  | 14.4 | 5.4  | 2.4 | 1.4  | 30.9 | 43.6 | 68.0  | 121.7 | 167.3 | 134.7 | 246.0 | 65.6  |
| Mean     | 20.7 | 11.9 | 16.0   | 28.7  | 13.3 | 4.7  | 6.4  | 2.6 | 4.3  | 13.6 | 32.8 | 71.5  | 116.4 | 199.1 | 248.4 | 307.0 | 80.5  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3  | S4  | S5   | S6   | S7   | S8   | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|-----|-----|------|------|------|------|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |     | 2   | 24   | 21   | 9    | 11   | 5   | 1   | 73     |
| 2006   |     |     |     |     |     |        |    |    | 4   | 18  | 35   | 42   | 25   | 20   | 21  | 4   | 169    |
| 2007   |     |     |     |     |     |        |    |    |     | 12  | 11   | 27   | 65   | 22   | 12  | 6   | 155    |
| 2008   |     |     |     |     |     |        |    |    |     | 9   | 11   | 13   | 33   | 20   | 21  | 7   | 114    |
| 2009   |     |     |     |     |     |        |    |    |     | 2   | 3    | 5    | 21   | 16   | 2   | 1   | 50     |
| 2010   | 1   |     |     |     | 14  | 15     |    |    |     | 12  | 15   | 19   | 9    | 18   | 8   | 4   | 85     |
| 2011   | 1   |     |     |     |     | 1      |    |    |     | 3   | 8    | 15   | 23   | 13   | 6   | 2   | 70     |
| 2012   | 8   | 16  |     |     | 1   | 25     |    |    |     | 21  | 12   | 49   | 19   | 9    | 2   | 4   | 116    |
| 2013   | 10  |     |     |     |     | 10     |    |    |     | 8   | 12   | 25   | 24   | 11   | 3   |     | 83     |
| 2014   |     |     |     |     |     |        |    |    |     | 4   | 4    | 19   | 17   | 8    | 11  |     | 63     |
| Mean   | 2.5 | 2.3 |     |     | 1.9 | 5.7    |    |    | 2.0 | 9.1 | 13.5 | 23.5 | 24.5 | 14.8 | 9.1 | 2.9 | 97.8   |

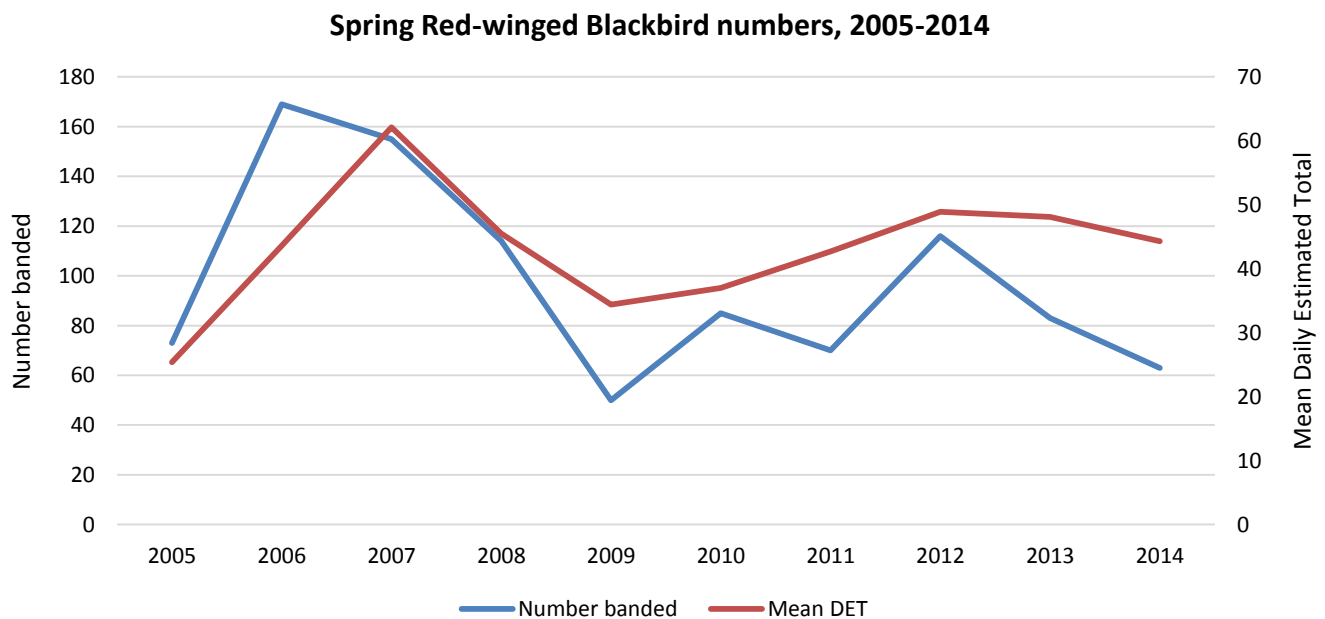
| Banded | Jun | Jul | Summer | F1  | F2  | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   |     | 1   | 1      | 1   |     |    |    |    |    |    |    |    |     |     | 2   |     | 3    |
| 2007   |     |     |        | 1   |     |    |    |    |    |    |    |    |     |     | 1   | 1   | 3    |
| 2008   |     |     |        |     |     |    |    |    |    |    |    |    |     | 5   | 1   | 1   | 7    |
| 2009   | 22  | 7   | 29     |     |     |    |    |    |    |    |    |    |     |     | 30  |     | 30   |
| 2010   | 3   | 3   | 6      |     |     |    |    |    |    |    |    |    |     | 1   | 10  | 1   | 12   |
| 2011   |     |     |        |     | 1   |    |    |    |    |    |    |    |     |     | 8   | 9   | 18   |
| 2012   | 5   |     | 5      | 1   |     |    |    |    |    |    |    |    |     | 2   | 10  |     | 13   |
| 2013   | 10  | 1   | 11     |     |     |    |    |    |    |    |    |    |     |     | 1   |     | 2    |
| 2014   | 2   |     | 2      |     |     |    |    |    |    |    |    |    |     |     |     | 3   | 3    |
| Mean   | 7.0 | 1.3 | 6.0    | 0.3 | 0.1 |    |    |    |    |    |    |    |     | 0.8 | 6.3 | 1.6 | 9.1  |

Red-winged Blackbird is one of the most abundant birds at MBO, with a large breeding population and giant flocks of migrants in late fall; overall it is present annually from late March through November, and smaller numbers have occurred throughout winter. Although usually present on all days during both spring and fall, there is a distinct spring peak between weeks 4 and 7, while fall numbers tend to build strongly from mid-season through to week 13, after dipping to a low from mid-August to mid-September. Spring numbers appear to have stabilized around the long-term mean, but in fall there is a mix of high years with a mean daily count of 103 to 116 birds (2007, 2010, 2011, 2012) and low years ranging from 27 to 66 (2005, 2006, 2008, 2013, 2014).



The figure above shows the annual pattern of occurrence of Red-winged Blackbird at MBO, which generally includes a large breeding population through most of spring, a small early fall peak related to local dispersal, and a large late fall peak as mixed-blackbird flocks gather at MBO. The lack of a distinct peak in spring suggests that the majority of individuals observed during the season are local residents, with relatively few migrants stopping over. Numbers in early September are lower than any other time of year except December to February.

The figure below shows a fair correlation between number of Red-winged Blackbirds banded and observed at MBO in spring. Fluctuations are somewhat more pronounced among number of individuals banded, as is the case for many species. Overall, numbers fluctuated more dramatically over the first few years, and have on average been relatively stable since 2008.



**EAME: Eastern Meadowlark / Sturnelle des prés (*Sturnella magna*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2007     | May 3  | May 3  | May 19 | 17   | 2 (3%) | 1    | 2     |        |        |        |      |        |      |       |
| 2008     |        |        |        |      |        |      |       | Oct 18 | Oct 18 | Oct 24 | 7    | 2 (2%) | 1    | 2     |
| 2009     | Apr 25 | Apr 25 | Apr 25 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     | Apr 30 | Apr 30 | Apr 30 | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2013     | Apr 5  | Apr 5  | Apr 5  | 1    | 1 (1%) | 1    | 1     |        |        |        |      |        |      |       |
| 2014     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | Apr 23 | Apr 23 | Apr 27 | 5    | 1 (2%) | 1    | 0.5   | Oct 18 | Oct 18 | Oct 24 | 7    | 2 (2%) | 1    | 0.2   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2   | S3 | S4 | S5   | S6   | S7 | S8   | S9 | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|------|----|----|------|------|----|------|----|-----|--------|
| 2005     |     |     |     |     |     |        |    |      |    |    |      |      |    |      |    |     |        |
| 2006     |     |     |     |     |     |        |    |      |    |    |      |      |    |      |    |     |        |
| 2007     |     |     |     |     |     |        |    |      |    |    |      | 0.1  |    | 0.1  |    |     | 0.03   |
| 2008     |     |     |     |     |     |        |    |      |    |    |      |      |    |      |    |     |        |
| 2009     |     |     |     |     |     |        |    |      |    |    | 0.1  |      |    |      |    |     | 0.01   |
| 2010     |     |     |     |     |     |        |    |      |    |    |      |      |    |      |    |     |        |
| 2011     |     |     |     |     |     |        |    |      |    |    | 0.1  |      |    |      |    |     | 0.01   |
| 2012     |     |     |     |     |     |        |    |      |    |    |      |      |    |      |    |     |        |
| 2013     |     |     |     |     |     |        |    | 0.1  |    |    |      |      |    |      |    |     | 0.01   |
| 2014     |     |     |     |     |     |        |    |      |    |    |      |      |    |      |    |     |        |
| Mean     |     |     |     |     |     |        |    | 0.01 |    |    | 0.03 | 0.01 |    | 0.01 |    |     | 0.01   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12  | F13  | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|------|------|-------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |      |       |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |      |       |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |      |       |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 0.1  | 0.1  | 0.02  |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |      |       |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |      |       |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |      |       |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |      |       |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |      |       |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |      |       |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 0.01 | 0.01 | <0.01 |

Eastern Meadowlark is a rare species at MBO, with two spring sightings in 2007, and one more in every second year thereafter, plus a pair of observations in late October 2008.



**RUBL: Rusty Blackbird / Quiscale rouilleux (*Euphagus carolinus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 30 | May 2  | May 9  | 10   | 5 (8%)   | 7    | 14    | Sep 11 | Sep 27 | Oct 30 | 50   | 23 (26%) | 68   | 263   |
| 2006     | Apr 7  | Apr 19 | May 4  | 28   | 7 (10%)  | 2    | 8     | Sep 6  | Sep 25 | Oct 27 | 52   | 30 (33%) | 166  | 425   |
| 2007     | Apr 23 | May 9  | May 9  | 17   | 7 (10%)  | 4    | 12    | Sep 22 | Sep 30 | Oct 22 | 31   | 15 (16%) | 52   | 155   |
| 2008     | Apr 26 | May 29 | May 31 | 36   | 6 (9%)   | 7    | 27    | Sep 29 | Oct 12 | Oct 28 | 30   | 15 (16%) | 17   | 74    |
| 2009     | Mar 31 | May 12 | May 20 | 51   | 13 (19%) | 7    | 23    | Aug 8  | Oct 8  | Oct 30 | 84   | 28 (31%) | 55   | 293   |
| 2010     | Apr 14 | Apr 21 | May 12 | 29   | 8 (11%)  | 3    | 11    | Sep 15 | Oct 2  | Oct 30 | 46   | 29 (32%) | 28   | 130   |
| 2011     | Apr 7  | Apr 29 | May 6  | 30   | 7 (10%)  | 6    | 12    | Aug 30 | Sep 25 | Oct 30 | 62   | 23 (25%) | 46   | 91    |
| 2012     | Apr 18 | Apr 21 | May 14 | 27   | 21 (30%) | 6    | 39    | Sep 11 | Oct 1  | Oct 27 | 47   | 26 (29%) | 50   | 210   |
| 2013     | Apr 19 | May 1  | May 17 | 29   | 11 (16%) | 9    | 39    | Sep 16 | Sep 25 | Oct 29 | 44   | 24 (26%) | 17   | 90    |
| 2014     | Apr 13 | May 9  | May 9  | 27   | 16 (24%) | 45   | 148   | Sep 17 | Sep 23 | Oct 30 | 44   | 37 (41%) | 24   | 238   |
| Mean     | Apr 16 | May 3  | May 13 | 28   | 10 (15%) | 10   | 33    | Sep 10 | Sep 29 | Oct 28 | 49   | 25 (28%) | 52   | 197   |

| Observed | Nov | Dec  | Jan  | Feb | Mar | Winter | S1   | S2   | S3  | S4  | S5  | S6  | S7  | S8   | S9  | S10 | Spring |
|----------|-----|------|------|-----|-----|--------|------|------|-----|-----|-----|-----|-----|------|-----|-----|--------|
| 2005     |     |      |      |     |     |        |      |      |     |     | 0.6 | 1.3 | 0.1 |      |     |     | 0.2    |
| 2006     |     | 0.3  | 0.5  |     |     | 0.2    |      | 0.2  | 0.1 | 0.4 | 0.1 | 0.3 |     |      |     |     | 0.1    |
| 2007     | 0.2 |      |      |     |     | 0.09   |      |      |     | 0.4 | 0.4 | 0.3 | 0.6 |      |     |     | 0.2    |
| 2008     |     |      |      |     |     |        |      |      |     |     | 1.1 |     | 0.1 |      | 1.0 | 1.6 | 0.4    |
| 2009     |     |      |      |     |     |        | 0.1  |      |     | 0.7 | 0.9 | 0.4 | 1.0 | 0.1  |     |     | 0.3    |
| 2010     | 0.6 |      |      |     |     | 0.2    |      |      | 0.1 | 0.6 | 0.1 | 0.3 | 0.4 |      |     |     | 0.2    |
| 2011     |     |      |      |     |     |        |      | 0.3  |     | 0.1 | 1.1 | 0.1 |     |      |     |     | 0.2    |
| 2012     | 0.6 |      |      |     |     | 0.2    |      |      |     | 1.7 | 1.0 | 1.3 | 1.6 |      |     |     | 0.6    |
| 2013     |     |      |      |     |     |        |      |      |     | 0.7 | 3.3 | 1.4 |     | 0.1  |     |     | 0.6    |
| 2014     | 0.4 |      |      |     |     | 0.07   |      |      | 1.7 | 1.3 | 5.6 | 6.1 | 6.4 |      |     |     | 2.2    |
| Mean     | 0.2 | 0.08 | 0.08 |     |     | 0.09   | 0.02 | 0.04 | 0.2 | 0.6 | 1.4 | 1.2 | 1.0 | 0.03 | 0.1 | 0.2 | 0.5    |

| Observed | Jun | Jul | Summer | F1 | F2   | F3 | F4 | F5   | F6  | F7  | F8   | F9   | F10  | F11  | F12 | F13 | Fall |
|----------|-----|-----|--------|----|------|----|----|------|-----|-----|------|------|------|------|-----|-----|------|
| 2005     |     |     |        |    |      |    |    |      | 0.1 | 1.6 | 9.6  | 16.0 | 7.5  | 0.7  | 5.0 | 0.6 | 3.0  |
| 2006     |     |     |        |    |      |    |    |      | 1.6 | 1.9 | 30.3 | 11.0 | 5.0  | 4.7  | 4.9 | 1.4 | 4.7  |
| 2007     |     |     |        |    |      |    |    |      |     |     | 0.6  | 9.7  | 3.1  | 0.9  | 7.9 |     | 1.7  |
| 2008     |     |     |        |    |      |    |    |      |     |     |      | 2.1  | 2.7  | 4.3  | 1.1 | 0.3 | 0.8  |
| 2009     |     |     |        |    | 0.1  |    |    |      |     |     | 5.4  | 8.9  | 14.9 | 10.0 | 0.9 | 1.7 | 3.2  |
| 2010     |     |     |        |    |      |    |    |      | 2.0 | 2.0 | 4.1  | 4.0  | 2.4  | 2.4  | 1.6 | 1.4 | 1.4  |
| 2011     |     |     |        |    |      |    |    | 0.1  | 0.4 | 0.1 | 7.0  | 1.0  | 0.6  | 0.7  | 1.3 | 1.7 | 1.0  |
| 2012     |     |     |        |    |      |    |    |      | 0.1 |     |      | 14.3 | 9.1  | 2.1  | 3.7 | 0.6 | 2.3  |
| 2013     |     |     |        |    |      |    |    |      |     | 0.3 | 3.1  | 1.3  | 6.0  | 0.9  | 1.0 | 0.3 | 1.0  |
| 2014     |     |     |        |    |      |    |    |      |     | 1.6 | 5.3  | 7.6  | 4.4  | 3.4  | 8.1 | 3.6 | 2.6  |
| Mean     |     |     |        |    | 0.01 |    |    | 0.01 | 0.2 | 0.7 | 6.3  | 7.5  | 5.7  | 3.0  | 3.6 | 1.2 | 2.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3  | S4  | S5  | S6 | S7  | S8  | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|-----|-----|-----|----|-----|-----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |     |     | 1   |    |     |     |    |     | 1      |
| 2006   |     |     | 1   |     |     | 1      |    |    | 1   |     |     |    |     |     |    |     | 1      |
| 2007   |     |     |     |     |     |        |    |    |     |     |     |    |     |     |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |     |     |     |    |     |     |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |     | 1   | 2   |    |     |     |    |     | 3      |
| 2010   |     |     |     |     |     |        |    |    |     |     |     |    |     |     |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |     |     |     |    |     |     |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |     | 1   |     |    | 3   |     |    |     | 4      |
| 2013   |     |     |     |     |     |        |    |    |     |     |     |    |     | 1   |    |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |     |     |     |    |     |     |    |     |        |
| Mean   |     |     | 0.3 |     |     | 0.1    |    |    | 0.5 | 0.2 | 0.3 |    | 0.3 | 0.1 |    |     | 1.0    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |     |     |     | 1   |     | 1    |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |    |    |    |    |    | 1   |     |     | 1   |     | 2    |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |     |     |     |     |     |      |
| Mean   |     |     |        |    |    |    |    |    |    |    |    | 0.1 |     |     | 0.2 |     | 0.3  |

Rusty Blackbird is a regular spring and fall migrant at MBO, with sightings continuing into November in four years, and an overwintering bird seen on multiple occasions in 2006. Spring observations have occurred throughout the season, but are distinctly more numerous from mid-April to early May, with an overall peak centered on week 5. Aside from an unusually early record in August 2009, fall migration typically begins around mid-September, with an overall peak around week 9. While fall numbers are generally larger than in spring, most blackbirds are flying high, and as such, over 70% of individuals have been banded in spring. Spring numbers have been consistent except for a high in 2014; fall counts have oscillated considerably.

**COGR: Common Grackle / Quiscale bronzé (*Quiscalus quiscula*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | May 20 | Jun 3 | 60   | 51 (86%) | 18   | 349   | Aug 1 | Sep 18 | Oct 29 | 90   | 75 (85%) | 1000 | 13251 |
| 2006     | Apr 2  | Apr 16 | Jun 5 | 65   | 61 (88%) | 50   | 921   | Aug 1 | Sep 2  | Oct 27 | 88   | 76 (84%) | 564  | 4177  |
| 2007     | Mar 29 | May 13 | Jun 4 | 68   | 55 (79%) | 20   | 388   | Aug 1 | Oct 18 | Oct 30 | 91   | 74 (81%) | 502  | 2843  |
| 2008     | Mar 30 | Apr 21 | Jun 5 | 68   | 61 (87%) | 153  | 594   | Aug 1 | Oct 17 | Oct 30 | 91   | 76 (84%) | 670  | 3695  |
| 2009     | Mar 28 | May 19 | Jun 5 | 70   | 59 (86%) | 20   | 442   | Aug 1 | Sep 26 | Oct 30 | 91   | 82 (90%) | 487  | 2136  |
| 2010     | Mar 28 | May 12 | Jun 5 | 70   | 58 (83%) | 26   | 349   | Aug 1 | Aug 29 | Oct 30 | 91   | 61 (67%) | 593  | 2777  |
| 2011     | Apr 3  | May 24 | Jun 5 | 64   | 58 (83%) | 20   | 409   | Aug 1 | Aug 24 | Oct 30 | 91   | 57 (63%) | 95   | 522   |
| 2012     | Mar 30 | May 7  | Jun 5 | 68   | 59 (84%) | 28   | 570   | Aug 1 | Sep 11 | Oct 30 | 91   | 83 (91%) | 1809 | 14004 |
| 2013     | Mar 28 | May 17 | Jun 5 | 70   | 60 (86%) | 24   | 466   | Aug 1 | Oct 6  | Oct 29 | 90   | 60 (66%) | 1200 | 3114  |
| 2014     | Apr 3  | Apr 20 | Jun 3 | 62   | 54 (79%) | 37   | 427   | Aug 1 | Sep 18 | Oct 30 | 91   | 85 (93%) | 612  | 4916  |
| Mean     | Mar 31 | May 7  | Jun 4 | 66   | 58 (84%) | 40   | 492   | Aug 1 | Sep 19 | Oct 29 | 90   | 73 (80%) | 753  | 5144  |

| Observed | Nov | Dec | Jan | Feb | Mar  | Winter | S1  | S2  | S3  | S4   | S5   | S6   | S7   | S8   | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|------|--------|-----|-----|-----|------|------|------|------|------|------|-----|--------|
| 2005     |     |     |     |     |      |        |     | 8.2 | 0.9 | 4.8  | 2.6  | 3.4  | 8.9  | 10.3 | 7.0  | 8.0 | 5.9    |
| 2006     |     |     |     |     |      |        | 0.3 | 4.8 | 9.9 | 5.7  | 19.0 | 35.4 | 27.9 | 14.3 | 9.4  | 5.6 | 13.3   |
| 2007     |     |     |     |     | 0.4  | 0.09   | 1.6 | 2.7 | 0.1 | 5.3  | 3.3  | 8.3  | 13.4 | 8.6  | 9.4  | 2.7 | 5.5    |
| 2008     |     |     |     |     |      |        | 1.0 | 2.3 | 2.4 | 38.3 | 5.3  | 6.1  | 8.0  | 8.7  | 8.3  | 4.4 | 8.5    |
| 2009     |     |     |     |     | 0.4  | 0.2    | 1.6 | 0.8 | 5.4 | 5.4  | 4.3  | 8.6  | 13.9 | 10.1 | 9.3  | 3.9 | 6.4    |
| 2010     | 1.9 |     |     |     | 2.1  | 1.0    | 3.1 | 0.6 | 1.6 | 4.6  | 5.6  | 7.1  | 10.6 | 8.0  | 6.3  | 2.4 | 5.0    |
| 2011     |     |     |     |     | 1.3  | 0.3    | 0.9 | 4.3 | 2.1 | 5.6  | 5.1  | 8.1  | 7.0  | 8.0  | 8.6  | 8.7 | 5.8    |
| 2012     | 2.0 |     |     |     | 16.6 | 4.1    | 3.3 | 1.3 | 4.7 | 6.4  | 10.4 | 15.9 | 17.1 | 10.7 | 7.6  | 4.0 | 8.1    |
| 2013     | 0.1 |     |     |     | 0.1  | 0.06   | 4.3 | 0.9 | 2.6 | 5.9  | 7.0  | 9.6  | 10.7 | 14.0 | 5.4  | 6.3 | 6.7    |
| 2014     |     |     |     |     |      |        | 0.7 | 3.1 | 2.6 | 12.4 | 3.7  | 4.6  | 8.7  | 7.1  | 10.9 | 8.5 | 6.3    |
| Mean     | 0.6 |     |     |     | 1.6  | 0.5    | 1.9 | 2.8 | 3.2 | 9.5  | 6.6  | 10.7 | 12.6 | 10.0 | 8.2  | 5.3 | 7.2    |

| Observed | Jun | Jul  | Summer | F1   | F2   | F3    | F4    | F5    | F6    | F7    | F8    | F9    | F10   | F11   | F12   | F13  | Fall  |
|----------|-----|------|--------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|
| 2005     | 3.5 | 3.7  | 3.6    | 3.7  | 4.7  | 10.7  | 82.0  | 137.4 | 425.0 | 366.3 | 333.6 | 150.0 | 142.0 | 124.5 | 132.7 | 39.9 | 150.6 |
| 2006     | 4.8 | 8.4  | 6.8    | 12.7 | 10.1 | 9.6   | 48.6  | 205.0 | 111.0 | 65.9  | 83.6  | 9.3   | 21.6  | 3.0   | 6.7   | 9.7  | 45.9  |
| 2007     | 3.3 | 3.0  | 3.2    | 19.0 | 14.3 | 10.3  | 8.7   | 10.3  | 10.4  | 13.6  | 48.9  | 56.0  | 5.6   | 20.1  | 108.4 | 80.6 | 31.2  |
| 2008     | 4.6 | 10.4 | 7.5    | 9.0  | 23.3 | 19.3  | 28.4  | 60.1  | 42.4  | 19.1  | 3.7   | 26.6  | 84.6  | 82.0  | 104.6 | 24.7 | 40.6  |
| 2009     | 4.0 | 0.5  | 2.0    | 42.1 | 18.1 | 6.6   | 6.9   | 11.9  | 21.0  | 13.7  | 50.0  | 79.9  | 24.1  | 10.0  | 18.4  | 2.4  | 23.5  |
| 2010     |     | 1.3  | 0.9    | 13.1 | 8.0  | 24.0  | 20.4  | 184.4 | 8.9   | 32.1  | 4.4   | 25.3  | 7.7   | 33.0  | 31.6  | 3.7  | 30.5  |
| 2011     | 5.0 | 4.8  | 4.9    | 13.7 | 8.6  | 2.3   | 16.4  | 5.0   | 0.6   | 0.4   | 2.7   | 1.6   | 2.6   | 7.4   | 1.9   | 11.4 | 5.7   |
| 2012     | 0.8 | 1.0  | 0.9    | 7.1  | 69.0 | 186.0 | 114.9 | 129.7 | 319.0 | 21.0  | 3.4   | 109.7 | 524.7 | 377.3 | 79.6  | 59.1 | 153.9 |
| 2013     | 9.3 | 7.0  | 8.0    | 9.3  | 2.3  | 4.6   | 10.3  | 4.7   | 2.3   | 79.6  | 5.4   | 1.7   | 187.7 | 68.6  | 63.4  | 5.0  | 34.2  |
| 2014     | 8.3 | 5.3  | 6.6    | 12.7 | 16.0 | 35.9  | 14.4  | 8.6   | 6.1   | 108.1 | 198.4 | 60.3  | 72.7  | 38.1  | 72.4  | 58.4 | 54.0  |
| Mean     | 4.1 | 4.8  | 4.5    | 14.3 | 17.4 | 30.9  | 35.1  | 75.7  | 94.7  | 72.0  | 73.4  | 50.6  | 106.8 | 75.7  | 62.0  | 29.5 | 56.7  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |     |     |     | 3   | 3   | 6   | 4   | 4   | 20     |
| 2006   |     |     |     |     |     |        |    |    | 1   |     | 9   | 24  | 14  | 6   | 4   | 1   | 59     |
| 2007   |     |     |     |     |     |        |    |    |     |     |     | 5   | 4   | 4   | 5   |     | 18     |
| 2008   |     |     |     |     |     |        |    |    |     |     |     |     | 2   | 1   | 6   | 2   | 11     |
| 2009   |     |     |     |     |     |        |    |    |     | 1   |     | 1   | 12  | 3   | 4   | 1   | 22     |
| 2010   |     |     |     |     |     |        |    |    |     | 2   | 2   | 3   | 5   | 1   | 2   |     | 15     |
| 2011   |     |     |     |     |     |        |    |    |     |     |     | 1   |     | 2   | 5   | 3   | 11     |
| 2012   | 2   |     |     |     |     | 2      |    |    |     |     | 5   | 8   | 5   | 5   | 2   | 1   | 26     |
| 2013   | 1   |     |     |     |     | 1      |    |    |     |     |     | 2   | 4   | 4   |     |     | 10     |
| 2014   |     |     |     |     |     |        |    |    |     | 2   |     | 1   | 5   | 2   | 9   | 10  | 29     |
| Mean   | 0.4 |     |     |     |     | 0.3    |    |    | 0.5 | 0.5 | 1.6 | 4.8 | 5.4 | 3.4 | 4.1 | 2.2 | 22.1   |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4 | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     | 1   | 1      |     |     |     |    |     | 1   |     | 5   |     |     | 1   |     |     | 7    |
| 2006   |     |     |        |     |     |     |    | 2   | 33  |     |     |     |     |     |     |     | 35   |
| 2007   |     |     |        |     |     |     |    |     |     |     |     |     |     |     | 1   |     | 1    |
| 2008   |     |     |        | 2   | 1   | 1   |    | 2   |     |     |     |     | 7   | 8   |     |     | 21   |
| 2009   | 2   |     | 2      | 2   |     |     |    |     |     |     |     |     | 1   |     |     |     | 3    |
| 2010   |     |     |        |     | 1   |     |    | 6   |     |     |     | 10  |     | 1   | 1   |     | 19   |
| 2011   | 1   |     | 1      | 1   |     |     |    |     |     |     |     |     |     |     |     | 1   | 2    |
| 2012   |     | 1   | 1      |     |     | 1   |    |     |     |     |     |     | 19  | 6   | 1   |     | 27   |
| 2013   |     | 1   | 1      |     |     |     |    |     |     | 1   |     |     | 6   |     | 8   |     | 15   |
| 2014   | 4   | 2   | 6      | 4   |     |     |    |     |     |     | 5   |     |     |     |     | 1   | 10   |
| Mean   | 1.2 | 0.6 | 1.3    | 0.9 | 0.2 | 0.2 |    | 1.0 | 3.4 | 0.1 | 1.0 | 1.0 | 3.3 | 1.6 | 1.1 | 0.2 | 14.0 |

Common Grackle is one of the most abundant species at MBO from late March through end of October. Spring numbers typically build to a strong peak between weeks 6 and 8. Fall is more variable, with the peak as early as week 4, and as late as week 12. Fall numbers are higher in the first half of the season than Red-winged Blackbird, while the overall peak also comes sooner, in week 10. Spring numbers have been fairly consistent outside of an exceptionally high total in 2006, but fall counts vary substantially from an extreme low in 2011 to highs roughly 25 times greater in both 2005 and 2012. Although a regular breeding bird at MBO, only modest numbers have been banded. Winter records are of late fall or early spring migrants.

**BHCO: Brown-headed Cowbird / Vacher à tête brune (*Molothrus ater*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 9  | Jun 3 | 60   | 56 (95%) | 12   | 263   | Aug 1  | Sep 27 | Oct 29 | 90   | 16 (18%) | 19   | 62    |
| 2006     | Apr 2  | Apr 24 | Jun 5 | 65   | 63 (91%) | 41   | 505   | Aug 24 | Sep 28 | Oct 24 | 62   | 12 (13%) | 42   | 80    |
| 2007     | Mar 28 | May 14 | Jun 5 | 70   | 49 (70%) | 16   | 204   | Aug 2  | Oct 22 | Oct 24 | 84   | 8 (9%)   | 5    | 21    |
| 2008     | Apr 11 | Apr 26 | Jun 5 | 56   | 52 (74%) | 14   | 180   | Aug 1  | Oct 18 | Oct 18 | 79   | 4 (4%)   | 3    | 7     |
| 2009     | Mar 30 | Apr 3  | Jun 5 | 68   | 62 (90%) | 14   | 316   | Aug 2  | Oct 17 | Oct 19 | 79   | 8 (9%)   | 3    | 11    |
| 2010     | Mar 28 | Mar 28 | Jun 5 | 70   | 64 (91%) | 12   | 187   | Aug 30 | Sep 26 | Oct 20 | 52   | 7 (8%)   | 24   | 44    |
| 2011     | Apr 10 | Apr 27 | Jun 5 | 57   | 51 (73%) | 20   | 272   | Aug 3  | Aug 3  | Oct 5  | 64   | 6 (7%)   | 4    | 10    |
| 2012     | Mar 28 | Apr 22 | Jun 4 | 69   | 54 (77%) | 20   | 185   | Aug 3  | Oct 7  | Oct 26 | 85   | 9 (10%)  | 4    | 14    |
| 2013     | Mar 31 | May 29 | Jun 5 | 67   | 50 (71%) | 5    | 114   | Aug 3  | Sep 25 | Oct 10 | 69   | 7 (8%)   | 11   | 21    |
| 2014     | Apr 6  | Apr 22 | Jun 2 | 58   | 50 (74%) | 7    | 155   | Aug 5  | Sep 29 | Oct 25 | 82   | 3 (3%)   | 2    | 5     |
| Mean     | Apr 2  | Apr 23 | Jun 4 | 64   | 55 (80%) | 16   | 238   | Aug 7  | Sep 29 | Oct 20 | 75   | 8 (9%)   | 12   | 28    |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1  | S2  | S3   | S4   | S5  | S6   | S7  | S8  | S9  | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|-----|-----|------|------|-----|------|-----|-----|-----|-----|--------|
| 2005     |      |     |     |     |     |        |     | 4.7 | 4.9  | 5.3  | 4.7 | 5.3  | 3.1 | 3.4 | 4.6 | 4.2 | 4.5    |
| 2006     | 0.07 |     |     |     |     | 0.02   | 0.9 | 7.0 | 11.1 | 13.4 | 9.7 | 12.6 | 6.9 | 4.9 | 3.9 | 2.9 | 7.3    |
| 2007     |      |     |     |     |     |        | 1.3 | 1.0 | 0.4  | 3.6  | 0.9 | 5.1  | 7.6 | 3.1 | 3.6 | 2.6 | 2.9    |
| 2008     |      |     |     |     |     |        |     |     | 2.3  | 2.6  | 5.9 | 3.0  | 4.6 | 3.1 | 2.9 | 1.4 | 2.6    |
| 2009     |      |     |     |     |     |        | 2.4 | 2.8 | 3.1  | 6.0  | 7.1 | 5.3  | 6.3 | 5.7 | 3.6 | 3.1 | 4.6    |
| 2010     |      |     |     |     | 0.8 | 0.2    | 3.1 | 2.3 | 1.3  | 5.3  | 3.4 | 2.9  | 3.0 | 1.9 | 2.0 | 1.6 | 2.7    |
| 2011     |      |     |     |     |     |        |     | 0.1 | 2.1  | 3.1  | 8.3 | 10.4 | 4.7 | 4.3 | 3.6 | 2.1 | 3.9    |
| 2012     |      |     |     |     | 1.0 | 0.2    | 1.4 | 0.4 | 4.3  | 5.9  | 3.7 | 3.3  | 2.6 | 2.1 | 2.0 | 0.7 | 2.6    |
| 2013     |      |     |     |     |     |        | 0.4 | 0.7 | 1.0  | 2.6  | 2.4 | 2.1  | 1.9 | 0.9 | 2.1 | 2.1 | 1.6    |
| 2014     |      |     |     |     |     |        |     | 1.0 | 0.6  | 4.3  | 4.4 | 2.6  | 2.4 | 3.3 | 2.0 | 1.8 | 2.3    |
| Mean     | 0.01 |     |     |     | 0.2 | 0.04   | 1.1 | 1.9 | 3.1  | 5.2  | 5.1 | 5.3  | 4.3 | 3.3 | 3.0 | 2.2 | 3.5    |

| Observed | Jun | Jul | Summer | F1  | F2   | F3  | F4  | F5   | F6   | F7   | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|------|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|------|
| 2005     | 2.5 | 1.8 | 2.1    | 1.4 | 0.3  | 0.1 |     | 0.1  |      |      | 2.1 | 4.3 | 0.2 | 0.2 | 0.4 | 0.3 | 0.7  |
| 2006     | 2.2 | 0.8 | 1.5    |     |      |     | 0.9 | 0.3  |      |      | 0.1 | 8.0 | 0.4 | 0.1 | 1.1 | 0.4 | 0.9  |
| 2007     | 1.0 | 1.2 | 1.1    | 0.4 | 0.1  |     |     |      |      |      | 1.0 |     | 0.1 | 0.4 | 0.7 | 0.1 | 0.2  |
| 2008     | 0.2 | 1.2 | 0.7    | 0.3 |      |     |     |      | 0.3  |      |     |     |     |     | 0.4 |     | 0.08 |
| 2009     | 0.7 |     | 0.3    | 0.1 | 0.1  | 0.1 |     |      | 0.1  | 0.3  |     |     |     | 0.1 | 0.6 |     | 0.1  |
| 2010     |     |     |        |     |      |     |     | 0.1  |      |      |     | 5.3 | 0.3 |     | 0.6 |     | 0.5  |
| 2011     | 0.3 | 1.0 | 0.7    | 0.6 |      | 0.1 | 0.3 | 0.1  |      |      |     |     | 0.3 |     |     |     | 0.1  |
| 2012     | 0.3 | 0.3 | 0.2    | 0.1 | 0.1  | 0.1 |     |      |      |      | 0.1 | 0.4 | 0.7 |     | 0.1 | 0.1 | 0.2  |
| 2013     | 1.0 | 0.5 | 0.7    | 0.3 |      | 0.4 |     |      |      | 0.3  | 1.6 | 0.1 |     | 0.3 |     |     | 0.2  |
| 2014     | 0.3 |     | 0.1    | 0.1 |      |     |     |      |      |      |     | 0.3 |     |     |     | 0.3 | 0.05 |
| Mean     | 1.4 | 0.9 | 1.1    | 0.3 | 0.07 | 0.1 | 0.1 | 0.07 | 0.04 | 0.06 | 0.5 | 1.8 | 0.2 | 0.1 | 0.4 | 0.1 | 0.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3  | S4 | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|-----|----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |     |    | 1   | 2   |     |     |     |     | 3      |
| 2006   |     |     |     |     |     |        |    |    | 2   |    |     | 3   | 2   |     |     |     | 7      |
| 2007   |     |     |     |     |     |        |    |    |     |    |     | 1   | 1   |     | 2   | 1   | 5      |
| 2008   |     |     |     |     |     |        |    |    |     |    |     |     | 5   | 1   |     |     | 6      |
| 2009   |     |     |     |     |     |        |    |    |     |    | 1   | 2   | 1   | 1   |     |     | 5      |
| 2010   |     |     |     |     | 1   | 1      |    |    |     |    | 1   |     | 2   |     |     | 1   | 4      |
| 2011   |     |     |     |     |     |        |    |    |     |    | 3   |     |     |     | 1   |     | 4      |
| 2012   |     |     |     |     |     |        |    |    |     |    |     |     |     | 1   |     |     | 1      |
| 2013   |     |     |     |     |     |        |    |    |     |    |     |     | 1   |     |     |     | 1      |
| 2014   |     |     |     |     |     |        |    |    |     |    |     | 1   | 1   |     |     |     | 2      |
| Mean   |     |     |     |     | 0.1 | 0.1    |    |    | 1.0 |    | 0.6 | 0.9 | 1.3 | 0.3 | 0.3 | 0.2 | 3.8    |

| Banded | Jun | Jul | Summer | F1  | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        | 1   |    |    |    |    |    |    |    |    |     |     |     |     | 1    |
| 2012   |     | 1   | 1      |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2013   |     | 1   | 1      |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |     |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     | 0.2 | 0.2    | 0.1 |    |    |    |    |    |    |    |    |     |     |     |     | 0.1  |

Brown-headed Cowbird is a fairly common spring migrant and breeder at MBO, and an uncommon fall migrant. Spring migration begins as early as the first day of the season (or even in late winter in 2010 and 2012), and usually peaks between weeks 4 and 6. Summer observations have been recorded each year except 2010. Fall sightings are scattered throughout the season, although somewhat more frequently over the final six weeks of the season. Over 90% of birds banded have been in spring. Both spring and fall numbers have declined somewhat over time.

**BAOR: Baltimore Oriole / Oriole de Baltimore (*Icterus galbula*)**

| Observed | First  | Peak   | Last  | Span | # days   | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | May 10 | May 25 | Jun 3 | 25   | 25 (42%) | 10   | 152   | Aug 1 | Aug 17 | Sep 14 | 45   | 37 (42%) | 12   | 148   |
| 2006     | May 5  | May 25 | Jun 5 | 32   | 32 (46%) | 15   | 222   | Aug 1 | Aug 16 | Sep 22 | 53   | 39 (43%) | 27   | 352   |
| 2007     | May 9  | May 11 | Jun 5 | 28   | 27 (39%) | 17   | 201   | Aug 1 | Aug 5  | Oct 8  | 69   | 32 (35%) | 23   | 131   |
| 2008     | May 5  | May 15 | Jun 5 | 32   | 32 (46%) | 14   | 221   | Aug 1 | Aug 1  | Sep 20 | 51   | 37 (41%) | 12   | 171   |
| 2009     | May 2  | May 18 | Jun 5 | 35   | 33 (48%) | 12   | 198   | Aug 1 | Aug 20 | Sep 6  | 37   | 29 (32%) | 8    | 117   |
| 2010     | May 3  | May 22 | Jun 5 | 34   | 34 (49%) | 10   | 221   | Aug 1 | Aug 21 | Sep 11 | 42   | 32 (35%) | 15   | 137   |
| 2011     | May 7  | May 13 | Jun 5 | 30   | 30 (43%) | 20   | 239   | Aug 1 | Aug 24 | Sep 2  | 33   | 30 (33%) | 12   | 131   |
| 2012     | May 5  | May 10 | Jun 5 | 32   | 32 (46%) | 30   | 325   | Aug 1 | Aug 15 | Sep 17 | 48   | 32 (35%) | 13   | 187   |
| 2013     | May 10 | May 16 | Jun 5 | 27   | 27 (39%) | 18   | 243   | Aug 1 | Aug 17 | Sep 20 | 51   | 33 (36%) | 12   | 163   |
| 2014     | May 9  | May 16 | Jun 4 | 27   | 27 (40%) | 15   | 244   | Aug 1 | Aug 7  | Sep 16 | 47   | 35 (38%) | 6    | 107   |
| Mean     | May 6  | May 17 | Jun 4 | 30   | 30 (44%) | 16   | 227   | Aug 1 | Aug 14 | Sep 16 | 48   | 34 (37%) | 14   | 164   |

| Observed | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7   | S8   | S9   | S10 | Spring |
|----------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|------|------|------|-----|--------|
| 2005     |     |     |     |     |     |        |    |    |    |    |    |     | 3.1  | 5.6  | 7.6  | 7.6 | 2.6    |
| 2006     |     |     |     |     |     |        |    |    |    |    |    | 0.7 | 5.4  | 8.7  | 10.3 | 6.6 | 3.2    |
| 2007     |     |     |     |     |     |        |    |    |    |    |    |     | 7.1  | 7.9  | 9.3  | 4.4 | 2.9    |
| 2008     |     |     |     |     |     |        |    |    |    |    |    | 1.7 | 6.9  | 10.3 | 7.6  | 5.1 | 3.2    |
| 2009     |     |     |     |     |     |        |    |    |    |    |    | 1.1 | 8.0  | 8.6  | 5.6  | 5.0 | 2.9    |
| 2010     |     |     |     |     |     |        |    |    |    |    |    | 2.6 | 6.7  | 7.6  | 7.9  | 6.9 | 3.2    |
| 2011     |     |     |     |     |     |        |    |    |    |    |    | 0.4 | 6.1  | 11.4 | 9.4  | 6.7 | 3.4    |
| 2012     |     |     |     |     |     |        |    |    |    |    |    | 5.6 | 17.9 | 9.7  | 7.7  | 5.6 | 4.6    |
| 2013     |     |     |     |     |     |        |    |    |    |    |    |     | 5.1  | 14.7 | 7.6  | 7.3 | 3.5    |
| 2014     |     |     |     |     |     |        |    |    |    |    |    |     | 9.6  | 12.0 | 8.0  | 6.2 | 3.6    |
| Mean     |     |     |     |     |     |        |    |    |    |    |    | 1.2 | 7.6  | 9.6  | 8.1  | 6.1 | 3.3    |

| Observed | Jun | Jul | Summer | F1  | F2   | F3   | F4  | F5  | F6  | F7  | F8   | F9  | F10  | F11 | F12 | F13 | Fall |
|----------|-----|-----|--------|-----|------|------|-----|-----|-----|-----|------|-----|------|-----|-----|-----|------|
| 2005     | 3.4 | 1.8 | 2.6    | 3.3 | 3.4  | 4.4  | 5.9 | 2.9 | 1.0 | 0.3 |      |     |      |     |     |     | 1.7  |
| 2006     | 4.5 | 3.8 | 4.1    | 9.7 | 16.1 | 10.7 | 9.3 | 3.3 | 0.9 | 0.1 | 0.1  |     |      |     |     |     | 3.9  |
| 2007     | 5.6 | 1.5 | 3.7    | 7.7 | 5.4  | 2.3  | 2.4 | 0.4 | 0.3 |     |      | 0.1 |      |     |     |     | 1.4  |
| 2008     | 5.4 | 1.2 | 3.3    | 6.3 | 5.1  | 6.0  | 4.0 | 2.4 | 0.1 | 0.1 | 0.3  |     |      |     |     |     | 1.9  |
| 2009     | 2.7 | 2.3 | 2.4    | 3.3 | 4.1  | 4.9  | 3.7 | 0.6 | 0.1 |     |      |     |      |     |     |     | 1.3  |
| 2010     | 2.0 | 1.2 | 1.4    | 2.9 | 4.0  | 5.7  | 1.9 | 4.0 | 1.1 |     |      |     |      |     |     |     | 1.5  |
| 2011     | 3.0 | 2.8 | 2.9    | 3.4 | 4.9  | 4.9  | 4.4 | 1.1 |     |     |      |     |      |     |     |     | 1.4  |
| 2012     | 1.8 | 1.5 | 1.6    | 4.3 | 7.3  | 8.3  | 6.3 | 0.4 |     | 0.1 |      |     |      |     |     |     | 2.1  |
| 2013     | 3.7 | 2.5 | 3.0    | 2.1 | 1.9  | 8.1  | 7.0 | 3.1 | 0.4 | 0.4 | 0.1  |     |      |     |     |     | 1.8  |
| 2014     | 3.7 | 3.8 | 3.7    | 2.0 | 4.3  | 2.6  | 3.6 | 2.6 | 0.1 | 0.1 |      |     |      |     |     |     | 1.2  |
| Mean     | 3.8 | 2.3 | 3.0    | 4.5 | 5.7  | 5.8  | 4.8 | 2.1 | 0.4 | 0.1 | 0.06 |     | 0.01 |     |     |     | 1.8  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |     | 3   | 3   | 6   | 2   | 14     |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |     | 3   | 6   | 2   |     | 11     |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |     | 8   | 3   | 7   |     | 18     |
| 2008   |     |     |     |     |     |        |    |    |    |    |    | 1   | 5   | 7   | 1   |     | 14     |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |     | 7   | 6   | 2   |     | 15     |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |     | 3   | 5   | 6   | 2   | 16     |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |     |     | 7   |     |     | 7      |
| 2012   |     |     |     |     |     |        |    |    |    |    |    | 1   | 6   | 1   |     | 1   | 9      |
| 2013   |     |     |     |     |     |        |    |    |    |    |    |     | 1   | 4   |     | 2   | 7      |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |     | 11  | 6   | 1   | 1   | 19     |
| Mean   |     |     |     |     |     |        |    |    |    |    |    | 0.2 | 4.7 | 4.8 | 2.5 | 0.8 | 13.0   |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     | 6   | 7   | 13  | 5   |    |    |    |    |     |     |     |     | 31   |
| 2006   |     | 1   | 1      | 14  | 25  | 18  | 4   | 1   |    |    |    |    |     |     |     |     | 62   |
| 2007   |     |     |        | 17  | 1   |     |     |     |    |    |    |    |     |     |     |     | 18   |
| 2008   |     |     |        | 16  | 14  | 9   | 5   | 4   |    |    |    |    |     |     |     |     | 48   |
| 2009   |     | 7   | 7      | 7   | 3   | 1   | 1   |     |    |    |    |    |     |     |     |     | 12   |
| 2010   | 2   | 4   | 6      | 7   | 3   | 1   | 2   | 2   |    |    |    |    |     |     |     |     | 15   |
| 2011   | 4   | 5   | 9      | 8   | 5   | 1   | 2   |     |    |    |    |    |     |     |     |     | 16   |
| 2012   |     | 1   | 1      | 8   | 11  | 1   | 3   |     |    |    |    |    |     |     |     |     | 23   |
| 2013   |     | 3   | 3      | 1   |     | 10  | 10  | 4   |    |    |    |    |     |     |     |     | 25   |
| 2014   |     | 4   | 4      | 4   | 2   |     | 1   |     |    |    |    |    |     |     |     |     | 7    |
| Mean   | 1.0 | 2.8 | 3.4    | 8.2 | 7.0 | 4.8 | 4.1 | 1.6 |    |    |    |    |     |     |     |     | 25.7 |

Baltimore Oriole arrives within the first ten days of May each year, and is then seen daily through the end of August. The spring peak has gotten earlier over time, advancing from weeks 9 or 10 in the first three years to week 8 in most years since. Fall numbers typically peak in the middle two weeks of August and taper off by mid-September, aside from one exceptional record in early October. However, the number banded in fall peaks in the first week of August, perhaps suggesting a higher capture rate for the offspring of local breeders. The number observed in spring has increased slightly over time, while fall has declined a bit, although the change is more apparent in the banding totals than observations.

**PIGR: Pine Grosbeak / Durbec des sapins (*Pinicola enucleator*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       | Oct 28 | Oct 28 | Oct 28 | 1    | 1 (1%) | 1    | 1     |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       | Oct 29 | Oct 29 | Oct 29 | 1    | 1 (1%) | 2    | 2     |
| 2008     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2009     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2012     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2013     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| Mean     |       |      |      |      |        |      |       | Oct 28 | Oct 28 | Oct 28 | 1    | 1 (1%) | 2    | 0.3   |

| Observed | Nov  | Dec  | Jan  | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|------|------|------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005     |      |      |      | 1.3 |     | 0.4    |    |    |    |    |    |    |    |    |    |     |        |
| 2006     |      |      |      |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2007     |      |      |      |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2008     |      |      |      |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009     | 0.3  |      |      | 2.2 |     | 0.6    |    |    |    |    |    |    |    |    |    |     |        |
| 2010     |      |      |      |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2011     |      |      |      |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2012     |      |      |      |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2013     | 0.1  | 0.1  | 0.1  |     |     | 0.08   |    |    |    |    |    |    |    |    |    |     |        |
| 2014     |      |      |      |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| Mean     | 0.03 | 0.02 | 0.03 | 0.4 |     | 0.08   |    |    |    |    |    |    |    |    |    |     |        |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13  | Fall  |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|------|-------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.1  | 0.01  |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.3  | 0.02  |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |      |       |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.04 | <0.01 |

Pine Grosbeak is a rare species at MBO, with only two observations just before the end of fall, plus a few observations scattered over three other winter seasons. None have been banded.

**HOFI: House Finch / Roselin familier (*Haemorrhous mexicanus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | May 1  | Jun 2  | 59   | 12 (20%) | 3    | 16    | Aug 11 | Oct 30 | Oct 30 | 81   | 16 (18%) | 12   | 53    |
| 2006     | Apr 2  | Apr 2  | May 1  | 30   | 4 (6%)   | 1    | 4     | Aug 7  | Aug 7  | Sep 28 | 53   | 3 (3%)   | 1    | 3     |
| 2007     | Apr 24 | May 26 | Jun 1  | 39   | 4 (6%)   | 4    | 9     | Aug 3  | Aug 3  | Oct 29 | 88   | 8 (9%)   | 3    | 17    |
| 2008     | Apr 17 | Apr 21 | Apr 23 | 7    | 4 (6%)   | 2    | 5     | Aug 31 | Oct 10 | Oct 23 | 54   | 9 (10%)  | 9    | 23    |
| 2009     | May 12 | May 12 | Jun 1  | 21   | 3 (4%)   | 1    | 3     | Aug 5  | Sep 19 | Oct 21 | 78   | 8 (9%)   | 2    | 9     |
| 2010     | Apr 8  | Apr 18 | May 11 | 34   | 5 (7%)   | 6    | 12    | Aug 6  | Oct 30 | Oct 30 | 86   | 27 (30%) | 37   | 139   |
| 2011     | May 10 | May 10 | May 18 | 9    | 2 (3%)   | 1    | 2     | Sep 3  | Oct 29 | Oct 30 | 58   | 11 (12%) | 5    | 22    |
| 2012     | Apr 3  | May 2  | May 12 | 40   | 6 (9%)   | 5    | 10    | Aug 8  | Oct 25 | Oct 30 | 84   | 43 (47%) | 12   | 109   |
| 2013     | Mar 28 | Apr 2  | Apr 29 | 33   | 10 (14%) | 3    | 18    | Aug 3  | Oct 25 | Oct 30 | 89   | 34 (37%) | 10   | 80    |
| 2014     | Mar 29 | Mar 29 | Apr 5  | 8    | 2 (3%)   | 1    | 2     | Aug 1  | Oct 17 | Oct 30 | 91   | 65 (71%) | 15   | 226   |
| Mean     | Apr 13 | Apr 24 | May 10 | 28   | 5 (8%)   | 3    | 8.1   | Aug 10 | Oct 4  | Oct 25 | 76   | 22 (25%) | 11   | 68    |

| Observed | Nov  | Dec  | Jan  | Feb  | Mar  | Winter | S1  | S2  | S3  | S4  | S5  | S6   | S7   | S8   | S9   | S10  | Spring |
|----------|------|------|------|------|------|--------|-----|-----|-----|-----|-----|------|------|------|------|------|--------|
| 2005     | 14.0 | 6.0  |      | 2.3  | 3.0  | 6.4    |     | 0.5 | 0.3 | 0.3 | 0.9 |      |      |      | 0.3  | 0.2  | 0.3    |
| 2006     | 4.4  | 4.3  | 1.0  | 0.4  | 0.4  | 2.2    | 0.1 |     |     | 0.3 | 0.1 |      |      |      |      |      | 0.06   |
| 2007     | 4.9  | 2.7  | 12.7 | 13.5 | 8.4  | 7.4    |     |     |     | 0.1 | 0.4 |      |      |      | 0.6  | 0.1  | 0.1    |
| 2008     |      |      |      |      |      |        |     |     | 0.1 | 0.6 |     |      |      |      |      |      | 0.07   |
| 2009     | 0.9  | 22.5 | 3.3  | 2.0  | 2.7  | 3.3    |     |     |     |     |     |      | 0.3  |      |      | 0.1  | 0.04   |
| 2010     | 6.5  | 6.1  | 0.09 | 1.7  | 0.8  | 3.2    |     | 0.1 | 0.6 | 0.9 |     |      | 0.1  |      |      |      | 0.2    |
| 2011     | 31.7 |      |      | 0.2  |      | 8.6    |     |     |     |     |     |      | 0.1  | 0.1  |      |      | 0.03   |
| 2012     | 8.3  | 13.3 | 10.7 | 0.3  |      | 6.8    | 0.1 | 0.3 |     |     | 0.1 | 0.7  | 0.1  |      |      |      | 0.1    |
| 2013     | 16.4 | 14.9 | 18.3 | 22.6 | 10.3 | 15.6   | 1.3 |     | 0.3 | 0.4 | 0.6 |      |      |      |      |      | 0.3    |
| 2014     | 13.6 | 6.3  | 3.7  | 6.9  | 9.4  | 7.6    | 0.2 | 0.1 |     |     |     |      |      |      |      |      | 0.03   |
| Mean     | 9.1  | 6.9  | 5.6  | 4.3  | 3.9  | 6.1    | 0.2 | 0.1 | 0.1 | 0.3 | 0.2 | 0.07 | 0.07 | 0.01 | 0.09 | 0.04 | 0.1    |

| Observed | Jun | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13  | Fall |
|----------|-----|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 2005     | 0.2 |      | 0.09   |     | 0.3 |     | 0.6 |     |     | 0.3 | 0.1 | 0.2 | 0.3 | 1.5 | 1.6 | 3.0  | 0.6  |
| 2006     |     |      |        | 0.1 |     |     |     |     |     | 0.1 |     | 0.1 |     |     |     |      | 0.03 |
| 2007     | 0.1 |      | 0.08   | 0.4 | 0.3 | 0.1 | 0.3 |     |     |     |     |     | 0.7 |     |     | 0.6  | 0.2  |
| 2008     | 0.6 | 0.8  | 0.7    |     |     |     |     | 0.4 |     |     | 0.4 |     |     | 1.9 | 0.6 |      | 0.3  |
| 2009     |     |      |        | 0.1 |     | 0.1 |     | 0.1 | 0.1 |     | 0.3 | 0.1 |     |     | 0.3 |      | 0.10 |
| 2010     |     |      |        | 0.1 | 0.6 |     | 0.1 | 0.9 | 0.3 | 0.3 |     | 0.1 | 0.4 | 0.1 | 2.6 | 14.3 | 1.5  |
| 2011     |     |      |        |     |     |     |     | 0.3 | 0.1 |     | 0.7 | 0.6 | 0.1 |     |     | 1.3  | 0.2  |
| 2012     |     |      |        |     | 0.7 | 0.7 | 1.1 | 2.0 | 2.3 | 0.3 | 0.6 | 1.4 | 0.7 | 0.6 | 1.6 | 3.6  | 1.2  |
| 2013     |     |      |        | 0.4 | 0.1 | 0.7 |     | 0.1 |     | 0.4 |     | 0.4 | 1.4 | 2.4 | 1.9 | 3.4  | 0.9  |
| 2014     |     |      |        | 5.9 | 3.1 | 2.7 | 1.7 | 2.0 | 0.3 | 0.4 | 2.0 | 2.1 | 0.9 | 3.9 | 3.6 | 3.7  | 2.5  |
| Mean     | 0.1 | 0.06 | 0.09   | 0.7 | 0.5 | 0.4 | 0.4 | 0.6 | 0.3 | 0.2 | 0.4 | 0.5 | 0.5 | 1.0 | 1.2 | 3.0  | 0.8  |

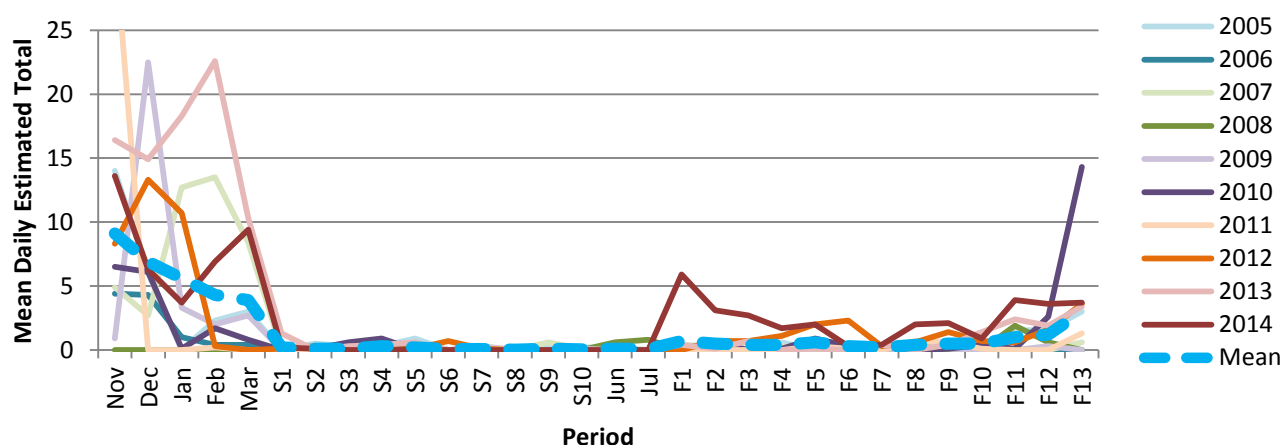
| Banded | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|--------|------|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005   | 52   | 5   |     | 1   |     | 58     |    |    |    |    |    |    |    |    |    |     |        |
| 2006   | 4    |     | 1   |     |     | 5      |    |    |    |    |    |    |    |    |    |     |        |
| 2007   | 16   | 5   |     |     |     | 21     |    |    |    |    |    |    |    |    |    |     |        |
| 2008   |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009   |      |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2010   | 31   | 1   |     |     |     | 32     |    |    |    |    |    |    |    |    |    |     |        |
| 2011   | 61   |     |     |     |     | 61     |    |    |    |    |    |    |    |    |    |     |        |
| 2012   | 65   | 4   |     |     |     | 69     |    |    |    |    |    |    |    |    |    |     |        |
| 2013   | 57   | 31  |     | 1   | 6   | 95     |    |    |    |    |    |    |    |    |    |     |        |
| 2014   | 29   | 3   |     |     |     | 32     |    |    |    |    |    |    |    |    |    |     |        |
| Mean   | 39.4 | 7.0 | 0.3 | 0.3 | 0.8 | 41.4   |    |    |    |    |    |    |    |    |    |     |        |

| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6 | F7  | F8 | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|----|-----|----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     |     |     |     |    |     |    |     |     |     |     | 2   | 2    |
| 2006   |     |     |        |     |     |     |     |     |    | 1   |    | 1   |     |     |     |     | 2    |
| 2007   |     |     |        |     |     |     |     |     |    |     |    |     |     |     |     |     |      |
| 2008   |     |     |        |     |     |     |     |     |    |     |    |     |     |     |     |     |      |
| 2009   |     |     |        |     |     |     |     |     |    |     |    |     |     |     |     |     |      |
| 2010   |     |     |        | 1   |     |     |     |     |    |     |    |     |     | 1   | 3   | 2   | 7    |
| 2011   |     |     |        |     |     |     |     |     |    |     |    |     |     |     |     |     |      |
| 2012   |     |     |        |     | 2   | 2   | 1   | 2   |    |     |    |     |     |     |     |     | 7    |
| 2013   |     |     |        | 1   |     |     |     |     |    |     |    |     |     |     |     |     | 1    |
| 2014   |     |     |        | 5   |     |     |     |     |    |     |    |     |     |     |     |     | 5    |
| Mean   |     |     |        | 0.7 | 0.2 | 0.2 | 0.1 | 0.2 |    | 0.1 |    | 0.1 |     | 0.1 | 0.3 | 0.4 | 2.4  |

House Finch has been observed at MBO throughout the year, but ranges from rare in summer to very common in winter, with somewhat irregular occurrence during both spring and fall. Although winter numbers are inflated by attraction to the feeders, they tend to build in late fall even before the feeders have been installed, and then peak in November, dropping off steadily for the remainder of winter. Once the feeders are removed at the end of winter, sightings fall much farther, with only one week in spring ever reaching the threshold of a mean daily count over one individual. Fall observations are scattered throughout the season, and only in 2014 occurred in every week. Most have been banded in winter, with none at all in spring or summer.



**Mean daily estimated total of House Finches throughout the year**



The figure above illustrates that House Finch is distinctly more abundant in winter, a rarity among birds at MBO. Recognizing this, a special research program was launched in November 2011 to explore the local movements of House Finches. Over the winter of 2011-12, 69 House Finches were marked with colour bands (for visual identification without recapture), plus another 30 in October-November 2012. Interactive reporting forms in both English and French were developed for the MBO website to facilitate reports of sightings: <http://www.migrationresearch.org/mbo/report-a-bird.html>. The website and the project were promoted through social media, listservs, local media, and to birding clubs in and around Montreal.

Of the 99 individuals with colour bands, 47 individuals (47%) were resighted 142 times; in contrast, only 21 (12%) of the 171 House Finches banded during the same period were captured at MBO. All but two of the colour-banded birds were hatch-year individuals, therefore no comparison by age was possible. However, the sex ratio was more balanced, and there was little difference in frequency of resightings, with 25 of 50 males (50%) and 22 of 49 females reported.

The majority of sightings of colour-banded House Finches (56%) came from two backyards in Senneville, within 3 km of MBO, while most of the rest (41%) were at MBO itself. In December 2012, the first few reports arrived from Beaconsfield and Ste-Anne-de-Bellevue, both also within 5 km of the study site. Two of the birds banded at MBO were reported elsewhere before being seen again at MBO, suggesting that House Finches may move around considerably within a larger winter territory.



Resightings were most frequent during the first winter of the study (111 of 142; 78%). Only 23 observations (involving 11 individual House Finches) were reported in 2013 and 2014, with all but two of them at MBO; this may represent a mix of natural mortality and possibly dispersal to other locations where the birds were either not seen, or that observers were unaware of where to report sightings. However, 8 individuals with colour bands from the winter of 2011-2012 were observed back at MBO the following winter, even though only one individual (without an auxiliary marker) was recaptured, which highlighted the value of the colour bands in tracking the occurrence of individuals in this species. Whereas the recapture rate of 12% implies low winter site fidelity, the resightings indicate that more House Finches linger in the area (or periodically return) than previously thought. However, half of the colour-banded individuals were not seen again, either at MBO or at nearby feeders, suggesting that some House Finches also appear to be moving through MBO as migrants or winter nomads, similar to the behaviour shown by other finch species.



**PUFI: Purple Finch / Roselin pourpré (*Haemorrhous purpureus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 10 | Apr 30 | May 27 | 48   | 10 (17%) | 2    | 12    | Aug 13 | Oct 4  | Oct 30 | 79   | 17 (19%) | 3    | 26    |
| 2006     | Apr 30 | May 6  | Jun 5  | 37   | 14 (20%) | 2    | 16    |        |        |        |      |          |      |       |
| 2007     | Apr 3  | Apr 9  | May 20 | 48   | 11 (16%) | 2    | 13    | Aug 4  | Sep 5  | Oct 23 | 81   | 29 (32%) | 5    | 56    |
| 2008     | Apr 20 | May 2  | May 27 | 38   | 18 (26%) | 3    | 25    | Aug 20 | Sep 25 | Oct 27 | 69   | 17 (19%) | 3    | 25    |
| 2009     | Apr 18 | Apr 30 | May 19 | 32   | 11 (16%) | 3    | 16    | Aug 8  | Aug 19 | Oct 28 | 82   | 12 (13%) | 2    | 14    |
| 2010     | Mar 31 | Apr 13 | May 21 | 52   | 16 (23%) | 3    | 24    | Aug 24 | Oct 2  | Oct 30 | 68   | 12 (13%) | 3    | 17    |
| 2011     | May 6  | May 6  | May 13 | 8    | 4 (6%)   | 1    | 4     | Sep 17 | Sep 17 | Oct 30 | 44   | 4 (4%)   | 1    | 4     |
| 2012     | Apr 12 | Apr 24 | May 24 | 43   | 22 (31%) | 4    | 35    | Aug 1  | Oct 23 | Oct 25 | 86   | 61 (67%) | 10   | 197   |
| 2013     | Apr 22 | Apr 30 | Jun 1  | 41   | 16 (23%) | 4    | 24    | Aug 1  | Aug 5  | Oct 23 | 84   | 15 (16%) | 4    | 28    |
| 2014     | Apr 7  | Apr 19 | Jun 1  | 56   | 31 (46%) | 4    | 49    | Aug 3  | Oct 11 | Oct 25 | 84   | 17 (19%) | 5    | 34    |
| Mean     | Apr 15 | Apr 25 | May 25 | 40   | 15 (22%) | 3    | 22    | Aug 13 | Sep 18 | Oct 26 | 75   | 20 (23%) | 4    | 40    |

| Observed | Nov | Dec | Jan | Feb  | Mar  | Winter | S1   | S2  | S3  | S4  | S5  | S6  | S7  | S8  | S9  | S10  | Spring |
|----------|-----|-----|-----|------|------|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|--------|
| 2005     |     |     |     |      |      |        |      | 0.2 |     | 0.2 | 0.7 | 0.3 |     | 0.3 | 0.1 |      | 0.2    |
| 2006     |     |     |     |      |      |        |      |     |     |     | 0.1 | 0.9 | 0.7 | 0.1 | 0.3 | 0.1  | 0.2    |
| 2007     |     |     |     |      |      |        | 0.1  | 0.6 | 0.1 | 0.3 | 0.1 |     | 0.1 | 0.4 |     |      | 0.2    |
| 2008     |     |     |     |      |      |        |      |     |     | 0.3 | 0.6 | 1.7 | 0.6 | 0.1 | 0.3 |      | 0.4    |
| 2009     |     | 4.5 |     |      |      | 0.2    |      |     |     | 0.4 | 0.7 | 0.7 | 0.3 | 0.1 |     |      | 0.2    |
| 2010     | 0.2 |     |     |      | 0.08 | 0.06   | 0.1  | 0.1 | 1.7 | 0.3 | 0.4 | 0.1 |     | 0.6 |     |      | 0.3    |
| 2011     | 0.2 |     |     |      |      | 0.05   |      |     |     |     |     | 0.1 | 0.4 |     |     |      | 0.06   |
| 2012     | 0.6 | 0.8 |     |      |      | 0.4    |      |     | 0.3 | 0.6 | 1.1 | 1.1 | 0.9 | 0.7 | 0.3 |      | 0.5    |
| 2013     |     |     |     | 0.2  | 0.3  | 0.1    |      |     |     | 0.6 | 1.1 | 1.1 |     | 0.3 |     | 0.3  | 0.3    |
| 2014     |     |     |     |      |      |        |      | 0.1 | 0.6 | 0.9 | 1.0 | 0.1 | 0.9 | 2.0 | 1.3 | 0.2  | 0.7    |
| Mean     | 0.1 | 0.2 |     | 0.01 | 0.06 | 0.08   | 0.03 | 0.1 | 0.3 | 0.3 | 0.6 | 0.6 | 0.4 | 0.5 | 0.2 | 0.06 | 0.3    |

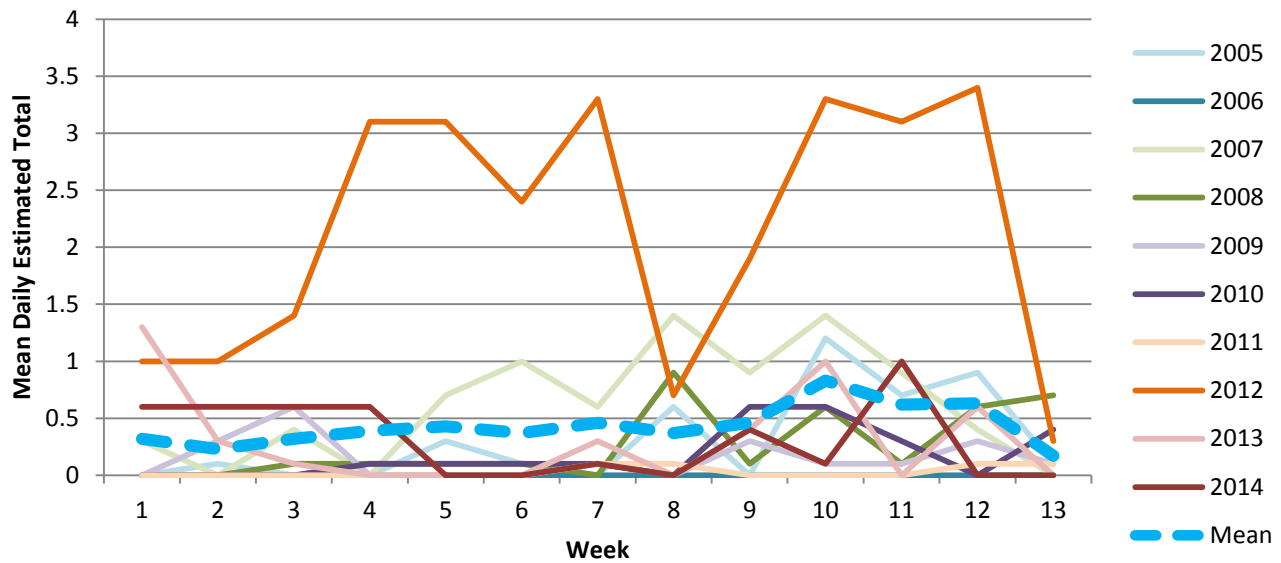
| Observed | Jun  | Jul  | Summer | F1  | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|----------|------|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005     |      |      |        |     | 0.1 |     |     | 0.3 | 0.1 |     | 0.6 |     | 1.2 | 0.7 | 0.9 | 0.1 | 0.3  |
| 2006     |      |      |        |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
| 2007     |      |      |        | 0.3 |     | 0.4 |     | 0.7 | 1.0 | 0.6 | 1.4 | 0.9 | 1.4 | 0.9 | 0.4 |     | 0.6  |
| 2008     |      |      |        |     |     | 0.1 | 0.1 | 0.1 | 0.1 |     | 0.9 | 0.1 | 0.6 | 0.1 | 0.6 | 0.7 | 0.3  |
| 2009     |      |      |        |     | 0.3 | 0.6 |     |     |     | 0.1 |     | 0.3 | 0.1 | 0.1 | 0.3 | 0.1 | 0.2  |
| 2010     |      | 0.2  | 0.1    |     |     |     | 0.1 | 0.1 | 0.1 | 0.1 |     | 0.6 | 0.6 | 0.3 |     | 0.4 | 0.2  |
| 2011     |      |      |        |     |     |     |     |     |     | 0.1 | 0.1 |     |     |     | 0.1 | 0.1 | 0.04 |
| 2012     |      | 0.3  | 0.1    | 1.0 | 1.0 | 1.4 | 3.1 | 3.1 | 2.4 | 3.3 | 0.7 | 1.9 | 3.3 | 3.1 | 3.4 | 0.3 | 2.2  |
| 2013     |      |      |        | 1.3 | 0.3 | 0.1 |     |     |     | 0.3 |     | 0.4 | 1.0 |     | 0.6 |     | 0.3  |
| 2014     | 0.3  | 0.3  | 0.3    | 0.6 | 0.6 | 0.6 | 0.6 |     |     | 0.1 |     | 0.4 | 0.1 | 1.0 |     | 0.9 | 0.4  |
| Mean     | 0.02 | 0.05 | 0.03   | 0.3 | 0.2 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.5 | 0.8 | 0.6 | 0.6 | 0.3 | 0.4  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6  | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     | 3   |     |     | 2   |     |     | 5      |
| 2006   |     |     |     |     |     |        |    |    |    |     |     | 1   | 2   |     |     |     | 3      |
| 2007   |     |     |     |     |     |        |    |    |    |     |     |     |     | 1   |     |     | 1      |
| 2008   |     |     |     |     |     |        |    |    |    |     |     |     |     |     |     |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |     |     | 3   |     |     |     |     | 3      |
| 2010   | 1   |     |     |     |     | 1      |    |    |    |     |     |     |     |     |     |     |        |
| 2011   | 1   |     |     |     |     | 1      |    |    |    |     |     |     |     |     |     |     |        |
| 2012   | 3   | 3   |     |     |     | 6      |    |    |    | 3   |     |     | 2   | 2   | 1   |     | 8      |
| 2013   |     |     |     |     | 1   | 1      |    |    |    |     | 2   |     |     |     |     |     | 2      |
| 2014   |     |     |     |     |     |        |    |    |    |     |     |     | 2   | 4   |     |     | 6      |
| Mean   | 0.6 | 0.4 |     |     | 0.1 | 1.0    |    |    |    | 0.3 | 0.5 | 0.4 | 0.6 | 0.9 | 0.1 |     | 2.8    |

| Banded | Jun | Jul | Summer | F1  | F2  | F3 | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     |    |     |     |     |     | 1   |     | 2   |     |     |     | 3    |
| 2006   |     |     |        |     |     |    |     |     |     |     |     |     |     |     |     |     |      |
| 2007   |     |     |        |     |     |    |     | 2   | 1   |     |     | 2   | 3   | 3   |     |     | 11   |
| 2008   |     |     |        |     |     |    |     | 1   |     |     | 1   |     | 2   |     |     | 3   | 7    |
| 2009   |     |     |        |     | 1   |    |     |     |     | 1   |     | 1   | 1   | 1   |     |     | 5    |
| 2010   |     |     |        |     |     |    |     |     |     |     |     | 3   |     |     |     | 1   | 4    |
| 2011   |     |     |        |     |     |    |     |     |     |     |     |     |     |     |     |     |      |
| 2012   |     | 1   | 1      | 3   |     |    | 2   | 9   | 2   | 9   | 1   | 2   | 4   | 10  | 2   |     | 44   |
| 2013   |     |     |        | 4   |     |    |     |     |     |     |     |     |     |     |     |     | 4    |
| 2014   |     |     |        | 3   | 1   |    | 2   |     |     | 1   |     |     |     |     |     |     | 7    |
| Mean   |     | 0.1 | 0.1    | 1.0 | 0.2 |    | 0.4 | 1.2 | 0.3 | 1.1 | 0.3 | 0.8 | 1.2 | 1.4 | 0.2 | 0.4 | 8.5  |

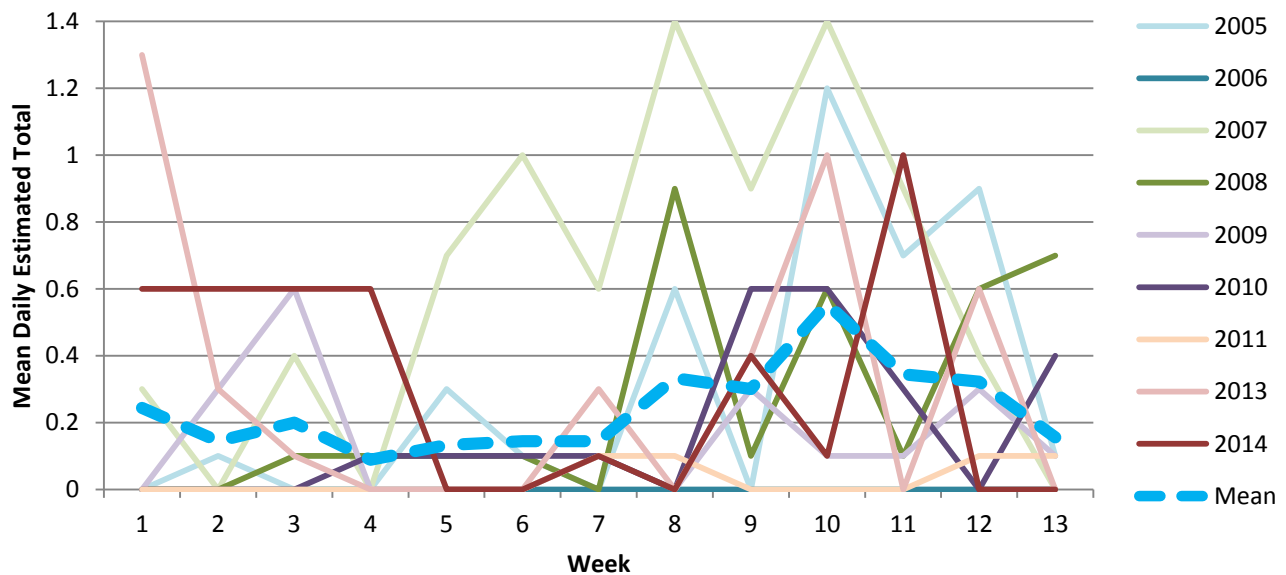
Purple Finch is an uncommon and irregular species at MBO in all seasons. Spring sightings have spanned all ten weeks of spring, and individual season peaks have been as early as week 2 or late as week 8, but the overall peak is in weeks 5 and 6. Sightings are least frequent in summer, but there has been evidence of breeding annually since 2012. Fall sightings have also been highly variable, with the peak in individual years ranging from week 1 to 12, but on the whole numbers tend to be a bit higher between weeks 10 and 12. Winter observations were all in a five-year block from 2009 to 2013. Overall, spring and fall numbers have remained fairly consistent over time, except for lows in spring and fall 2011, and highs in spring and fall 2012 and spring 2014.

**Mean daily estimated total of Purple Finches in fall, by week**



The figure above highlights the exceptional abundance of Purple Finches in fall 2012, with two waves of migrants moving through MBO in unprecedented numbers, one spanning late August to mid-September, and another from end of September to past mid-October. The figure below, with 2012 omitted, shows that there is a fair amount of variability among other years, but a fairly distinct overall peak in week 10.

**Mean daily estimated total of Purple Finches in fall, by week (2012 omitted)**



**WWCR: White-winged Crossbill / Bec-croisé bifascié (*Loxia leucoptera*)**

| Observed | First | Peak | Last | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|-------|------|------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2006     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2007     |       |      |      |      |        |      |       | Oct 9  | Oct 9  | Oct 9  | 1    | 1 (1%) | 2    | 2     |
| 2008     |       |      |      |      |        |      |       | Aug 26 | Oct 22 | Oct 29 | 65   | 3 (3%) | 17   | 20    |
| 2009     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2011     |       |      |      |      |        |      |       | Oct 28 | Oct 28 | Oct 28 | 1    | 1 (1%) | 2    | 2     |
| 2012     |       |      |      |      |        |      |       | Aug 23 | Oct 23 | Oct 29 | 68   | 6 (7%) | 6    | 17    |
| 2013     |       |      |      |      |        |      |       |        |        |        |      |        |      |       |
| 2014     |       |      |      |      |        |      |       | Oct 24 | Oct 24 | Oct 24 | 1    | 1 (1%) | 1    | 1     |
| Mean     |       |      |      |      |        |      |       | Sep 27 | Oct 21 | Oct 23 | 27   | 2 (3%) | 6    | 4.2   |

| Observed | Nov  | Dec | Jan  | Feb  | Mar  | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|------|-----|------|------|------|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005     |      |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2006     |      |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2007     |      |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2008     |      |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009     |      |     | 0.5  | 0.2  | 0.1  | 0.2    |    |    |    |    |    |    |    |    |    |     |        |
| 2010     |      |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2011     | 0.3  |     |      |      |      | 0.08   |    |    |    |    |    |    |    |    |    |     |        |
| 2012     |      |     |      |      |      | 0.08   |    |    |    |    |    |    |    |    |    |     |        |
| 2013     | 0.5  |     |      |      |      | 0.08   |    |    |    |    |    |    |    |    |    |     |        |
| 2014     |      |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| Mean     | 0.07 |     | 0.03 | 0.03 | 0.02 | 0.03   |    |    |    |    |    |    |    |    |    |     |        |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4   | F5 | F6 | F7 | F8 | F9   | F10 | F11 | F12 | F13  | Fall |
|----------|-----|-----|--------|----|----|----|------|----|----|----|----|------|-----|-----|-----|------|------|
| 2005     |     |     |        |    |    |    |      |    |    |    |    |      |     |     |     |      |      |
| 2006     |     |     |        |    |    |    |      |    |    |    |    |      |     |     |     |      |      |
| 2007     |     |     |        |    |    |    |      |    |    |    |    |      | 0.3 |     |     |      | 0.02 |
| 2008     |     |     |        |    |    |    | 0.1  |    |    |    |    |      |     |     | 2.4 | 0.3  | 0.2  |
| 2009     |     |     |        |    |    |    |      |    |    |    |    |      |     |     |     |      |      |
| 2010     |     |     |        |    |    |    |      |    |    |    |    |      |     |     |     |      |      |
| 2011     |     |     |        |    |    |    |      |    |    |    |    |      |     |     |     | 0.3  | 0.02 |
| 2012     |     |     |        |    |    |    | 0.1  |    |    |    |    | 0.1  |     | 0.9 | 1.3 | 0.2  | 0.2  |
| 2013     |     |     |        |    |    |    |      |    |    |    |    |      |     |     |     |      |      |
| 2014     |     |     |        |    |    |    |      |    |    |    |    |      |     |     |     | 0.1  | 0.01 |
| Mean     |     |     |        |    |    |    | 0.03 |    |    |    |    | 0.04 |     | 0.3 | 0.2 | 0.05 |      |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2006   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2013   | 1   |     |     |     |     | 1      |    |    |    |    |    |    |    |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| Mean   | 0.1 |     |     |     |     | 0.1    |    |    |    |    |    |    |    |    |    |     |        |

White-winged Crossbill is a rare fall and winter bird at MBO. Except for two records in late August in 2008 and 2012, all other fall sightings have been in October, spread across five years, and usually in the final two weeks of the season. In 2011, fall observations carried over into early November; there were also November sightings in 2013 when none were seen during fall. The only time that White-winged Crossbills were observed over a long period was spanning January to March 2009. Just one individual has been banded in early winter 2013.

**CORE: Common Redpoll / Sizerin flammé (*Acanthis flammea*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |          |      |       | Oct 27 | Oct 27 | Oct 27 | 1    | 1 (1%) | 4    | 4     |
| 2006     |        |        |        |      |          |      |       |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |          |      |       | Oct 29 | Oct 29 | Oct 29 | 1    | 1 (1%) | 3    | 3     |
| 2008     | Apr 10 | Apr 10 | Apr 17 | 8    | 2 (3%)   | 4    | 5     |        |        |        |      |        |      |       |
| 2009     | Apr 17 | Apr 17 | Apr 17 | 1    | 1 (1%)   | 1    | 1     |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |          |      |       | Oct 22 | Oct 22 | Oct 22 | 1    | 1 (1%) | 3    | 3     |
| 2011     | Mar 28 | Mar 29 | Apr 25 | 29   | 4 (6%)   | 45   | 97    | Oct 30 | Oct 30 | Oct 30 | 1    | 1 (1%) | 3    | 3     |
| 2012     |        |        |        |      |          |      |       | Oct 28 | Oct 28 | Oct 28 | 1    | 1 (1%) | 3    | 3     |
| 2013     | Mar 28 | Mar 28 | Apr 13 | 17   | 11 (16%) | 50   | 191   | Oct 25 | Oct 25 | Oct 25 | 1    | 1 (1%) | 18   | 18    |
| 2014     |        |        |        |      |          |      |       | Oct 26 | Oct 30 | Oct 30 | 5    | 3 (3%) | 2    | 4     |
| Mean     | Apr 5  | Apr 5  | Apr 18 | 14   | 4 (6%)   | 25   | 29    | Oct 26 | Oct 27 | Oct 27 | 2    | 1 (1%) | 5    | 3.8   |

| Observed | Nov | Dec  | Jan  | Feb  | Mar  | Winter | S1   | S2  | S3  | S4 | S5   | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|-----|------|------|------|------|--------|------|-----|-----|----|------|----|----|----|----|-----|--------|
| 2005     | 1.3 |      |      |      | 1.3  | 0.7    |      |     |     |    |      |    |    |    |    |     |        |
| 2006     |     | 2.8  | 8.5  | 2.7  | 14.9 | 5.6    |      |     |     |    |      |    |    |    |    |     |        |
| 2007     |     |      |      |      |      |        |      |     |     |    |      |    |    |    |    |     |        |
| 2008     | 4.8 |      |      | 3.6  |      | 2.6    |      | 0.6 | 0.1 |    |      |    |    |    |    |     | 0.07   |
| 2009     | 1.0 |      | 15.8 | 25.9 | 29.4 | 20.1   |      |     | 0.1 |    |      |    |    |    |    |     | 0.01   |
| 2010     |     |      |      |      |      |        |      |     |     |    |      |    |    |    |    |     |        |
| 2011     | 0.8 |      | 2.0  | 64.3 | 61.1 | 24.5   | 10.7 | 2.9 |     |    | 0.3  |    |    |    |    |     | 1.4    |
| 2012     |     |      |      |      |      |        |      |     |     |    |      |    |    |    |    |     |        |
| 2013     | 0.5 | 13.3 | 42.0 | 43.0 | 44.6 | 31.8   | 23.3 | 2.4 | 1.6 |    |      |    |    |    |    |     | 2.7    |
| 2014     |     |      |      |      |      |        |      |     |     |    |      |    |    |    |    |     |        |
| Mean     | 0.6 | 2.5  | 10.5 | 12.5 | 20.4 | 9.3    | 3.8  | 0.6 | 0.2 |    | 0.03 |    |    |    |    |     | 0.4    |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12  | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|------|-----|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      | 0.6 | 0.05 |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |      |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      | 0.4 | 0.03 |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |      |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      |     |      |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 0.4  |     | 0.03 |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      | 0.4 | 0.03 |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      | 0.4 | 0.03 |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      | 2.6 | 0.2  |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |    |     |     |      | 0.6 | 0.04 |
| Mean     |     |     |        |    |    |    |    |    |    |    |    |    |     |     | 0.04 | 0.5 | 0.04 |

| Banded | Nov | Dec | Jan | Feb  | Mar  | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|------|------|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005   |     |     |     |      | 1    | 1      |    |    |    |    |    |    |    |    |    |     |        |
| 2006   |     |     | 26  |      | 14   | 40     |    |    |    |    |    |    |    |    |    |     |        |
| 2007   |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2008   |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009   |     |     |     |      | 21   | 21     |    |    |    |    |    |    |    |    |    |     |        |
| 2010   |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2011   | 1   |     |     | 2    | 50   | 53     |    |    |    |    |    |    |    |    |    |     |        |
| 2012   |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2013   | 3   | 23  |     | 87   | 227  | 340    |    |    |    |    |    |    |    |    |    |     |        |
| 2014   |     |     |     |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| Mean   | 0.5 | 3.3 | 8.7 | 14.8 | 39.1 | 50.6   |    |    |    |    |    |    |    |    |    |     |        |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 3   | 3    |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 0.3 | 0.3  |

Common Redpoll is widely known to be an irruptive migrant, with large number overwintering in southern Canada every two to three years. This pattern is reflected well by MBO's winter results with particularly high numbers in winters 2009, 2011, and 2013, and more modest ones also in 2006 and 2008. Even in peak winters, numbers only started building significantly in December or January, building to a peak in March. Nonetheless, small numbers have been observed in the final nine days of fall in seven out of ten years. Sightings have extended into spring after four of the five big winter movements. More Common Redpolls have been banded in winter than any other species except American Goldfinch.

**HORE: Hoary Redpoll / Sizerin blanchâtre (*Acanthis hornemanni*)**

| Observed | Nov | Dec | Jan  | Feb  | Mar  | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|----------|-----|-----|------|------|------|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005     |     |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2006     |     |     |      |      | 0.2  | 0.03   |    |    |    |    |    |    |    |    |    |     |        |
| 2007     |     |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2008     |     |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009     |     |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2010     |     |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2011     |     |     |      | 0.2  | 0.3  | 0.08   |    |    |    |    |    |    |    |    |    |     |        |
| 2012     |     |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| 2013     |     |     | 0.5  | 0.2  | 0.1  | 0.2    |    |    |    |    |    |    |    |    |    |     |        |
| 2014     |     |     |      |      |      |        |    |    |    |    |    |    |    |    |    |     |        |
| Mean     |     |     | 0.09 | 0.03 | 0.07 | 0.04   |    |    |    |    |    |    |    |    |    |     |        |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2006   |     |     |     |     | 1   | 1      |    |    |    |    |    |    |    |    |    |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2011   |     |     |     |     | 1   | 1      |    |    |    |    |    |    |    |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| 2013   |     |     |     |     | 1   | 1      |    |    |    |    |    |    |    |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |    |    |    |    |    |    |     |        |
| Mean   |     |     |     |     | 0.4 | 0.3    |    |    |    |    |    |    |    |    |    |     |        |

Hoary Redpoll is a rare winter visitor to MBO, with sightings in early 2006, 2011, and 2013, corresponding to three of the peak redpoll invasion years. In each of those years, a lone individual was banded; some of the sightings may have involved the same individuals lingering at the feeders for a period of time.

**PISI: Pine Siskin / Tarin des pins (*Spinus pinus*)**

| Observed | First  | Peak   | Last   | Span | # days   | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     |        |        |        |      |          |      |       | Oct 21 | Oct 21 | Oct 28 | 8    | 3 (3%)   | 8    | 10    |
| 2006     | Apr 2  | Apr 2  | Apr 5  | 4    | 2 (3%)   | 3    | 5     | Oct 10 | Oct 10 | Oct 10 | 1    | 1 (1%)   | 1    | 1     |
| 2007     |        |        |        |      |          |      |       | Oct 17 | Oct 28 | Oct 28 | 12   | 4 (4%)   | 12   | 29    |
| 2008     |        |        |        |      |          |      |       | Oct 13 | Oct 13 | Oct 27 | 15   | 9 (10%)  | 100  | 215   |
| 2009     | Mar 31 | Apr 19 | May 22 | 53   | 30 (43%) | 12   | 111   |        |        |        |      |          |      |       |
| 2010     |        |        |        |      |          |      |       | Oct 22 | Oct 30 | Oct 30 | 9    | 4 (4%)   | 16   | 29    |
| 2011     | Mar 31 | May 20 | May 30 | 61   | 12 (17%) | 6    | 26    | Sep 23 | Oct 3  | Oct 30 | 38   | 18 (20%) | 150  | 454   |
| 2012     | Apr 25 | May 5  | May 5  | 11   | 3 (4%)   | 4    | 7     | Aug 10 | Sep 29 | Oct 30 | 82   | 23 (25%) | 60   | 152   |
| 2013     | Apr 11 | Apr 11 | Jun 1  | 52   | 4 (6%)   | 5    | 11    |        |        |        |      |          |      |       |
| 2014     |        |        |        |      |          |      |       | Sep 23 | Oct 24 | Oct 30 | 38   | 30 (33%) | 43   | 284   |
| Mean     | Apr 7  | Apr 23 | May 12 | 36   | 10 (15%) | 6    | 16    | Oct 2  | Oct 16 | Oct 26 | 25   | 12 (13%) | 49   | 117   |

| Observed | Nov  | Dec | Jan  | Feb  | Mar | Winter | S1  | S2  | S3  | S4  | S5  | S6  | S7   | S8  | S9   | S10  | Spring |
|----------|------|-----|------|------|-----|--------|-----|-----|-----|-----|-----|-----|------|-----|------|------|--------|
| 2005     | 0.5  |     |      |      |     | 0.1    |     |     |     |     |     |     |      |     |      |      |        |
| 2006     |      |     |      | 0.7  | 1.9 | 0.5    | 0.4 | 0.3 |     |     |     |     |      |     |      |      | 0.07   |
| 2007     |      |     |      |      |     |        |     |     |     |     |     |     |      |     |      |      |        |
| 2008     |      |     |      |      |     |        |     |     |     |     |     |     |      |     |      |      |        |
| 2009     |      | 0.5 |      | 13.4 | 5.7 | 5.6    | 0.7 | 1.7 | 1.0 | 5.7 | 2.7 | 3.3 | 0.6  | 0.4 |      |      | 1.6    |
| 2010     | 0.05 |     |      |      |     | 0.02   |     |     |     |     |     |     |      |     |      |      |        |
| 2011     | 0.1  |     |      |      |     | 0.03   | 0.4 |     |     | 0.3 |     |     |      | 2.1 | 0.7  | 0.1  | 0.4    |
| 2012     | 1.3  | 0.5 |      |      | 0.6 | 0.7    |     |     |     |     | 0.1 | 0.9 |      |     |      |      | 0.1    |
| 2013     | 9.1  | 0.6 | 0.07 | 0.8  |     | 1.7    |     |     | 0.7 | 0.4 |     |     |      |     | 0.1  | 0.3  | 0.2    |
| 2014     |      |     |      |      |     |        |     |     |     |     |     |     |      |     |      |      |        |
| Mean     | 0.9  | 0.1 | 0.01 | 1.9  | 1.3 | 0.9    | 0.2 | 0.2 | 0.2 | 0.7 | 0.3 | 0.4 | 0.06 | 0.3 | 0.09 | 0.04 | 0.2    |

| Observed | Jun | Jul | Summer | F1 | F2   | F3 | F4 | F5   | F6 | F7 | F8  | F9  | F10  | F11  | F12 | F13  | Fall |
|----------|-----|-----|--------|----|------|----|----|------|----|----|-----|-----|------|------|-----|------|------|
| 2005     |     |     |        |    |      |    |    |      |    |    |     |     |      |      | 1.3 | 0.1  | 0.1  |
| 2006     |     |     |        |    |      |    |    |      |    |    |     |     |      | 0.1  |     |      | 0.01 |
| 2007     |     |     |        |    |      |    |    |      |    |    |     |     |      |      | 1.4 | 2.7  | 0.3  |
| 2008     |     |     |        |    |      |    |    |      |    |    |     |     |      | 21.0 | 4.6 | 5.1  | 2.4  |
| 2009     |     |     |        |    |      |    |    |      |    |    |     |     |      |      |     |      |      |
| 2010     |     |     |        |    |      |    |    |      |    |    |     |     |      |      | 1.6 | 2.6  | 0.3  |
| 2011     |     |     |        |    |      |    |    |      |    |    | 0.1 | 0.1 | 50.0 | 11.3 |     | 3.3  | 5.0  |
| 2012     |     |     |        |    | 0.4  |    |    | 0.4  |    |    |     | 8.6 | 1.7  | 3.6  | 3.3 | 3.7  | 1.7  |
| 2013     |     |     |        |    |      |    |    |      |    |    |     |     |      |      |     |      |      |
| 2014     |     |     |        |    |      |    |    |      |    |    | 1.6 | 3.3 | 1.9  | 7.6  | 6.4 | 19.9 | 3.1  |
| Mean     |     |     |        |    | 0.04 |    |    | 0.04 |    |    | 0.2 | 1.2 | 5.4  | 4.4  | 1.9 | 3.7  | 1.3  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3 | S4  | S5  | S6 | S7  | S8  | S9  | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|----|----|-----|-----|----|-----|-----|-----|-----|--------|
| 2005   |     |     |     |     |     |        |    |    |    |     |     |    |     |     |     |     |        |
| 2006   |     |     |     | 7   |     | 7      |    |    |    |     |     |    |     |     |     |     |        |
| 2007   |     |     |     |     |     |        |    |    |    |     |     |    |     |     |     |     |        |
| 2008   |     |     |     |     |     |        |    |    |    |     |     |    |     |     |     |     |        |
| 2009   |     |     |     |     | 3   | 3      |    |    |    | 1   | 1   |    | 1   |     |     |     | 3      |
| 2010   |     |     |     |     |     |        |    |    |    |     |     |    |     |     |     |     |        |
| 2011   |     |     |     |     |     |        |    |    |    |     |     |    |     | 2   | 1   |     | 3      |
| 2012   |     |     |     |     |     |        |    |    |    |     |     |    |     |     |     |     |        |
| 2013   |     |     |     |     |     |        |    |    |    |     |     |    |     |     |     |     |        |
| 2014   |     |     |     |     |     |        |    |    |    |     |     |    |     |     |     |     |        |
| Mean   |     |     |     | 1.2 | 0.4 | 1.1    |    |    |    | 0.1 | 0.1 |    | 0.1 | 0.2 | 0.1 |     | 0.6    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2006   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |    |     | 14  |     |     | 14   |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |    | 1   |     |     |     | 1    |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     | 6   | 6    |
| Mean   |     |     |        |    |    |    |    |    |    |    |    |    | 0.1 | 1.4 |     | 0.6 | 2.1  |

Pine Siskin is an irregular species at MBO, with sightings in all seasons except summer. Spring observations have occurred throughout the season, but were regular over an extended period only in 2009. Fall observations have been recorded in every year except 2009 and 2013, although in large numbers only in 2008, 2011, 2012, and 2014. From 2005 to 2010, all fall sightings were in the final three weeks of the season, but more recently there have been earlier observations, including a record large peak in week 10 of 2011. Winter sightings have occurred in all months, but were numerous only in February and March 2009 – an irruption that carried over into the following spring. Small numbers have been banded in all three seasons. A pair bred at MBO in May 2011.

# AMGO: American Goldfinch / Chardonneret jaune (*Spinus tristis*)

| Observed | First  | Peak   | Last  | Span | # days    | High | Total | First | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|-------|------|-----------|------|-------|-------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | Apr 28 | Jun 3 | 60   | 59 (100%) | 20   | 625   | Aug 1 | Sep 13 | Oct 30 | 91   | 83 (94%) | 50   | 1303  |
| 2006     | Mar 28 | May 10 | Jun 5 | 70   | 68 (99%)  | 38   | 825   | Aug 1 | Sep 13 | Oct 30 | 91   | 82 (90%) | 100  | 1421  |
| 2007     | Mar 28 | May 13 | Jun 5 | 70   | 66 (94%)  | 36   | 773   | Aug 1 | Sep 7  | Oct 30 | 91   | 90 (99%) | 50   | 1685  |
| 2008     | Mar 29 | May 30 | Jun 5 | 69   | 61 (87%)  | 28   | 576   | Aug 1 | Sep 10 | Oct 30 | 91   | 85 (93%) | 31   | 1023  |
| 2009     | Mar 28 | May 25 | Jun 5 | 70   | 65 (94%)  | 28   | 511   | Aug 1 | Sep 16 | Oct 30 | 91   | 85 (93%) | 43   | 1102  |
| 2010     | Mar 28 | May 5  | Jun 5 | 70   | 69 (99%)  | 28   | 642   | Aug 1 | Sep 1  | Oct 30 | 91   | 87 (96%) | 52   | 1162  |
| 2011     | Mar 28 | May 25 | Jun 5 | 70   | 54 (77%)  | 30   | 342   | Aug 1 | Sep 9  | Oct 30 | 91   | 84 (92%) | 38   | 887   |
| 2012     | Mar 30 | Apr 24 | Jun 5 | 68   | 65 (93%)  | 27   | 642   | Aug 1 | Sep 12 | Oct 30 | 91   | 84 (92%) | 50   | 1572  |
| 2013     | Mar 28 | Jun 4  | Jun 5 | 70   | 63 (90%)  | 15   | 387   | Aug 1 | Sep 3  | Oct 30 | 91   | 86 (95%) | 85   | 1850  |
| 2014     | Mar 29 | May 13 | Jun 4 | 68   | 65 (96%)  | 30   | 509   | Aug 1 | Sep 1  | Oct 30 | 91   | 88 (97%) | 50   | 1482  |
| Mean     | Mar 29 | May 14 | Jun 4 | 68   | 64 (93%)  | 28   | 583   | Aug 1 | Sep 8  | Oct 30 | 91   | 85 (94%) | 55   | 1349  |

| Observed | Nov  | Dec  | Jan | Feb  | Mar  | Winter | S1  | S2  | S3  | S4   | S5   | S6   | S7   | S8   | S9   | S10  | Spring |
|----------|------|------|-----|------|------|--------|-----|-----|-----|------|------|------|------|------|------|------|--------|
| 2005     | 21.8 | 18.5 |     | 1.5  | 5.0  | 10.7   |     | 7.3 | 5.9 | 6.7  | 9.7  | 13.0 | 10.6 | 13.3 | 13.4 | 16.0 | 10.6   |
| 2006     | 17.4 | 10.9 | 5.0 | 1.0  | 1.1  | 7.6    | 3.3 | 3.0 | 6.1 | 9.7  | 8.1  | 17.7 | 20.9 | 15.4 | 21.3 | 12.7 | 12.0   |
| 2007     | 4.6  | 4.6  | 5.2 | 0.7  | 11.9 | 5.6    | 2.9 | 3.3 | 2.1 | 14.6 | 13.0 | 15.3 | 19.9 | 15.7 | 13.3 | 10.4 | 11.0   |
| 2008     | 9.8  | 2.3  | 0.4 |      |      | 3.7    | 0.9 | 1.9 | 3.7 | 6.6  | 10.9 | 9.1  | 15.4 | 11.7 | 10.3 | 11.9 | 8.2    |
| 2009     | 13.1 | 14.0 | 7.8 | 18.1 | 3.5  | 9.9    | 4.6 | 3.3 | 2.9 | 6.4  | 8.7  | 9.6  | 9.4  | 10.0 | 12.9 | 5.7  | 7.4    |
| 2010     | 16.8 | 2.3  | 5.3 | 5.1  | 15.3 | 10.4   | 3.3 | 3.6 | 5.3 | 7.7  | 9.6  | 15.6 | 14.0 | 14.4 | 11.6 | 6.7  | 9.2    |
| 2011     | 19.8 | 2.0  | 9.1 | 6.0  | 3.1  | 10.0   | 0.3 | 1.3 | 0.6 | 1.9  | 4.4  | 7.0  | 8.3  | 8.9  | 11.4 | 4.9  | 4.9    |
| 2012     | 5.4  | 9.3  | 6.0 | 2.3  | 4.0  | 5.4    | 4.4 | 4.9 | 7.4 | 9.6  | 10.6 | 11.4 | 13.6 | 12.7 | 10.6 | 6.6  | 9.2    |
| 2013     | 34.0 | 17.6 | 0.9 |      | 1.4  | 8.9    | 1.6 | 1.6 | 2.1 | 4.0  | 4.4  | 11.1 | 7.4  | 10.4 | 6.3  | 6.3  | 5.5    |
| 2014     | 23.0 | 1.8  | 0.3 | 1.5  | 4.0  | 5.4    | 3.0 | 3.3 | 3.3 | 6.4  | 7.0  | 6.4  | 13.9 | 11.4 | 11.1 | 8.5  | 7.5    |
| Mean     | 15.1 | 8.4  | 4.4 | 4.2  | 5.6  | 8.0    | 2.7 | 3.3 | 3.9 | 7.4  | 8.6  | 11.6 | 13.3 | 12.4 | 12.2 | 8.8  | 8.5    |

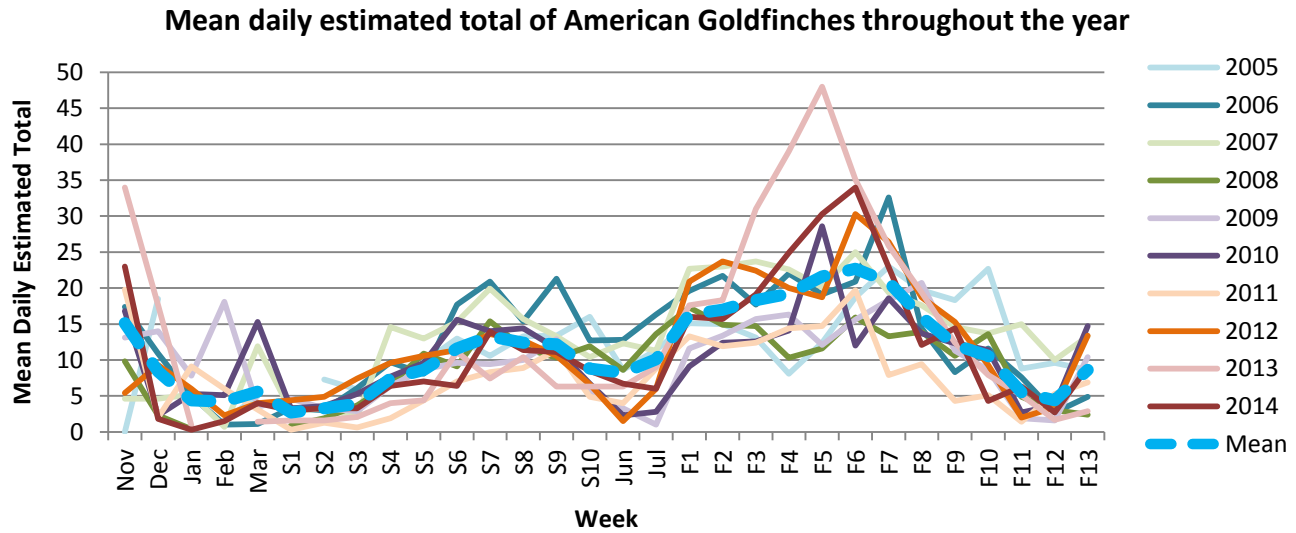
| Observed | Jun  | Jul  | Summer | F1   | F2   | F3   | F4   | F5   | F6   | F7   | F8   | F9   | F10  | F11  | F12  | F13  | Fall |
|----------|------|------|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2005     | 8.6  | 11.4 | 10.1   | 15.1 | 15.0 | 13.1 | 8.1  | 12.4 | 18.7 | 23.0 | 19.7 | 18.3 | 22.7 | 8.8  | 9.6  | 8.6  | 14.8 |
| 2006     | 12.8 | 16.3 | 14.7   | 19.6 | 21.7 | 17.7 | 22.0 | 19.1 | 20.9 | 32.6 | 14.4 | 8.3  | 11.6 | 7.6  | 2.7  | 4.9  | 15.6 |
| 2007     | 12.3 | 11.3 | 11.8   | 22.7 | 23.0 | 23.7 | 22.6 | 20.1 | 25.0 | 19.4 | 17.6 | 14.6 | 13.7 | 15.0 | 10.0 | 13.3 | 18.5 |
| 2008     | 8.6  | 13.6 | 11.1   | 17.3 | 14.9 | 14.7 | 10.3 | 11.6 | 15.9 | 13.3 | 13.9 | 10.6 | 13.6 | 4.9  | 3.0  | 2.4  | 11.2 |
| 2009     | 3.3  | 1.0  | 2.0    | 11.6 | 13.4 | 15.7 | 16.3 | 12.1 | 15.6 | 18.3 | 20.7 | 11.3 | 8.6  | 1.9  | 1.6  | 10.4 | 12.1 |
| 2010     | 2.3  | 2.8  | 2.7    | 9.1  | 12.4 | 12.6 | 14.1 | 28.6 | 12.0 | 18.6 | 13.7 | 12.3 | 11.4 | 2.7  | 3.7  | 14.7 | 12.8 |
| 2011     | 4.0  | 8.8  | 6.7    | 13.3 | 11.9 | 12.4 | 14.4 | 14.7 | 19.7 | 7.9  | 9.4  | 4.3  | 5.1  | 1.4  | 5.3  | 6.9  | 9.7  |
| 2012     | 1.5  | 6.0  | 3.8    | 20.9 | 23.7 | 22.4 | 20.0 | 18.7 | 30.3 | 26.4 | 18.7 | 15.3 | 9.3  | 2.0  | 3.4  | 13.4 | 17.3 |
| 2013     | 6.3  | 9.0  | 7.9    | 17.6 | 18.3 | 31.0 | 39.0 | 48.0 | 35.1 | 25.9 | 19.4 | 12.4 | 7.9  | 5.1  | 1.7  | 2.9  | 20.3 |
| 2014     | 6.7  | 6.0  | 6.3    | 16.0 | 15.7 | 19.1 | 24.9 | 30.3 | 34.0 | 22.9 | 12.1 | 14.4 | 4.3  | 6.3  | 2.7  | 9.0  | 16.3 |
| Mean     | 8.2  | 10.1 | 9.2    | 16.3 | 17.0 | 18.3 | 19.2 | 21.6 | 22.7 | 20.8 | 16.0 | 12.1 | 10.6 | 5.5  | 4.4  | 8.6  | 14.9 |

| Banded | Nov  | Dec  | Jan | Feb | Mar | Winter | S1 | S2  | S3  | S4  | S5  | S6  | S7  | S8   | S9   | S10 | Spring |
|--------|------|------|-----|-----|-----|--------|----|-----|-----|-----|-----|-----|-----|------|------|-----|--------|
| 2005   | 72   | 21   |     | 2   | 18  | 113    |    | 5   | 1   | 4   | 12  | 16  | 7   | 34   | 20   | 12  | 111    |
| 2006   | 69   | 20   | 17  | 3   | 2   | 111    |    |     | 2   | 4   | 2   | 3   | 8   | 3    | 9    | 1   | 32     |
| 2007   | 2    | 5    | 6   |     | 8   | 21     |    |     |     | 4   | 1   | 6   | 18  | 11   | 8    | 3   | 51     |
| 2008   |      |      |     |     |     |        |    |     |     | 8   | 5   | 5   | 6   | 9    | 8    |     | 41     |
| 2009   |      |      |     |     | 2   | 2      |    |     |     | 2   |     | 4   | 8   | 13   | 18   | 2   | 47     |
| 2010   | 56   | 1    | 1   | 3   | 19  | 80     |    |     |     | 4   | 5   | 1   | 10  | 12   | 13   |     | 45     |
| 2011   | 93   |      |     |     |     | 93     |    |     |     |     |     | 2   | 2   | 5    | 7    | 1   | 17     |
| 2012   | 41   | 34   |     | 4   | 8   | 87     |    |     |     | 5   | 2   | 8   | 4   | 17   | 14   | 1   | 51     |
| 2013   | 146  | 77   |     |     | 5   | 228    |    |     |     |     |     | 1   | 1   | 3    | 3    | 1   | 9      |
| 2014   | 69   | 1    |     |     |     | 70     |    |     |     | 2   | 2   | 1   | 26  | 15   | 7    | 7   | 60     |
| Mean   | 68.5 | 22.7 | 8.0 | 2.0 | 7.8 | 89.4   |    | 2.5 | 1.5 | 3.3 | 2.9 | 4.7 | 9.0 | 12.2 | 10.7 | 2.8 | 46.4   |

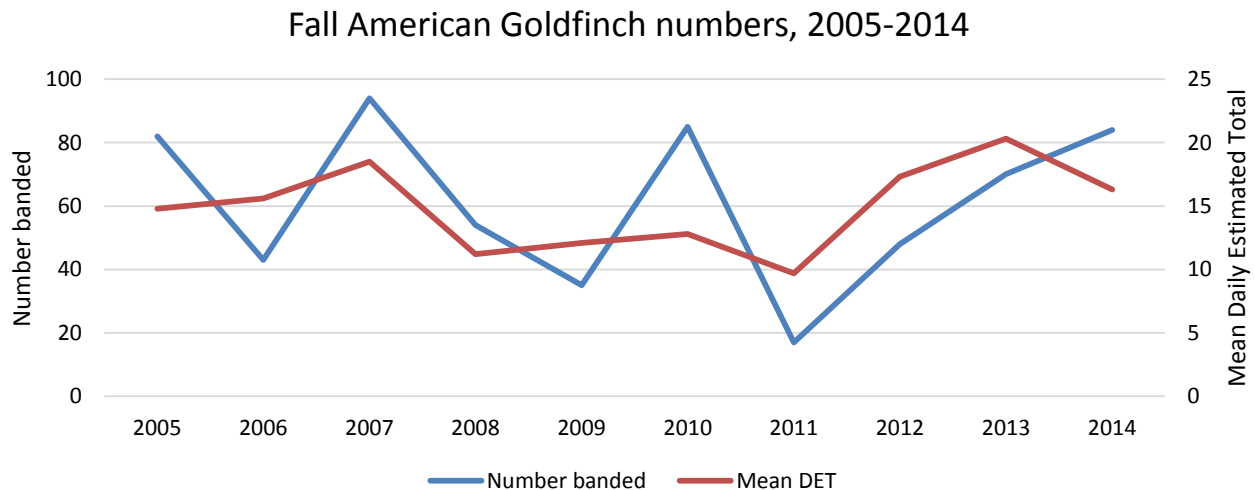
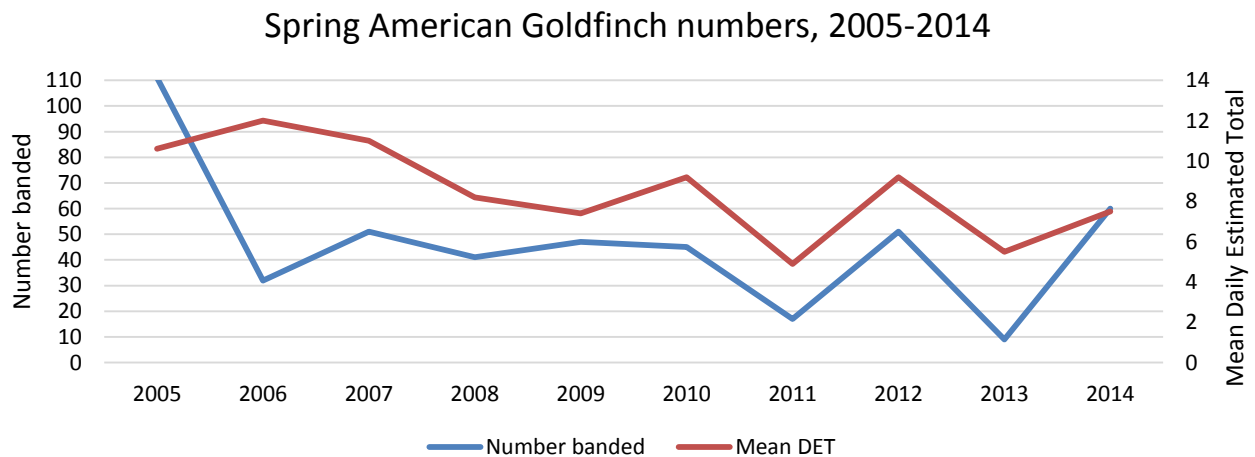
| Banded | Jun | Jul | Summer | F1  | F2  | F3  | F4  | F5  | F6   | F7   | F8  | F9  | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|-----|-----|------|
| 2005   |     |     |        |     |     | 3   |     | 2   | 6    | 40   | 5   |     | 10  | 1   | 11  | 4   | 82   |
| 2006   |     |     |        | 1   | 2   | 3   | 7   | 3   | 3    | 14   | 1   | 2   | 4   | 2   | 1   |     | 43   |
| 2007   |     |     |        | 2   | 3   | 1   |     | 3   | 20   | 4    | 17  | 15  | 16  | 6   | 5   | 2   | 94   |
| 2008   |     |     |        | 2   | 2   | 2   | 2   | 1   | 11   | 7    | 4   | 12  | 10  | 1   |     |     | 54   |
| 2009   |     | 1   | 1      | 2   |     | 7   | 6   | 1   | 2    | 2    | 7   | 3   | 3   |     | 1   | 1   | 35   |
| 2010   |     |     |        |     | 1   | 2   | 1   | 4   | 2    | 17   | 13  | 14  | 5   | 4   |     | 22  | 85   |
| 2011   | 1   |     | 1      |     |     | 1   | 3   | 6   | 6    |      |     |     |     | 1   |     |     | 17   |
| 2012   | 2   |     | 2      |     |     | 2   | 5   | 3   | 13   | 12   | 1   | 1   | 3   |     |     | 8   | 48   |
| 2013   | 1   | 1   | 2      | 2   | 2   | 4   | 12  | 9   | 13   | 14   | 4   | 8   |     | 2   |     |     | 70   |
| 2014   | 8   | 5   | 13     |     | 4   | 1   | 3   | 8   | 44   | 11   | 1   | 12  |     |     |     |     | 84   |
| Mean   | 2.0 | 0.8 | 2.1    | 0.9 | 1.4 | 2.6 | 3.9 | 4.0 | 12.0 | 12.1 | 5.3 | 6.7 | 5.1 | 1.7 | 1.8 | 3.7 | 61.2 |

American Goldfinch is among the most abundant birds at MBO in all seasons, but is particularly abundant in winter, with the 804 individuals banded accounting for more than one-quarter of birds of all species during that season. However, American Goldfinch has also been observed in all spring, summer, and fall periods. Despite being present throughout the year, there are regular peaks to migration in the second half of spring and middle of fall. Spring numbers have shown somewhat of a decline over time, whereas fall counts have fluctuated without showing any consistent pattern.





The figure above shows three overall peaks to American Goldfinch abundance annually, around mid-May, mid-September, and in November. The first figure below shows the slight decline over time in spring numbers, with the number banded and the daily estimated total correlating quite well, especially over the past five years. The second figure below shows that fall numbers have oscillated more, with little overall pattern, and the link between number banded and daily estimated total is somewhat less reliable.



**EVGR: Evening Grosbeak / Gros-bec errant (*Coccothraustes vespertinus*)**

| Observed | First  | Peak   | Last   | Span | # days | High | Total | First  | Peak   | Last   | Span | # days | High | Total |
|----------|--------|--------|--------|------|--------|------|-------|--------|--------|--------|------|--------|------|-------|
| 2005     |        |        |        |      |        |      |       | Sep 28 | Oct 8  | Oct 19 | 22   | 4 (5%) | 3    | 7     |
| 2006     | Apr 16 | Apr 18 | Apr 18 | 3    | 2 (3%) | 2    | 3     |        |        |        |      |        |      |       |
| 2007     |        |        |        |      |        |      |       | Oct 30 | Oct 30 | Oct 30 | 1    | 1 (1%) | 3    | 3     |
| 2008     | Apr 26 | Apr 26 | Apr 26 | 1    | 1 (1%) | 2    | 2     |        |        |        |      |        |      |       |
| 2009     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2010     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| 2011     | Apr 15 | Apr 15 | Apr 15 | 1    | 1 (1%) | 3    | 3     |        |        |        |      |        |      |       |
| 2012     |        |        |        |      |        |      |       | Oct 25 | Oct 25 | Oct 25 | 1    | 1 (1%) | 12   | 12    |
| 2013     | May 4  | May 4  | May 4  | 1    | 1 (1%) | 1    | 1     | Oct 25 | Oct 25 | Oct 25 | 1    | 1 (1%) | 1    | 1     |
| 2014     |        |        |        |      |        |      |       |        |        |        |      |        |      |       |
| Mean     | Apr 22 | Apr 23 | Apr 23 | 2    | 1 (2%) | 2    | 0.9   | Oct 19 | Oct 22 | Oct 24 | 6    | 2 (2%) | 5    | 2.3   |

| Observed | Nov  | Dec | Jan | Feb | Mar | Winter | S1 | S2 | S3   | S4   | S5   | S6   | S7 | S8 | S9 | S10 | Spring |
|----------|------|-----|-----|-----|-----|--------|----|----|------|------|------|------|----|----|----|-----|--------|
| 2005     |      |     |     |     |     |        |    |    |      |      |      |      |    |    |    |     |        |
| 2006     |      |     |     |     |     |        |    |    | 0.1  | 0.3  |      |      |    |    |    |     | 0.04   |
| 2007     |      |     |     |     |     |        |    |    |      |      |      |      |    |    |    |     |        |
| 2008     |      |     |     |     |     |        |    |    |      |      | 0.3  |      |    |    |    |     | 0.03   |
| 2009     |      |     |     |     |     |        |    |    |      |      |      |      |    |    |    |     |        |
| 2010     |      |     |     |     |     |        |    |    |      |      |      |      |    |    |    |     |        |
| 2011     | 0.7  |     |     |     |     | 0.2    |    |    | 0.4  |      |      |      |    |    |    |     | 0.04   |
| 2012     |      |     |     |     |     |        |    |    |      |      |      |      |    |    |    |     |        |
| 2013     |      |     |     |     |     |        |    |    |      |      |      | 0.1  |    |    |    |     | 0.01   |
| 2014     |      |     |     |     |     |        |    |    |      |      |      |      |    |    |    |     |        |
| Mean     | 0.07 |     |     |     |     | 0.02   |    |    | 0.06 | 0.03 | 0.03 | 0.01 |    |    |    |     | 0.01   |

| Observed | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9   | F10  | F11 | F12  | F13 | Fall |
|----------|-----|-----|--------|----|----|----|----|----|----|----|----|------|------|-----|------|-----|------|
| 2005     |     |     |        |    |    |    |    |    |    |    |    | 0.5  | 0.5  |     | 0.1  |     | 0.08 |
| 2006     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |      |     |      |
| 2007     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |      | 0.4 | 0.03 |
| 2008     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |      |     |      |
| 2009     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |      |     |      |
| 2010     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |      |     |      |
| 2011     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |      |     |      |
| 2012     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |      | 1.7 | 0.1  |
| 2013     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |      | 0.1 | 0.01 |
| 2014     |     |     |        |    |    |    |    |    |    |    |    |      |      |     |      |     |      |
| Mean     |     |     |        |    |    |    |    |    |    |    |    | 0.04 | 0.04 |     | 0.01 | 0.2 | 0.03 |

Evening Grosbeak is a rare and irregular spring and fall migrant at MBO, with one early winter sighting. Spring observations have occurred in four years, always between April 16 and May 4. Fall observations have also been recorded in four years; aside from earlier sightings in 2005, all more recent records have been in the final week of October. Evening Grosbeak is the only finch to have been observed at MBO but never banded.

**HOSP: House Sparrow / Moineau domestique (*Passer domesticus*)**

| Observed | First  | Peak   | Last   | Span | # days    | High | Total | First  | Peak   | Last   | Span | # days   | High | Total |
|----------|--------|--------|--------|------|-----------|------|-------|--------|--------|--------|------|----------|------|-------|
| 2005     | Apr 5  | May 5  | Jun 3  | 60   | 50 (85%)  | 9    | 154   | Aug 1  | Oct 15 | Oct 30 | 91   | 30 (34%) | 15   | 144   |
| 2006     | Mar 28 | Apr 11 | Jun 5  | 70   | 69 (100%) | 15   | 498   | Aug 28 | Aug 28 | Oct 14 | 48   | 7 (8%)   | 2    | 11    |
| 2007     | Mar 28 | May 8  | Jun 4  | 69   | 46 (66%)  | 6    | 110   | Aug 9  | Aug 12 | Oct 9  | 62   | 8 (9%)   | 2    | 10    |
| 2008     | Apr 9  | May 1  | May 8  | 30   | 4 (6%)    | 2    | 5     | Oct 12 | Oct 17 | Oct 24 | 13   | 5 (5%)   | 4    | 9     |
| 2009     | May 17 | May 17 | May 17 | 1    | 1 (1%)    | 1    | 1     | Oct 6  | Oct 6  | Oct 30 | 25   | 2 (2%)   | 4    | 5     |
| 2010     |        |        |        |      |           |      |       |        |        |        |      |          |      |       |
| 2011     |        |        |        |      |           |      |       |        |        |        |      |          |      |       |
| 2012     |        |        |        |      |           |      |       | Oct 28 | Oct 28 | Oct 28 | 1    | 1 (1%)   | 1    | 1     |
| 2013     |        |        |        |      |           |      |       |        |        |        |      |          |      |       |
| 2014     |        |        |        |      |           |      |       |        |        |        |      |          |      |       |
| Mean     | Apr 11 | May 2  | May 26 | 46   | 34 (50%)  | 7    | 77    | Sep 13 | Sep 27 | Oct 22 | 40   | 9 (10%)  | 5    | 18    |

| Observed | Nov | Dec | Jan  | Feb | Mar  | Winter | S1  | S2  | S3   | S4   | S5   | S6  | S7  | S8  | S9  | S10 | Spring |
|----------|-----|-----|------|-----|------|--------|-----|-----|------|------|------|-----|-----|-----|-----|-----|--------|
| 2005     | 1.5 | 0.5 |      | 1.3 | 2.0  | 1.4    |     | 4.3 | 3.0  | 4.2  | 1.9  | 4.3 | 1.9 | 0.7 | 1.0 | 2.8 | 2.6    |
| 2006     | 2.6 | 1.4 | 11.6 | 4.0 | 5.6  | 5.0    | 5.3 | 7.5 | 10.4 | 11.0 | 11.1 | 9.4 | 6.3 | 3.9 | 5.1 | 2.1 | 7.2    |
| 2007     | 3.2 | 0.6 | 1.0  | 0.5 | 2.9  | 2.1    | 0.9 | 0.9 | 1.1  | 0.9  | 0.3  | 3.4 | 2.6 | 1.7 | 3.1 | 0.9 | 1.6    |
| 2008     |     |     |      |     |      |        |     | 0.1 |      | 0.1  | 0.3  | 0.1 |     |     |     |     | 0.07   |
| 2009     |     |     |      |     | 0.07 | 0.03   |     |     |      |      |      |     |     | 0.1 |     |     | 0.01   |
| 2010     |     |     |      |     | 0.08 | 0.02   |     |     |      |      |      |     |     |     |     |     |        |
| 2011     |     |     |      | 0.3 | 0.3  | 0.1    |     |     |      |      |      |     |     |     |     |     |        |
| 2012     |     |     |      |     |      |        |     |     |      |      |      |     |     |     |     |     |        |
| 2013     |     |     |      |     |      |        |     |     |      |      |      |     |     |     |     |     |        |
| 2014     |     |     |      |     |      |        |     |     |      |      |      |     |     |     |     |     |        |
| Mean     | 1.0 | 0.5 | 2.1  | 0.8 | 1.2  | 1.1    | 0.7 | 1.2 | 1.5  | 1.6  | 1.4  | 1.7 | 1.1 | 0.6 | 0.9 | 0.5 | 1.1    |

| Observed | Jun | Jul  | Summer | F1   | F2   | F3   | F4  | F5   | F6 | F7 | F8   | F9   | F10 | F11 | F12 | F13 | Fall |
|----------|-----|------|--------|------|------|------|-----|------|----|----|------|------|-----|-----|-----|-----|------|
| 2005     | 2.1 | 1.4  | 1.8    | 0.7  |      | 0.3  | 0.9 |      |    |    | 0.4  | 0.7  | 0.7 | 4.8 | 4.7 | 8.3 | 1.6  |
| 2006     | 1.9 | 0.08 | 0.9    |      |      |      | 0.3 | 0.1  |    |    | 0.1  |      | 0.6 | 0.4 |     |     | 0.1  |
| 2007     | 0.4 | 0.2  | 0.3    |      | 0.6  | 0.1  |     | 0.3  |    |    | 0.1  | 0.1  | 0.1 |     |     |     | 0.1  |
| 2008     | 0.2 |      | 0.1    |      |      |      |     |      |    |    |      |      |     | 0.3 | 0.9 | 0.1 | 0.10 |
| 2009     |     |      |        |      |      |      |     |      |    |    |      | 0.6  |     |     |     | 0.1 | 0.05 |
| 2010     |     |      |        |      |      |      |     |      |    |    |      |      |     |     |     |     |      |
| 2011     |     |      |        |      |      |      |     |      |    |    |      |      |     |     |     |     |      |
| 2012     |     |      |        |      |      |      |     |      |    |    |      |      |     |     | 0.1 |     | 0.01 |
| 2013     |     |      |        |      |      |      |     |      |    |    |      |      |     |     |     |     |      |
| 2014     |     |      |        |      |      |      |     |      |    |    |      |      |     |     |     |     |      |
| Mean     | 1.0 | 0.4  | 0.7    | 0.07 | 0.06 | 0.04 | 0.1 | 0.04 |    |    | 0.07 | 0.07 | 0.2 | 0.5 | 0.6 | 0.9 | 0.2  |

| Banded | Nov | Dec | Jan | Feb | Mar | Winter | S1 | S2  | S3 | S4 | S5  | S6  | S7  | S8 | S9 | S10 | Spring |
|--------|-----|-----|-----|-----|-----|--------|----|-----|----|----|-----|-----|-----|----|----|-----|--------|
| 2005   | 4   |     |     | 1   | 2   | 7      |    |     |    |    |     | 1   |     |    |    | 1   | 2      |
| 2006   | 1   |     | 7   |     | 3   | 11     |    | 1   |    |    | 3   | 1   | 1   |    |    |     | 6      |
| 2007   | 3   | 1   |     |     | 2   | 6      |    |     |    |    |     |     |     |    |    |     |        |
| 2008   |     |     |     |     |     |        |    |     |    |    |     |     |     |    |    |     |        |
| 2009   |     |     |     |     |     |        |    |     |    |    |     |     |     |    |    |     |        |
| 2010   |     |     |     |     |     |        |    |     |    |    |     |     |     |    |    |     |        |
| 2011   |     |     |     |     |     |        |    |     |    |    |     |     |     |    |    |     |        |
| 2012   |     |     |     |     |     |        |    |     |    |    |     |     |     |    |    |     |        |
| 2013   |     |     |     |     |     |        |    |     |    |    |     |     |     |    |    |     |        |
| 2014   |     |     |     |     |     |        |    |     |    |    |     |     |     |    |    |     |        |
| Mean   | 1.0 | 0.1 | 2.3 | 0.2 | 0.9 | 2.7    |    | 0.5 |    |    | 0.3 | 0.2 | 0.1 |    |    | 0.1 | 0.8    |

| Banded | Jun | Jul | Summer | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | Fall |
|--------|-----|-----|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|------|
| 2005   |     | 1   | 1      |    |    |    |    |    |    |    |    |    |     |     |     | 2   | 2    |
| 2006   | 2   |     | 2      |    |    |    |    |    |    |    |    |    |     | 1   |     |     | 1    |
| 2007   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2008   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2009   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2010   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2011   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2012   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2013   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| 2014   |     |     |        |    |    |    |    |    |    |    |    |    |     |     |     |     |      |
| Mean   | 0.3 | 0.1 | 0.3    |    |    |    |    |    |    |    |    |    |     | 0.1 |     | 0.2 | 0.3  |

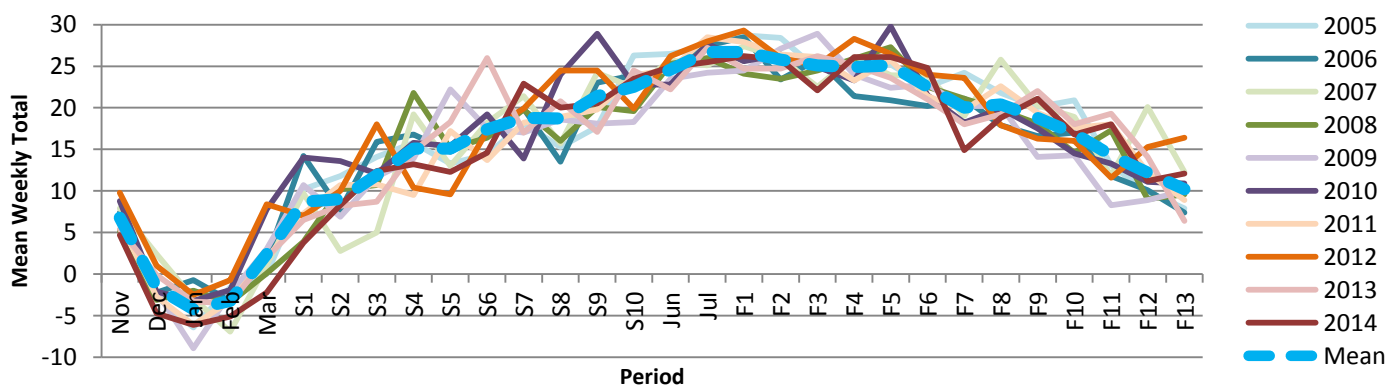
House Sparrow was a regular presence at MBO during the first three years of operation, with sightings particularly regular and numerous in winter and spring, though spotty over much of fall. Observations tailed off rapidly in 2009 and 2010, and even further in 2011 and 2012; there have been no sightings at all since the end of fall 2012. In the early years, House Sparrow was among the most frequently banded species in winter, and smaller numbers were also banded in spring and fall in both 2005 and 2006, as well as a few at nest boxes in summer 2005 and 2006.

## Appendix E: Weather Summaries

Weather can have a significant effect on the operations of MBO in any season, and during spring and fall can also influence the timing and nature of migration. The tables below summarize archived Environment Canada weather data for Montreal (at Trudeau International Airport, 15 km east of MBO). Temperatures more than 1.0°C below the ten-year mean are shown in blue, with the coldest year in bold; those more than 1.0°C above the ten-year mean are shown in red, with the warmest year in bold. Rainfall and snowfall amounts more than 25% below the ten-year mean are shown in red, with the wettest year in bold; those more than 25% above the ten-year mean are shown in blue, with the driest year in bold. Seasonal averages (or totals in the case of precipitation) are reported at the bottom of each section. As elsewhere, November and December data pertain to the year before that indicated (e.g., the data for December 2005 can be found in the December 2006 cells).

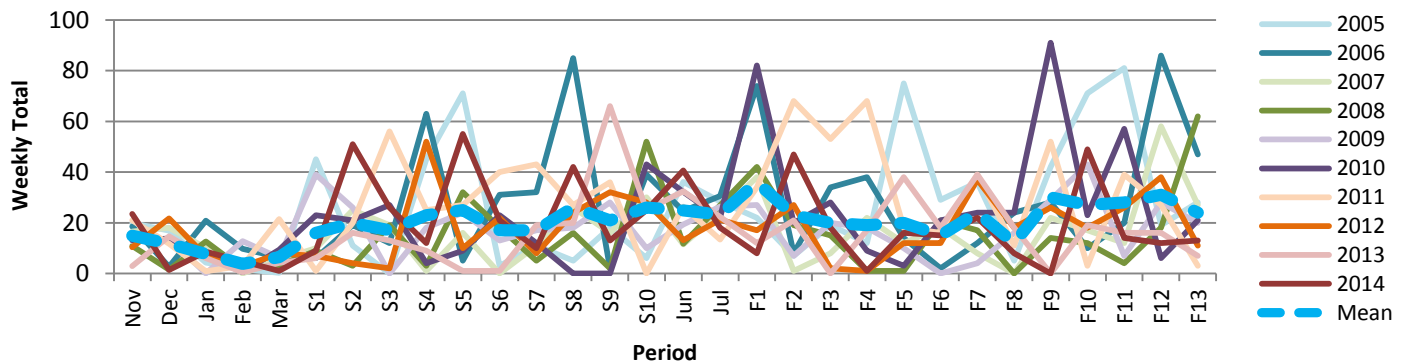
|                     | Mean daily low temperature |             |              |              |              |             |             |             |             |              |              | Mean daily high temperature |             |             |             |             |             |             |             |             |             |             |
|---------------------|----------------------------|-------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|--------------|--------------|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                     | 2005                       | 2006        | 2007         | 2008         | 2009         | 2010        | 2011        | 2012        | 2013        | 2014         | Mean         | 2005                        | 2006        | 2007        | 2008        | 2009        | 2010        | 2011        | 2012        | 2013        | 2014        | Mean        |
| Oct 31 – Nov 30     | -1.6                       | -1.1        | <b>0.9</b>   | <b>-2.6</b>  | -1.0         | <b>0.4</b>  | -1.5        | <b>0.8</b>  | <b>-3.7</b> | <b>-2.6</b>  | <b>-1.2</b>  | 6.6                         | 7.4         | <b>7.9</b>  | <b>5.2</b>  | 6.0         | <b>8.8</b>  | 6.3         | <b>9.8</b>  | <b>5.4</b>  | <b>4.7</b>  | <b>6.8</b>  |
| December            | <b>-12.1</b>               | -9.4        | <b>-4.8</b>  | -9.6         | <b>-11.2</b> | -8.6        | -9.0        | <b>-6.1</b> | <b>-6.9</b> | <b>-12.0</b> | <b>-9.0</b>  | <b>-2.7</b>                 | -2.2        | <b>2.4</b>  | <b>-3.1</b> | -2.1        | -2.1        | <b>-2.7</b> | <b>1.0</b>  | <b>-0.1</b> | <b>-4.7</b> | <b>-1.6</b> |
| January             | <b>-15.5</b>               | <b>-8.3</b> | <b>-11.1</b> | <b>-10.3</b> | <b>-16.8</b> | <b>-9.6</b> | -12.8       | -12.3       | -12.8       | <b>-14.3</b> | <b>-12.4</b> | <b>-6.4</b>                 | <b>-0.7</b> | <b>-2.9</b> | <b>-2.0</b> | <b>-8.9</b> | -3.2        | <b>-6.1</b> | <b>-2.5</b> | -3.3        | <b>-6.1</b> | <b>-4.2</b> |
| February            | -11.4                      | -10.4       | <b>-14.9</b> | -11.9        | -11.7        | <b>-7.5</b> | -11.9       | <b>-8.8</b> | -10.3       | <b>-12.7</b> | <b>-11.2</b> | <b>-1.6</b>                 | -3.2        | <b>-6.9</b> | -3.4        | -2.3        | <b>-1.9</b> | -3.2        | <b>-0.7</b> | -3.5        | <b>-5.1</b> | <b>-3.2</b> |
| March 1 - 27        | <b>-9.1</b>                | -5.5        | <b>-8.3</b>  | <b>-9.1</b>  | -7.0         | <b>-1.6</b> | -6.8        | <b>-1.9</b> | <b>-4.6</b> | <b>-12.0</b> | <b>-6.0</b>  | <b>0.0</b>                  | 1.8         | <b>1.1</b>  | <b>0.1</b>  | 3.0         | <b>7.8</b>  | 1.9         | <b>8.4</b>  | 2.0         | <b>-2.2</b> | <b>2.4</b>  |
| WINTER              | <b>-9.9</b>                | <b>-6.9</b> | -7.5         | -8.7         | <b>-9.4</b>  | <b>-5.4</b> | -8.4        | <b>-5.7</b> | -7.6        | <b>-10.7</b> | <b>-8.0</b>  | -0.8                        | 0.7         | 0.4         | -0.6        | -0.9        | <b>1.9</b>  | -0.8        | <b>3.2</b>  | 0.1         | <b>-2.7</b> | <b>0.1</b>  |
| S1: Mar 28 - Apr 3  | <b>1.8</b>                 | <b>0.7</b>  | -1.1         | <b>-5.3</b>  | <b>2.4</b>   | <b>2.6</b>  | <b>-1.8</b> | <b>-2.7</b> | <b>-2.5</b> | -1.4         | <b>-0.7</b>  | <b>10.2</b>                 | <b>14.2</b> | 9.7         | <b>3.9</b>  | <b>10.7</b> | <b>14.0</b> | <b>7.3</b>  | <b>7.0</b>  | <b>6.5</b>  | <b>3.8</b>  | <b>8.7</b>  |
| S2: Apr 4 - 10      | 0.4                        | <b>-1.9</b> | <b>-2.8</b>  | 0.8          | -0.6         | <b>6.2</b>  | -0.5        | <b>2.0</b>  | -1.2        | -0.6         | <b>-0.2</b>  | <b>11.8</b>                 | <b>7.7</b>  | <b>2.8</b>  | <b>10.2</b> | <b>6.9</b>  | <b>13.6</b> | <b>10.7</b> | 10.0        | 8.2         | 8.3         | <b>9.0</b>  |
| S3: Apr 11 - 17     | <b>-0.2</b>                | <b>3.6</b>  | 0.0          | 0.0          | <b>-0.7</b>  | <b>2.3</b>  | 1.4         | <b>5.0</b>  | 1.1         | <b>-0.9</b>  | <b>1.2</b>   | <b>14.1</b>                 | <b>15.9</b> | <b>5.0</b>  | <b>10.7</b> | 11.7        | 12.1        | <b>10.8</b> | <b>18.0</b> | <b>8.7</b>  | <b>12.4</b> | <b>11.9</b> |
| S4: Apr 18 - 24     | 2.2                        | <b>4.9</b>  | 4.2          | <b>6.2</b>   | 2.5          | 3.9         | <b>0.9</b>  | <b>2.1</b>  | 2.2         | 2.8          | <b>3.2</b>   | 15.8                        | <b>16.8</b> | <b>19.2</b> | <b>21.8</b> | <b>13.9</b> | 15.8        | <b>9.5</b>  | <b>10.4</b> | 14.8        | <b>13.2</b> | <b>15.1</b> |
| S5: Apr 25 - May 1  | <b>5.6</b>                 | <b>1.4</b>  | 4.8          | 4.9          | <b>6.5</b>   | 4.1         | <b>5.9</b>  | <b>1.2</b>  | <b>6.0</b>  | 3.4          | <b>4.4</b>   | <b>13.3</b>                 | 14.7        | <b>13.0</b> | 15.1        | <b>22.2</b> | 15.4        | <b>17.2</b> | <b>9.6</b>  | <b>18.3</b> | <b>12.3</b> | <b>15.1</b> |
| S6: May 2 - 8       | <b>4.9</b>                 | <b>5.3</b>  | <b>4.8</b>   | <b>5.2</b>   | 7.6          | <b>8.5</b>  | 6.6         | 7.5         | <b>10.7</b> | 6.0          | <b>6.7</b>   | <b>14.4</b>                 | 17.1        | 18.2        | 16.4        | 17.5        | <b>19.2</b> | <b>13.7</b> | 17.2        | <b>26.0</b> | <b>14.6</b> | <b>17.4</b> |
| S7: May 9 - 15      | <b>5.9</b>                 | <b>11.3</b> | 8.2          | 8.0          | <b>6.8</b>   | <b>4.0</b>  | 7.9         | <b>9.3</b>  | <b>6.7</b>  | <b>11.5</b>  | <b>8.0</b>   | 18.1                        | 19.9        | <b>21.4</b> | 19.8        | <b>17.0</b> | <b>13.9</b> | 18.2        | <b>19.9</b> | <b>17.0</b> | <b>22.9</b> | <b>18.8</b> |
| S8: May 16 - 22     | <b>7.0</b>                 | 8.8         | <b>3.8</b>   | <b>6.2</b>   | <b>6.5</b>   | <b>9.6</b>  | <b>10.3</b> | <b>11.3</b> | <b>10.1</b> | <b>9.4</b>   | <b>8.3</b>   | <b>15.3</b>                 | <b>13.5</b> | <b>15.7</b> | <b>16.0</b> | 18.6        | <b>24.0</b> | 18.9        | <b>24.5</b> | <b>20.8</b> | <b>20.0</b> | <b>18.7</b> |
| S9: May 23 - 29     | <b>9.1</b>                 | 11.8        | <b>12.5</b>  | <b>7.8</b>   | <b>9.2</b>   | <b>16.3</b> | 11.7        | <b>13.4</b> | <b>7.6</b>  | 10.1         | <b>11.0</b>  | <b>17.7</b>                 | <b>23.0</b> | <b>24.2</b> | <b>20.1</b> | <b>18.1</b> | <b>28.9</b> | <b>19.8</b> | <b>24.5</b> | <b>17.1</b> | <b>20.5</b> | <b>21.4</b> |
| S10: May 30 - Jun 5 | <b>13.9</b>                | 13.1        | <b>13.6</b>  | 12.1         | <b>7.3</b>   | <b>14.0</b> | 12.9        | 11.6        | <b>14.4</b> | 13.3         | <b>12.6</b>  | <b>26.3</b>                 | <b>23.9</b> | 22.4        | <b>19.6</b> | <b>18.3</b> | <b>22.8</b> | <b>23.9</b> | <b>19.9</b> | <b>24.5</b> | <b>23.5</b> | <b>22.5</b> |
| SPRING              | 5.0                        | 5.9         | 4.8          | <b>4.6</b>   | 4.7          | <b>7.2</b>  | 5.5         | 6.1         | 5.5         | 5.4          | 5.5          | 15.7                        | 16.7        | 15.2        | 15.3        | 15.5        | <b>18.0</b> | <b>15.0</b> | 16.1        | 16.2        | 15.2        | <b>15.9</b> |
| Jun 6 - 30          | <b>16.5</b>                | 14.9        | 14.0         | 15.8         | 14.2         | 13.8        | 15.0        | 15.0        | <b>13.6</b> | 15.1         | <b>14.8</b>  | <b>26.5</b>                 | 24.3        | <b>25.7</b> | 25.3        | <b>23.5</b> | <b>22.8</b> | 24.6        | <b>26.2</b> | <b>22.2</b> | 24.9        | <b>24.6</b> |
| July                | 17.1                       | 17.7        | <b>15.7</b>  | 16.8         | <b>15.9</b>  | <b>18.2</b> | 17.6        | 16.5        | 17.2        | 16.8         | <b>17.0</b>  | 27.3                        | 27.5        | <b>25.1</b> | 26.0        | <b>24.2</b> | 27.7        | <b>28.5</b> | <b>28.0</b> | 27.2        | <b>25.5</b> | <b>26.7</b> |
| SUMMER              | <b>16.8</b>                | 16.4        | 14.9         | 16.3         | <b>15.1</b>  | 16.3        | 16.4        | 15.8        | 15.6        | 16.1         | <b>16.0</b>  | <b>26.9</b>                 | 26.0        | 25.4        | 25.7        | <b>23.9</b> | 25.5        | 26.8        | <b>27.2</b> | 25.0        | 25.2        | <b>25.8</b> |
| F1: Aug 1 - 7       | 17.8                       | 17.4        | 17.1         | 16.8         | 16.1         | <b>15.5</b> | 17.7        | <b>19.2</b> | <b>15.1</b> | 16.3         | <b>16.9</b>  | <b>28.7</b>                 | <b>28.5</b> | 27.4        | <b>24.1</b> | <b>24.5</b> | <b>25.6</b> | <b>27.9</b> | <b>29.3</b> | <b>24.7</b> | 26.2        | <b>26.7</b> |
| F2: Aug 8 - 14      | <b>19.2</b>                | <b>12.4</b> | 15.3         | <b>14.6</b>  | 16.7         | 16.9        | 17.2        | <b>18.2</b> | 16.2        | 15.8         | <b>16.3</b>  | <b>28.4</b>                 | <b>23.4</b> | 26.0        | <b>23.5</b> | <b>27.1</b> | 26.4        | 26.4        | 26.0        | <b>24.7</b> | <b>25.8</b> | <b>25.8</b> |
| F3: Aug 15 - 21     | 14.8                       | 16.0        | <b>10.7</b>  | <b>13.6</b>  | <b>19.5</b>  | 15.8        | <b>16.4</b> | 14.9        | 15.4        | <b>13.5</b>  | <b>15.1</b>  | 24.6                        | 25.8        | <b>22.5</b> | 24.5        | <b>28.9</b> | 24.9        | 26.1        | 25.1        | <b>26.2</b> | <b>22.1</b> | <b>25.1</b> |
| F4: Aug 22 - 28     | 14.2                       | <b>11.8</b> | 16.0         | <b>13.3</b>  | 13.9         | 14.9        | 15.0        | <b>17.7</b> | 15.4        | <b>16.2</b>  | <b>14.8</b>  | 25.8                        | <b>21.4</b> | <b>26.1</b> | 25.9        | 24.0        | <b>23.3</b> | <b>23.3</b> | <b>28.3</b> | 25.1        | 26.1        | <b>24.9</b> |
| F5: Aug 29 - Sep 4  | 16.3                       | <b>12.1</b> | <b>12.2</b>  | 16.2         | <b>12.3</b>  | <b>19.9</b> | <b>16.6</b> | <b>14.2</b> | 15.8        | <b>17.0</b>  | <b>15.3</b>  | 25.2                        | <b>20.9</b> | <b>23.9</b> | <b>27.3</b> | <b>22.4</b> | <b>29.8</b> | 25.7        | <b>26.5</b> | <b>23.6</b> | 26.1        | <b>25.1</b> |
| F6: Sep 5 - 11      | <b>10.2</b>                | 11.1        | 12.5         | 12.3         | 10.8         | 11.7        | 12.8        | 12.6        | 11.0        | <b>13.1</b>  | <b>11.8</b>  | 22.5                        | <b>20.2</b> | <b>23.9</b> | 22.5        | 22.8        | 21.5        | <b>21.4</b> | <b>24.0</b> | <b>21.0</b> | <b>24.8</b> | <b>22.5</b> |
| F7: Sep 12 - 18     | <b>16.6</b>                | <b>12.6</b> | <b>7.3</b>   | 10.5         | 9.4          | 9.5         | 10.2        | 10.2        | 9.3         | <b>6.0</b>   | <b>10.2</b>  | <b>24.2</b>                 | <b>21.1</b> | 19.0        | <b>21.1</b> | 20.2        | <b>18.2</b> | 19.7        | <b>23.6</b> | <b>18.0</b> | <b>14.9</b> | <b>20.0</b> |
| F8: Sep 19 - 25     | <b>11.2</b>                | 9.3         | <b>12.8</b>  | <b>7.4</b>   | 8.7          | <b>8.3</b>  | <b>13.5</b> | 8.7         | 8.9         | <b>8.0</b>   | <b>9.7</b>   | <b>21.8</b>                 | <b>17.9</b> | <b>25.8</b> | 19.7        | 20.2        | 19.9        | <b>22.6</b> | <b>17.9</b> | <b>19.2</b> | <b>18.8</b> | <b>20.4</b> |
| F9: Sep 26 - Oct 2  | 9.1                        | <b>8.1</b>  | <b>11.3</b>  | <b>12.1</b>  | <b>7.2</b>   | 10.7        | <b>11.0</b> | <b>8.4</b>  | 9.6         | <b>10.9</b>  | <b>9.8</b>   | <b>20.1</b>                 | <b>16.6</b> | <b>20.3</b> | 18.1        | <b>14.1</b> | 17.5        | 19.4        | <b>16.3</b> | <b>22.0</b> | <b>21.1</b> | <b>18.8</b> |
| F10: Oct 3 - 9      | <b>10.9</b>                | <b>5.6</b>  | <b>9.5</b>   | <b>3.8</b>   | <b>9.3</b>   | <b>6.2</b>  | 7.6         | 7.7         | 8.6         | 8.6          | <b>7.8</b>   | <b>20.9</b>                 | 17.0        | <b>18.9</b> | <b>14.6</b> | <b>14.3</b> | <b>14.5</b> | 17.6        | 16.0        | <b>18.0</b> | <b>16.8</b> | <b>16.9</b> |
| F11: Oct 10 - 16    | <b>9.0</b>                 | <b>4.0</b>  | <b>4.8</b>   | 6.1          | <b>0.5</b>   | <b>4.6</b>  | <b>9.8</b>  | <b>3.1</b>  | <b>9.0</b>  | <b>8.4</b>   | <b>5.9</b>   | <b>13.1</b>                 | <b>11.8</b> | <b>11.8</b> | <b>17.3</b> | <b>8.3</b>  | 13.3        | <b>18.0</b> | 11.6        | <b>19.3</b> | <b>18.0</b> | <b>14.3</b> |
| F12: Oct 17 - 23    | <b>3.1</b>                 | 3.6         | <b>8.6</b>   | <b>0.5</b>   | <b>0.0</b>   | <b>1.4</b>  | <b>6.7</b>  | <b>6.6</b>  | 5.2         | <b>6.2</b>   | <b>4.2</b>   | <b>9.9</b>                  | <b>10.1</b> | <b>20.1</b> | <b>9.0</b>  | <b>8.9</b>  | <b>11.1</b> | 12.2        | <b>15.3</b> | <b>14.1</b> | 11.2        | <b>12.2</b> |
| F13: Oct 24 - 30    | <b>1.6</b>                 | 2.1         | 1.9          | 2.6          | 2.5          | <b>4.5</b>  | <b>0.2</b>  | <b>7.7</b>  | <b>-1.2</b> | <b>5.9</b>   | <b>2.8</b>   | <b>7.9</b>                  | <b>7.4</b>  | <b>12.3</b> | 9.6         | 10.0        | 10.9        | <b>8.9</b>  | <b>16.4</b> | <b>6.4</b>  | <b>12.1</b> | <b>10.2</b> |
| FALL                | 11.8                       | <b>9.7</b>  | 10.8         | 10.0         | 9.8          | 10.8        | <b>11.9</b> | 11.5        | 10.6        | 11.2         | <b>10.8</b>  | <b>21.0</b>                 | <b>18.6</b> | <b>21.4</b> | 19.8        | <b>18.9</b> | 19.8        | 20.7        | <b>21.3</b> | 20.2        | 20.3        | <b>20.2</b> |

Mean high temperature throughout the year

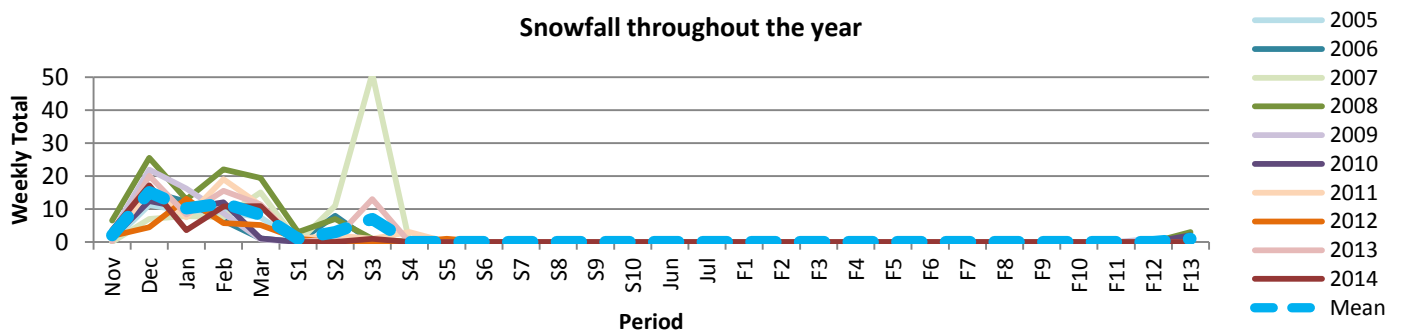


|                     | Total rainfall (mm) |      |      |      |      |      |      |      |      |      |      |      | Total snowfall (cm) |      |      |      |      |      |      |      |      |      |  |  |
|---------------------|---------------------|------|------|------|------|------|------|------|------|------|------|------|---------------------|------|------|------|------|------|------|------|------|------|--|--|
|                     | 2005                | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | Mean | 2005 | 2006                | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | Mean |  |  |
| Oct 31 - Nov 30     | 88                  | 82   | 73   | 48   | 57   | 58   | 93   | 46   | 13   | 104  | 66   | 1    | 14                  | 0    | 29   | 13   | 5    | 4    | 8    | 1    | 16   | 9    |  |  |
| December            | 75                  | 12   | 80   | 7    | 61   | 61   | 52   | 96   | 65   | 6    | 52   | 50   | 68                  | 31   | 113  | 97   | 55   | 71   | 20   | 89   | 76   | 67   |  |  |
| January             | 19                  | 92   | 45   | 56   | 0    | 32   | 4    | 30   | 27   | 38   | 34   | 41   | 54                  | 35   | 57   | 72   | 45   | 33   | 58   | 37   | 16   | 45   |  |  |
| February            | 7                   | 39   | 0    | 7    | 51   | 2    | 12   | 11   | 2    | 19   | 15   | 37   | 26                  | 30   | 88   | 35   | 48   | 76   | 23   | 62   | 43   | 47   |  |  |
| March 1 - 27        | 1                   | 25   | 21   | 12   | 24   | 36   | 83   | 30   | 16   | 4    | 25   | 29   | 4                   | 58   | 75   | 3    | 4    | 43   | 20   | 44   | 42   | 32   |  |  |
| WINTER              | 190                 | 250  | 219  | 130  | 193  | 189  | 244  | 213  | 123  | 171  | 192  | 157  | 166                 | 154  | 362  | 229  | 157  | 227  | 129  | 233  | 193  | 201  |  |  |
| S1: Mar 28 - Apr 3  | 45                  | 6    | 10   | 9    | 39   | 23   | 1    | 7    | 6    | 9    | 16   | 0    | 0                   | 0    | 3    | 0    | 0    | 1    | 1    | 0    | 0    | 1    |  |  |
| S2: Apr 4 - 10      | 11                  | 19   | 25   | 3    | 26   | 21   | 20   | 4    | 16   | 51   | 20   | 0    | 8                   | 11   | 7    | 1    | 0    | 2    | 0    | 1    | 0    | 3    |  |  |
| S3: Apr 11 - 17     | 0                   | 12   | 19   | 19   | 0    | 27   | 56   | 2    | 13   | 26   | 17   | 0    | 0                   | 51   | 1    | 0    | 0    | 1    | 0    | 13   | 1    | 7    |  |  |
| S4: Apr 18 - 24     | 45                  | 63   | 1    | 3    | 18   | 4    | 25   | 52   | 9    | 12   | 23   | 0    | 0                   | 0    | 0    | 0    | 0    | 3    | 0    | 0    | 0    | 0    |  |  |
| S5: Apr 25 - May 1  | 71                  | 5    | 16   | 32   | 24   | 9    | 27   | 10   | 1    | 55   | 25   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 0    |  |  |
| S6: May 2 - 8       | 3                   | 31   | 0    | 18   | 13   | 23   | 40   | 22   | 1    | 21   | 17   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| S7: May 9 - 15      | 11                  | 32   | 11   | 5    | 17   | 12   | 43   | 8    | 19   | 10   | 17   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| S8: May 16 - 22     | 5                   | 85   | 26   | 16   | 18   | 0    | 27   | 24   | 20   | 42   | 26   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| S9: May 23 - 29     | 18                  | 2    | 16   | 2    | 28   | 0    | 36   | 32   | 66   | 13   | 21   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| S10: May 30 - Jun 5 | 6                   | 39   | 30   | 52   | 10   | 43   | 0    | 28   | 25   | 25   | 26   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| SPRING              | 214                 | 295  | 154  | 158  | 194  | 163  | 274  | 190  | 176  | 263  | 208  | 0    | 8                   | 62   | 10   | 1    | 0    | 6    | 2    | 14   | 1    | 10   |  |  |
| Jun 6 - 30          | 129                 | 88   | 41   | 42   | 69   | 115  | 94   | 47   | 116  | 145  | 89   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| July                | 126                 | 135  | 106  | 119  | 117  | 97   | 59   | 94   | 99   | 80   | 103  | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| SUMMER              | 255                 | 223  | 147  | 161  | 186  | 212  | 153  | 141  | 215  | 225  | 192  | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F1: Aug 1 - 7       | 22                  | 74   | 38   | 42   | 27   | 82   | 34   | 17   | 12   | 8    | 36   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F2: Aug 8 - 14      | 7                   | 8    | 1    | 19   | 7    | 20   | 68   | 27   | 21   | 47   | 23   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F3: Aug 15 - 21     | 19                  | 34   | 8    | 15   | 20   | 28   | 53   | 2    | 0    | 18   | 20   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F4: Aug 22 - 28     | 12                  | 38   | 22   | 1    | 18   | 9    | 68   | 1    | 17   | 1    | 19   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F5: Aug 29 - Sep 4  | 75                  | 14   | 12   | 1    | 10   | 3    | 18   | 12   | 38   | 16   | 20   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F6: Sep 5 - 11      | 29                  | 2    | 18   | 21   | 0    | 21   | 16   | 12   | 18   | 15   | 15   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F7: Sep 12 - 18     | 36                  | 12   | 8    | 17   | 4    | 24   | 39   | 37   | 39   | 22   | 24   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F8: Sep 19 - 25     | 5                   | 24   | 0    | 0    | 16   | 24   | 11   | 18   | 18   | 8    | 12   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F9: Sep 26 - Oct 2  | 42                  | 28   | 22   | 14   | 29   | 91   | 52   | 26   | 0    | 0    | 30   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F10: Oct 3 - 9      | 71                  | 10   | 17   | 12   | 43   | 23   | 3    | 18   | 19   | 49   | 27   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F11: Oct 10 - 16    | 81                  | 20   | 12   | 4    | 7    | 57   | 39   | 26   | 16   | 14   | 28   | 0    | 0                   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F12: Oct 17 - 23    | 19                  | 86   | 58   | 18   | 28   | 6    | 27   | 38   | 16   | 12   | 31   | 0    | 0                   | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    |  |  |
| F13: Oct 24 - 30    | 28                  | 47   | 27   | 62   | 20   | 21   | 3    | 11   | 7    | 13   | 24   | 0    | 0                   | 0    | 3    | 0    | 2    | 0    | 0    | 0    | 0    | 1    |  |  |
| FALL                | 445                 | 398  | 242  | 227  | 229  | 410  | 432  | 246  | 223  | 222  | 307  | 0    | 0                   | 0    | 3    | 1    | 2    | 0    | 0    | 0    | 0    | 1    |  |  |

Rainfall throughout the year



Snowfall throughout the year



## Appendix F: Foreign recoveries

While the success of migration monitoring does not depend on the recovery of banded birds, such data do provide some interesting insights into the travels of particular individuals. Listed below in taxonomic order are the 84 individuals of 23 species that were banded at MBO between 2005 and 2014 and have subsequently been reported elsewhere.

Northern Saw-whet Owl is disproportionately numerous in this list, with 33 recaptures (including one individual at two separate banding stations in Pennsylvania on the same night) representing 3.2% of individuals banded at MBO. This is attributable to the use of an audiolure at MBO and other banding stations, which increases capture rate of Northern Saw-whet Owls far beyond that of other species. The next most commonly recaptured species are American Robin (10 individuals; 0.4% of the total banded at MBO), Common Grackle (7; 1.9%), and Red-winged Blackbird (5; 0.4%). All three of these recovery rates are higher than average for songbirds, but reflect the fact that these species are common in suburban areas, and the majority of reports were of individuals found dead as a result of cat predation or victims of vehicle or window collisions.

The recoveries can be subdivided into those that are local (within 10 km; 20 individuals, 23% of all recoveries), regional (within 100 km; 15, 18%), and long-distance (>100 km; 49, 59%). Only five individuals (6% of all recoveries) have been recaptured more than 1000 km from MBO, with the greatest distance being covered by an American Robin recovered near Duson, Louisiana, approximately 2320 km to the southwest, just two months after being banded; the other four were a Swainson's Thrush in South Carolina, another American Robin in North Carolina, a Cedar Waxwing in Alabama, and an American Goldfinch in Tennessee. All but one of the Northern Saw-whet Owl recoveries are in the long-distance class, and 85% of them between 395 and 830 km away, in part influenced by the density of banding stations in Pennsylvania, which account for 40% of the MBO owl recaptures. Curiously, four of the five owls that were recovered less than 300 km away were banded over a three-day span (October 8-10, 2013).

Just over one-quarter of recoveries (22 individuals; 26%) were within one month of banding, while another 20 individuals (24%) were within 6 months, and 8 (10%) more within 12 months. Only 13 (15%) were reported more than two years after banding, with the longest periods being a Common Grackle after more than 6.5 years, and a Merlin after just over 5 years. Among the Northern Saw-whet Owls, just over half (17 of 33; 52%) were recovered later in the same fall that they were banded (i.e., within three months). Half of the local recoveries (<10 km, across all species) were within 6 months of banding.

| Species               | Band number | Date banded | Age | Sex | Date recovered | Location recovered     | Distance & Direction | Time elapsed              |
|-----------------------|-------------|-------------|-----|-----|----------------|------------------------|----------------------|---------------------------|
| Sharp-shinned Hawk    | 1232-58582  | 5 Aug 08    | HY  | M   | 17 Dec 08      | Pincourt QC            | 8 km SW              | 4 months, 12 days         |
| Sharp-shinned Hawk    | 1272-07831  | 2 Oct 08    | HY  | M   | 30 Nov 08      | Pincourt QC            | 8 km SW              | 1 month, 28 days          |
| Sharp-shinned Hawk    | 1593-88634  | 11 Sep 12   | HY  | F   | 9 Nov 12       | West Cape May NJ       | 727 km S             | 1 month, 28 days          |
| Northern Saw-whet Owl | 0924-19541  | 12 Oct 09   | SY  | F   | 19 Oct 10      | Danielsville PA        | 532 km SSW           | 1 year, 7 days            |
| Northern Saw-whet Owl | 0924-19545  | 12 Oct 09   | ASY | F   | 15 Nov 09      | New Paltz NY           | 410 km S             | 1 month, 3 days           |
| Northern Saw-whet Owl | 0924-19557  | 13 Oct 09   | HY  | F   | 2 Nov 09       | Rohrersville MD        | 734 km SSW           | 19 days                   |
| Northern Saw-whet Owl | 0924-19571  | 15 Oct 09   | HY  | U   | 6 Nov 10       | Welland ON             | 503 km WSW           | 1 year, 21 days           |
| Northern Saw-whet Owl | 0924-19582  | 25 Oct 09   | HY  | F   | 8 Oct 10       | St. Williams ON        | 602 km WSW           | 11 months, 13 days        |
| Northern Saw-whet Owl | 1014-18028  | 3 Oct 10    | HY  | F   | 4 Nov 11       | Carsonville PA         | 597 km SSW           | 1 year, 1 month, 1 day    |
| Northern Saw-whet Owl | 1014-18061  | 12 Oct 10   | SY  | F   | 1 Nov 12       | Port Rowan ON          | 607 km WSW           | 2 years, 19 days          |
| Northern Saw-whet Owl | 0924-66252  | 6 Oct 11    | SY  | F   | 24 Oct 12      | New Tripoli PA         | 548 km SSW           | 1 year, 18 days           |
| Northern Saw-whet Owl | 0924-66266  | 6 Oct 11    | HY  | F   | 5 Nov 12       | New Ringgold PA        | 554 km SSW           | 1 year, 29 days           |
| Northern Saw-whet Owl | 0924-66296  | 8 Oct 11    | SY  | F   | 8 Nov 12       | Gibraltar OH           | 830 km WSW           | 1 year, 1 month           |
| Northern Saw-whet Owl | 0924-66300  | 9 Oct 11    | ATY | F   | 9 Nov 12       | Port Rowan ON          | 607 km WSW           | 1 year, 1 month           |
| Northern Saw-whet Owl | 1014-44207  | 10 Oct 11   | HY  | F   | 17 Oct 12      | Elizabethville PA      | 591 km SSW           | 1 year, 7 days            |
| Northern Saw-whet Owl | 1014-44241  | 22 Oct 11   | SY  | F   | 24 Oct 12      | Drumlin Farm MA        | 395 km SSE           | 1 year, 2 days            |
| Northern Saw-whet Owl | 1014-44245  | 22 Oct 11   | HY  | F   | 7 Apr 13       | Toronto ON             | 480 km WSW           | 1 year, 5 months, 15 days |
| Northern Saw-whet Owl | 1014-47617  | 27 Sep 12   | HY  | F   | 7 Nov 12       | Mount Holly Springs PA | 648 km SSW           | 1 month, 10 days          |
| Northern Saw-whet Owl | 1014-47669  | 7 Oct 12    | HY  | F   | 9 Nov 12       | McConnellsburg PA      | 696 km SSW           | 1 month, 2 days           |
| Northern Saw-whet Owl | 1014-47676  | 8 Oct 12    | HY  | F   | 10 Nov 12      | Kingstown PA           | 710 km SSW           | 1 month, 2 days           |
| Northern Saw-whet Owl | 1014-64413  | 13 Oct 12   | HY  | F   | 5 Nov 12       | Cape May Point NJ      | 730 km S             | 22 days                   |
| Northern Saw-whet Owl | 1014-64436  | 16 Oct 12   | HY  | U   | 15 Nov 12      | Hillsboro PA           | 708 km SSW           | 30 days                   |
| Northern Saw-whet Owl | 1014-64436  | 16 Oct 12   | HY  | U   | 16 Nov 12      | Queen Anne PA          | 709 km SSW           | 1 month                   |
| Northern Saw-whet Owl | 1014-64441  | 17 Oct 12   | HY  | F   | 6 Nov 12       | New Ringgold PA        | 554 km SSW           | 19 days                   |
| Northern Saw-whet Owl | 1014-64466  | 18 Oct 12   | HY  | F   | 14 Jan 13      | North Haven CT         | 458 km S             | 2 months, 26 days         |

| Species                | Band number | Date banded | Age | Sex | Date recovered | Location recovered           | Distance & Direction | Time elapsed                |
|------------------------|-------------|-------------|-----|-----|----------------|------------------------------|----------------------|-----------------------------|
| Northern Saw-whet Owl  | 1014-64507  | 23 Oct 12   | HY  | U   | 15 Nov 12      | Edinburg NY                  | 246 km S             | 22 days                     |
| Northern Saw-whet Owl  | 1014-64593  | 8 Oct 13    | SY  | F   | 24 Oct 13      | Shelburne VT                 | 130 km SSE           | 16 days                     |
| Northern Saw-whet Owl  | 1014-64596  | 9 Oct 13    | SY  | F   | 12 Oct 13      | Lake Clear NY                | 120 km SSW           | 3 days                      |
| Northern Saw-whet Owl  | 1014-90222  | 10 Oct 13   | SY  | F   | 13 Mar 14      | Saint-Calixte QC             | 58 km N              | 5 months, 3 days            |
| Northern Saw-whet Owl  | 1014-90227  | 10 Oct 13   | SY  | F   | 28 Oct 13      | Charlton NY                  | 278 km S             | 18 days                     |
| Northern Saw-whet Owl  | 1014-90236  | 11 Oct 13   | TY  | F   | 19 Nov 13      | Cressona PA                  | 565 km SSW           | 1 month, 8 days             |
| Northern Saw-whet Owl  | 1014-90247  | 12 Oct 13   | ASY | F   | 30 Oct 14      | Elizabethville PA            | 591 km SSW           | 1 year, 18 days             |
| Northern Saw-whet Owl  | 1014-90303  | 27 Oct 13   | SY  | F   | 24 Oct 14      | Port Rowan ON                | 607 km WSW           | 11 months, 27 days          |
| Northern Saw-whet Owl  | 1014-90355  | 1 Oct 14    | HY  | F   | 29 Oct 14      | Drumlin Farm MA              | 395 km SSE           | 28 days                     |
| Northern Saw-whet Owl  | 1014-90379  | 11 Oct 14   | HY  | M   | 24 Oct 14      | New Paltz NY                 | 410 km S             | 13 days                     |
| Northern Saw-whet Owl  | 1014-94209  | 13 Oct 14   | HY  | U   | 15 Nov 14      | North White Plains           | 488 km S             | 1 month, 2 days             |
| Eastern Screech-Owl    | 1115-06054  | 11 Oct 14   | HY  | U   | 10 Apr 15      | Senneville QC                | 2 km S               | 5 months, 29 days           |
| Merlin                 | 1583-85911  | 19 Apr 07   | ASY | M   | 27 May 12      | Winchendon MA                | 341 km SSE           | 5 years, 1 month, 8 days    |
| Blue Jay               | 1603-43837  | 17 Sep 08   | HY  | U   | 8 Jun 10       | St-Jean-de-Matha QC          | 95 km NNE            | 1 year, 8 months, 21 days   |
| Blue Jay               | 1342-00907  | 19 Oct 09   | HY  | U   | 26 Feb 10      | Ste-Anne-de-Bellevue QC      | 3 km S               | 4 months, 7 days            |
| Black-capped Chickadee | 2460-40011  | 1 Feb 06    | SY  | U   | 20 Feb 06      | Morgan Arboretum QC          | <1 km W              | 19 days                     |
| Black-capped Chickadee | 2490-24914  | 9 Sep 07    | HY  | U   | 6 Nov 07       | Lachine QC                   | 18 km E              | 1 month, 27 days            |
| Black-capped Chickadee | 2500-65183  | 16 Aug 08   | HY  | U   | 1 Nov 10       | Morgan Arboretum QC          | <1 km W              | 2 years, 2 months, 15 days  |
| Black-capped Chickadee | 2650-43061  | 18 Mar 12   | SY  | U   | 29 Mar 12      | Morgan Arboretum QC          | <1 km W              | 11 days                     |
| Swainson's Thrush      | 2571-23287  | 17 Sep 12   | HY  | U   | 10 Oct 12      | Millwood SC                  | 1395 km SSW          | 23 days                     |
| American Robin         | 1222-70269  | 21 Apr 06   | SY  | F   | 22 Apr 07      | Ste-Anne-de-Bellevue QC      | 2 km S               | 1 year, 1 day               |
| American Robin         | 1232-08343  | 17 Oct 06   | HY  | M   | Dec 06         | Duson LA                     | 2320 km SW           | approx. 2 months            |
| American Robin         | 1232-08355  | 17 Oct 06   | HY  | M   | 1 Oct 09       | Ile Perrot QC                | 6 km SW              | 2 years, 11 months, 14 days |
| American Robin         | 1232-08515  | 26 Oct 06   | HY  | M   | 12 Jul 07      | Senneville QC                | 418 km NW            | 8 months, 16 days           |
| American Robin         | 1232-26413  | 5 Oct 07    | HY  | U   | 14 Jun 12      | Kirkland QC                  | 7 km ENE             | 4 years, 8 months, 9 days   |
| American Robin         | 1272-07989  | 19 Oct 08   | AHY | M   | 12 Jul 09      | Sainte-Anne-de-Bellevue QC   | 3 km S               | 8 month, 23 days            |
| American Robin         | 1342-00944  | 22 Oct 09   | AHY | F   | 1 Apr 10       | Henderson NC                 | 1080 km SSW          | 5 months, 9 days            |
| American Robin         | 1342-36341  | 18 Aug 12   | HY  | U   | 22 Apr 13      | Greendale QC                 | 9 km ENE             | 8 months, 4 days            |
| American Robin         | 1342-36433  | 7 Nov 12    | HY  | F   | 26 Apr 13      | Trois-Rivieres QC            | 148 km NE            | 5 months, 19 days           |
| American Robin         | 1352-01653  | 28 Oct 13   | HY  | U   | 27 Apr 14      | Montreal QC                  | 30 km ENE            | 5 months, 29 days           |
| European Starling      | 1232-08517  | 25 Mar 07   | AHY | M   | 12 Dec 08      | Ava NY                       | 255 km SSW           | 1 year, 8 months, 17 days   |
| Cedar Waxwing          | 2691-45557  | 24 Apr 14   | SY  | M   | 6 Mar 15       | Pike Road AL                 | 1803 km SW           | 10 months, 11 days          |
| Common Yellowthroat    | 2460-40390  | 4 Aug 06    | HY  | U   | 18 Aug 06      | Hudson QC                    | 18 km WNW            | 14 days                     |
| American Redstart      | 2410-92963  | 2 Sep 05    | HY  | F   | 18 May 10      | Trois-Rivieres QC            | 148 km NE            | 4 years, 8 months, 16 days  |
| Yellow Warbler         | 2460-40300  | 1 Aug 07    | HY  | M   | 9 Aug 07       | Sainte-Anne-de-Bellevue QC   | 1 km SSW             | 8 days                      |
| Magnolia Warbler       | 2630-69192  | 4 Sep 12    | HY  | M   | 17 Jun 14      | Sir John Lake QC             | 40 km NW             | 1 year, 9 months, 13 days   |
| Yellow-rumped Warbler  | 2510-81875  | 30 Sep 06   | HY  | M   | 16 Oct 06      | Chestertown MD               | 710 km SSW           | 16 days                     |
| Yellow-rumped Warbler  | 2650-42001  | 15 Sep 13   | HY  | F   | 23 Sep 13      | Kirkland QC                  | 4 km SSE             | 8 days                      |
| Indigo Bunting         | 2351-48783  | 9 Sep 10    | HY  | M   | 27 May 11      | King City ON                 | 475 km WSW           | 8 months, 18 days           |
| American Tree Sparrow  | 2600-15486  | 26 Oct 09   | AHY | U   | 22 Apr 10      | Lac Megantic QC              | 240 km E             | 5 months, 26 days           |
| Song Sparrow           | 2241-39518  | 28 Jul 06   | HY  | U   | 17 Aug 06      | Hudson QC                    | 18 km WNW            | 19 days                     |
| White-throated Sparrow | 2261-90366  | 24 Sep 07   | HY  | U   | 12 Jul 11      | Blainville QC                | 38 km N              | 3 years, 9 months, 18 days  |
| Red-winged Blackbird   | 1152-34065  | 30 Apr 05   | SY  | M   | 26 Apr 10      | Sainte-Anne-de-Bellevue QC   | 2 km S               | 4 years, 11 months, 26 days |
| Red-winged Blackbird   | 1222-70315  | 22 Apr 06   | SY  | M   | 4 Jul 06       | Sainte-Anne-de-Bellevue QC   | 3 km WSW             | 2 months, 12 days           |
| Red-winged Blackbird   | 1232-08594  | 22 May 07   | SY  | M   | 18 Apr 11      | Port Rowan ON                | 607 km WSW           | 3 years, 10 months, 26 days |
| Red-winged Blackbird   | 1951-51396  | 10 May 08   | SY  | F   | 31 May 08      | Lacolle QC                   | 54 km SE             | 21 days                     |
| Red-winged Blackbird   | 1292-00599  | 24 May 09   | SY  | M   | 30 Apr 14      | Sainte-Anne-de-Bellevue QC   | 3 km SW              | 4 years, 11 months, 6 days  |
| Common Grackle         | 1323-93244  | 3 May 06    | AHY | M   | 2 Dec 12       | Saint-Michel-de-Wentworth QC | 60 km NW             | 6 years, 6 months, 29 days  |
| Common Grackle         | 1363-68390  | 7 May 07    | ASY | M   | 21 Apr 11      | Sainte-Anne-de-Bellevue QC   | 2 km SW              | 3 years, 11 months, 14 days |
| Common Grackle         | 2003-45007  | 7 Aug 08    | AHY | U   | 20 Jul 11      | Hudson QC                    | 15 km W              | 2 years, 11 months, 13 days |
| Common Grackle         | 1603-88220  | 24 Apr 10   | SY  | F   | 24 May 11      | Beaconsfield QC              | 5 km E               | 1 year, 1 month             |
| Common Grackle         | 1603-88249  | 29 Aug 10   | HY  | U   | 6 May 12       | Laval QC                     | 20 km NE             | 1 year, 8 months, 7 days    |
| Common Grackle         | 1713-34521  | 13 Oct 12   | HY  | M   | 1 Jun 14       | Pointe-des-Cascades QC       | 15 km S              | 1 year, 7 months, 18 days   |
| Common Grackle         | 1713-34524  | 14 Oct 12   | HY  | U   | 3 Mar 14       | Southampton Township NJ      | 616 km S             | 1 year, 4 months, 19 days   |
| House Finch            | 2431-86824  | 1 Nov 10    | AHY | M   | 2 Aug 11       | Laval QC                     | 23 km NE             | 9 months, 1 day             |
| American Goldfinch     | 2510-81047  | 14 May 07   | ASY | F   | 4 May 10       | Sainte-Anne-de-Bellevue QC   | 2 km S               | 2 years, 11 months, 20 days |
| American Goldfinch     | 2600-17001  | 15 Sep 10   | HY  | U   | 28 Aug 12      | Saint-Dominique QC           | 18 km WSW            | 1 year, 11 months, 13 days  |
| American Goldfinch     | 2650-41217  | 18 May 12   | SY  | M   | 8 Aug 15       | Seymour TN                   | 1347 km SW           | 1 year, 11 months, 13 days  |
| American Goldfinch     | 2650-44078  | 10 Sep 14   | HY  | U   | 2 Oct 14       | Potsdam NY                   | 120 km SW            | 22 days                     |



During the same period, 47 birds of 10 species banded elsewhere have been observed at MBO, as summarized in the table below. Northern Saw-whet Owl dominates this list with 38 birds (81%); all nine other species are represented by a single individual. More birds on this list are long-distance recoveries (94%, vs. 59% for birds banded at MBO), but this largely reflects the scarcity of other banding efforts within 100 km of MBO. Only two individuals recaptured at MBO were banded >1000 km away, both Northern Saw-whet Owls (one recaptured 29 days after being banded in Minnesota nearly 1300 km to the west, and another nearly one year after being banded in Indiana, 1100 km to the southwest). Among the owls, 11 (29%) were banded in Pennsylvania, 8 (21%) in Ontario, and the remainder from 8 other states.

Half (19) of the foreign Northern Saw-whet Owls recaptured at MBO were banded the previous fall, while only two (5%) were banded earlier in the same season, and three (8%) in spring or summer of the same year; the remainder were all banded in fall and recaptured at MBO either two (8 individuals; 21%), three (4 individuals; 11%), or four (2 individuals; 5%) years later. Among the other species, time elapsed ranges from an incredibly quick recapture of a Nashville Warbler just three days after being banded in Rochester, New York, to a Northern Waterthrush banded in Pennsylvania and recaptured at MBO just over 7 years later.

| Species               | Band number | Date banded | Location banded        | Age | Sex | Date recovered | Distance & Direction | Time elapsed                |
|-----------------------|-------------|-------------|------------------------|-----|-----|----------------|----------------------|-----------------------------|
| Canada Goose          | 998-48777   | 3 Jul 05    | Boucherville QC        | AHY | M   | 28 Apr 06      | 46 km WSW            | 9 months, 25 days           |
| Northern Saw-whet Owl | 1283-88336  | 8 Oct 01    | Waupoos Island ON      | SY  | F   | 18 Oct 04      | 290 km NE            | 3 years, 10 days            |
| Northern Saw-whet Owl | 934-86010   | 1 Jul 08    | Whitefish Point MI     | SY  | F   | 19 Oct 09      | 855 km E             | 1 year, 3 months, 11 days   |
| Northern Saw-whet Owl | 1014-11228  | 18 Oct 08   | Charlton NY            | HY  | M   | 13 Oct 12      | 275 km N             | 3 years, 11 months, 26 days |
| Northern Saw-whet Owl | 924-37161   | 5 Nov 08    | Bentonville VI         | ASY | U   | 20 Oct 09      | 812 km NNE           | 11 months, 15 days          |
| Northern Saw-whet Owl | 1014-02489  | 19 Oct 09   | Northbridge MA         | HY  | F   | 3 Oct 10       | 417 km NNW           | 11 months, 14 days          |
| Northern Saw-whet Owl | 1014-01834  | 25 Oct 09   | Prince Edward Point ON | HY  | F   | 6 Oct 11       | 283 km NE            | 11 months, 11 days          |
| Northern Saw-whet Owl | 1014-01881  | 29 Oct 09   | Prince Edward Point ON | ASY | M   | 23 Oct 11      | 283 km NE            | 1 year, 11 months, 24 days  |
| Northern Saw-whet Owl | 924-57535   | 4 Oct 10    | New Liskeard ON        | HY  | F   | 11 Oct 10      | 492 km ESE           | 7 days                      |
| Northern Saw-whet Owl | 924-64977   | 8 Oct 10    | Thunder Cape ON        | SY  | U   | 30 Oct 11      | 1175 km E            | 1 year, 22 days             |
| Northern Saw-whet Owl | 1014-20019  | 9 Oct 10    | Charlton NY            | AHY | F   | 11 Oct 13      | 275 km N             | 3 years, 2 days             |
| Northern Saw-whet Owl | 1014-25330  | 10 Oct 10   | Ellenville NY          | SY  | U   | 3 Oct 13       | 406 km N             | 2 years, 11 months, 24 days |
| Northern Saw-whet Owl | 1014-33312  | 13 Oct 10   | Fort Loudon PA         | HY  | F   | 4 Oct 11       | 690 km NNE           | 11 months, 22 days          |
| Northern Saw-whet Owl | 1014-07024  | 13 Oct 10   | South Hadley MA        | ASY | F   | 11 Oct 11      | 363 km NNW           | 11 months, 29 days          |
| Northern Saw-whet Owl | 1014-08661  | 17 Oct 10   | Prince Edward Point ON | HY  | F   | 23 Oct 11      | 283 km NE            | 1 year, 6 days              |
| Northern Saw-whet Owl | 924-59832   | 17 Oct 10   | Huntsdale PA           | SY  | F   | 9 Oct 12       | 606 km NNE           | 1 year, 11 months, 23 days  |
| Northern Saw-whet Owl | 1014-26965  | 1 Nov 10    | Friedensburg PA        | SY  | F   | 21 Oct 11      | 563 km NNE           | 11 months, 20 days          |
| Northern Saw-whet Owl | 1014-50214  | 4 Nov 10    | Berlinsville PA        | HY  | F   | 21 Oct 13      | 535 km NNE           | 2 years, 11 months, 17 days |
| Northern Saw-whet Owl | 1014-12027  | 10 Nov 10   | Bentonville PA         | ASY | F   | 11 Oct 11      | 812 km NNE           | 11 months, 1 day            |
| Northern Saw-whet Owl | 1014-33802  | 25 Sep 11   | Tofte MN               | AHY | U   | 24 Oct 11      | 1295 km E            | 29 days                     |
| Northern Saw-whet Owl | 1014-07171  | 26 Oct 11   | South Hadley MA        | ASY | F   | 11 Oct 13      | 362 km NNW           | 1 year, 11 months, 16 days  |
| Northern Saw-whet Owl | 924-30411   | 5 Nov 11    | Lamb's Knoll MD        | HY  | F   | 10 Oct 13      | 725 km NNE           | 1 year, 11 months, 5 days   |
| Northern Saw-whet Owl | 1014-36196  | 26 Sep 12   | New Liskeard ON        | HY  | F   | 27 Oct 14      | 496 km ESE           | 2 years, 1 month, 1 day     |
| Northern Saw-whet Owl | 1014-50867  | 7 Oct 12    | Drumlin Farm MA        | HY  | F   | 10 Oct 13      | 390 km NNW           | 1 year, 3 days              |
| Northern Saw-whet Owl | 1014-51480  | 11 Oct 12   | New Paltz NY           | HY  | U   | 8 Oct 13       | 402 km N             | 11 months, 28 days          |
| Northern Saw-whet Owl | 1014-76916  | 17 Oct 12   | Hawk Mountain PA       | HY  | F   | 9 Oct 13       | 554 km NNE           | 11 months, 23 days          |
| Northern Saw-whet Owl | 1014-50425  | 17 Oct 12   | Berlinsville PA        | HY  | U   | 11 Oct 14      | 535 km NNE           | 1 year, 11 months, 24 days  |
| Northern Saw-whet Owl | 1014-77160  | 20 Oct 12   | Leesport PA            | HY  | F   | 8 Oct 13       | 570 km NNE           | 11 months, 19 days          |
| Northern Saw-whet Owl | 1014-13827  | 3 Nov 12    | Huntsdale PA           | HY  | F   | 5 Oct 13       | 647 km NNE           | 11 months, 2 days           |
| Northern Saw-whet Owl | 1014-36952  | 3 Nov 12    | Malden Centre ON       | ASY | F   | 21 Oct 13      | 818 km ENE           | 11 months, 18 days          |
| Northern Saw-whet Owl | 1014-51646  | 4 Nov 12    | Liberty IN             | HY  | F   | 28 Oct 13      | 1105 km NE           | 11 months, 24 days          |
| Northern Saw-whet Owl | 1014-51372  | 5 Nov 12    | New Paltz NY           | HY  | U   | 27 Oct 14      | 403 km N             | 1 year, 11 months, 22 days  |
| Northern Saw-whet Owl | 1014-04452  | 14 Nov 12   | Kiptopeke VI           | HY  | U   | 11 Oct 13      | 930 km N             | 10 months, 27 days          |
| Northern Saw-whet Owl | 1014-78897  | 14 Nov 12   | Berlinsville PA        | HY  | U   | 16 Oct 13      | 535 km NNE           | 11 months, 2 days           |
| Northern Saw-whet Owl | 1014-49227  | 16 Nov 12   | Lamb's Knoll MD        | HY  | F   | 10 Oct 13      | 725 km NNE           | 10 months, 24 days          |
| Northern Saw-whet Owl | 1014-49227  | 16 Nov 12   | Lamb's Knoll MD        | HY  | F   | 15 Oct 13      | 725 km NNE           | 10 months, 29 days          |
| Northern Saw-whet Owl | 914-91705   | 16 Apr 13   | Whitefish Point MI     | SY  | U   | 3 Oct 13       | 856 km E             | 5 months, 17 days           |
| Northern Saw-whet Owl | 914-91873   | 25 Apr 13   | Whitefish Point MI     | SY  | F   | 29 Oct 13      | 860 km E             | 6 months, 4 days            |
| Northern Saw-whet Owl | 1014-80043  | 28 Oct 13   | Shelburne VT           | SY  | F   | 22 Oct 14      | 124 km NNW           | 11 months, 25 days          |
| Trail's Flycatcher    | 2150-12970  | 5 Jun 03    | Alpena MI              | AHY | U   | 27 May 06      | 754 km E             | 11 months, 22 days          |
| Tree Swallow          | 1921-10760  | 18 Jun 06   | Saint-Guillaume QC     | HY  | U   | 11 May 07      | 108 km WSW           | 10 months, 23 days          |
| Ruby-crowned Kinglet  | 2410-08206  | 9 Oct 5     | Toronto ON             | HY  | M   | 2 May 06       | 470 km ENE           | 6 months, 24 days           |
| European Starling     | 1342-01116  | 7 Jun 10    | Hudson QC              | JUV | U   | 12 Jul 10      | 12 km ENE            | 1 month, 5 days             |
| Northern Waterthrush  | 1821-03311  | 16 May 03   | Westmoreland PA        | SY  | U   | 21 May 10      | 735 km NE            | 7 years, 7 days             |
| Nashville Warbler     | 2530-77537  | 14 May 09   | Rochester NY           | ASY | F   | 17 May 09      | 386 km NE            | 3 days                      |
| Common Yellowthroat   | 2510-64888  | 25 Sep 11   | Block Island RI        | HY  | U   | 23 Jun 12      | 496 km NNW           | 8 months, 28 days           |
| American Goldfinch    | 2330-07413  | 5 Oct 05    | Laval QC               | HY  | M   | 18 Nov 05      | 23 km SW             | 1 month, 13 days            |

## Appendix G: MBO Volunteers

Volunteers are essential to the operation of programs at MBO. Between 2005 and 2014, 614 volunteers contributed on site, and numerous others have helped out behind the scenes instead. Volunteers who have participated during at least four years are listed in bold, and those who have served as a bander-in-charge are annotated with an asterisk.

|                          |            |                         |            |                          |            |
|--------------------------|------------|-------------------------|------------|--------------------------|------------|
| Nick Acheson             | 2007       | <b>David Bird</b>       | 2005-2009, | Michèle Carignan         | 2008       |
| Jessica Adams            | 2009       |                         | 2011,2013  | Vincent Carignan         | 2013       |
| Josiane Alarie           | 2009       | <b>Sue Bishop</b>       | 2010-2014  | Alison Casazza           | 2010       |
| Angelika Aleksieva       | 2013-2014  | Isabelle-Anne Bisson    | 2009       | Natalia Castellanos      | 2006-2008  |
| Nadège Allan             | 2005-2006  | Susan Black             | 2006       | <b>Sophie Cauchon</b>    | 2006-2010  |
| Chris Alsop              | 2007       | Geneviève Blanchet      | 2011       | Adriana Celada           | 2010       |
| Lise Amarasakera         | 2006       | Marie-Ève Blanchet      | 2010       | Dominic Chambers         | 2006,2008  |
| Alexandre Ancil          | 2008       | Jose Bnchetril          | 2007       | Alistair Chan            | 2011       |
| David Anderson           | 2011       | Emily Board             | 2012       | Megan Chan               | 2010       |
| Sheldon Andrews          | 2009-2010  | Nancy Boily             | 2010       | Victoria Chang           | 2008       |
| Evelyn Aponte            | 2009       | Marc Boisvert           | 2012-2014  | Céline Charette          | 2010       |
| <b>Veronica Aponte</b>   | 2008-2010, | Elise Bolduc            | 2005       | Steve Charlton           | 2010       |
|                          | 2014       | Marianne Bolla          | 2010       | Anne Chen                | 2007-2008  |
| Lina Artinian            | 2010       | Salomé Bonnefoi         | 2013       | Shannon Christianson     | 2011       |
| Kenzie Azmi              | 2011       | Éric Boodman            | 2010       | Marc-Philippe Christophe | 2010       |
| Jean Bacon               | 2008-2010  | Cindy Bouchard          | 2012-2014  | Gary Clemence            | 2009-2010  |
| Rob Baker                | 2010       | Kim Bouchard            | 2013       | Marc-André Clément       | 2010       |
| Laura Balanoff           | 2006       | Marc-Henri Bouchard     | 2014       | Chantal Cloutier         | 2010,2012  |
| Eva Banlaki              | 2011       | Marie-France Boudreault | 2013-2014  | <b>Chris Cloutier</b>    | 2009-2012  |
| Pierre Bannon            | 2005-2006  | Emily Boulanger         | 2012-2013  | Claude Cloutier          | 2010,2014  |
| Nathalie Barbeau         | 2011       | Robert Boule            | 2012       | Amélie Constantineau     | 2007-2008, |
| Lina Bardo               | 2005-2006, | Bianca Bourdeau         | 2005       |                          | 2010       |
|                          | 2009       | Manon Bourdon           | 2014       | Ariel Cordova-Rojas      | 2010       |
| Bob Barnhurst            | 2010-2012  | Martin Bowman           | 2005-2006  | Jane Cormack             | 2010       |
| Marie-Christine Barrette | 2005       | Mark Brenchley          | 2008       | Yolande Cossette         | 2012-2013  |
| <b>Christine Barrie</b>  | 2009-2014  | Sarah Briand            | 2009       | Serge Côté               | 2013       |
| Sylvie Bazinet           | 2007       | Jennifer Bridgeman      | 2006       | Stéphanie Côté           | 2011       |
| Richard Beauchamp        | 2012-2014  | Dan Brisebois           | 2012       | Gabrielle Cottam         | 2013-2014  |
| Jean-François Beauchemin | 2008       | Kaitlin Broadhurst      | 2011       | Joel Coutu               | 2011       |
| Normand Beaudet          | 2012       | Kristen Brochu          | 2007       | Averill Craig            | 2005-2006  |
| <b>Jean Beaudreault</b>  | 2005-2009  | Adam Bromwich           | 2012       | Ian Craig                | 2011       |
| Jeanne Beaudry-Pilotte   | 2010       | Carl Bromwich           | 2012-2014  | <b>Shawn Craik*</b>      | 2005-2010  |
| Pierre Beaulé            | 2009       | Marcelo Brongo          | 2009,2013  | Dawn Cruchet             | 2012       |
| Christine Beaumier       | 2010       | Chantal Broueou         | 2008       | Luke Currin              | 2013-2014  |
| Michel Beaupré           | 2009-2011  | Daniel Brown            | 2005-2006  | Mark Currin              | 2013-2014  |
| Louise Bédard            | 2008       | Duncan Brown            | 2008       | Jennifer Cyr-Devine      | 2005       |
| Christine Bedra          | 2006       | Mélisa Brunet           | 2005       | Marine Dageville         | 2012       |
| Katrina Bélanger-Smith   | 2008       | Jason Bueckert          | 2010       | Tiffany Damaglin         | 2008       |
| Ève Bélisle              | 2010       | <b>Gilles Burelle</b>   | 2007-2010  | Christina Damant         | 2013       |
| Brian Bell               | 2007-2008  | Skye Burgan             | 2011       | Jacinthe Daprato         | 2006       |
| Yves Bellemare           | 2010       | Lindsay Burkhart        | 2011       | <b>David Davey</b>       | 2008-2014  |
| Dan Benoit               | 2010       | Christine Burt          | 2009-2010  | Geneviève D'Avignon      | 2008       |
| Benoit Bérard            | 2011       | Francis Cabana          | 2010       | Anna de Aguayo           | 2008-2010  |
| Suzanne Bérard           | 2012       | Virginie Cabana-Vaudrin | 2008       | Diane Deakin             | 2010       |
| Alex Bernal              | 2012       | Leonardo Cabrera        | 2007       | Jessica Deakin           | 2008       |
| Johannie Bernard         | 2014       | Chrystine Cadieux       | 2008       | Steven Dedesko           | 2006       |
| Elisa Bernier            | 2008       | Iain Caldwell           | 2014       | Rui de Jesus             | 2011-2013  |
| <b>Nicolas Bernier*</b>  | 2010-2014  | Barb Campbell           | 2010       | Alejandro del Peral      | 2005-2006  |
| Yvan Bernier             | 2013-2014  | Diane Campbell          | 2010       | Jean De Marre            | 2009       |
| Melanie Bernstein        | 2009       | Véronik Campbell        | 2005-2007  | Diane Demers             | 2005-2007  |
| Christine Berry          | 2008       | Marie-Eve Campin        | 2008       | <b>Jean Demers</b>       | 2005-2014  |
| Matthias Bieber          | 2010       | Marilyne Caponi         | 2010       | Samuel Denault           | 2008-2009  |

|                                 |                         |                          |                    |                                |                         |
|---------------------------------|-------------------------|--------------------------|--------------------|--------------------------------|-------------------------|
| <b>Leah den Besten</b>          | 2010-2014               | Maura Forrest            | 2008               | Patrick-Jean Guay              | 2006                    |
| <b>Andrée-Anne Deschamps</b>    | 2008,<br>2010-2013      | <b>Liette Fortier</b>    | 2011-2014          | Joelle Guellet                 | 2007                    |
| Victoria Desmarais-Low          | 2008,2010               | Alexandre Fouillet       | 2012               | Samantha Guérard               | 2011                    |
| Gail Desnoyer                   | 2012                    | Val Francella            | 2006-2008          | Mathilde Guglielmi             | 2014                    |
| Mégane Déziel                   | 2014                    | Katie Fraser             | 2010               | Nicole Guido                   | 2014                    |
| Cheryl Diamond                  | 2006                    | Sarah Fraser             | 2005-2006          | Christina Guillemette          | 2008                    |
| Ross Diamond                    | 2007                    | Gérard Fréchette         | 2006-2007,<br>2009 | <b>Alison Hackney</b>          | 2011-2014               |
| Diana Dima                      | 2007                    | Sara Fréchette-Laflamme  | 2008               | Myriam Haineault               | 2011-2012               |
| Marianna Dimauro                | 2011,2014               | <b>Barbara Frei*</b>     | 2005-2014          | Peter Hall                     | 2007                    |
| Joy Ding                        | 2009                    | Kurt Frei                | 2007               | Julie Hamel                    | 2013                    |
| Emilie Dion                     | 2006-2007               | Maria Frei               | 2006-2008          | <b>Bana Hamze</b>              | 2005-2009               |
| Sarah Dixon                     | 2011                    | Mike Frei                | 2005,2007          | <b>Frédéric Hareau</b>         | 2010-2014               |
| Christina Donehower             | 2005-2006               | Andray Gagné             | 2012               | Nathaniel Harper               | 2012                    |
| Catherine Doucet                | 2009                    | Louise Gagné             | 2012-2013          | <b>Jeff Harrison</b>           | 2007-2011,<br>2013      |
| Nicole Doucet                   | 2012                    | <b>Jo-Annie Gagnon</b>   | 2010,<br>2012-2014 | Kanako Hasegawa                | 2006                    |
| Lena Douris                     | 2005                    | Marianne Gagnon          | 2008,2010,<br>2013 | Valerie Hayot-Sasson           | 2010                    |
| Abigail Dowden                  | 2010                    | Marie-France Gagnon      | 2012               | Jessica Head                   | 2014                    |
| Connie Downes                   | 2010                    | <b>Marcel Gahbauer*</b>  | 2005-2014          | Isaac Hébert                   | 2007                    |
| Tyler Driber                    | 2005                    | Tiffany Gamelin          | 2007-2008          | Lacey Hébert                   | 2007                    |
| Amanda Droghini                 | 2012                    | Alyssa Gangai            | 2009               | Janina Heim                    | 2008                    |
| Amélie Drolet                   | 2009-2011               | Ruoxi Gao                | 2010               | Amy Henderson                  | 2006-2007               |
| Melanie Drouin                  | 2007                    | Helen Garland            | 2005-2006          | Meggy Hervieux                 | 2006,2008               |
| Manon Dubé                      | 2006                    | Marie-Hélène Gauthier    | 2008               | Annie Hibbert                  | 2005                    |
| Geneviève Dubois                | 2013-2014               | Olivier Gautheron        | 2010               | Audrey Hihasiigiwi             | 2009                    |
| <b>Andrée Dubois-Laviolette</b> | 2005,2007,<br>2009-2014 | Marie-Pierre Gauthier    | 2009               | Martina Hoft                   | 2013                    |
| Josée Dubreuil                  | 2013                    | Nina Gauthier            | 2009               | Nicolas Houde                  | 2010                    |
| Lauriane Dubuc                  | 2014                    | Kirsten Gavin            | 2013               | Vicky Houde                    | 2008                    |
| Karine Duffy                    | 2010                    | Chloe Gendre             | 2009               | Lesley-Anne Howes              | 2008                    |
| <b>Steve Dumont</b>             | 2010-2014               | Nathalie Gendron         | 2012-2014          | Juliane Hudson                 | 2005                    |
| Philippe Dunn                   | 2010-2011               | Marie-Line Gentes        | 2009-2010          | <b>Marie-Anne Hudson*</b>      | 2005-2010               |
| Richard Dupuis                  | 2010                    | Chris Gibb               | 2005               | Leslie Hunt                    | 2013                    |
| Benoît Duthu                    | 2009-2010               | Gregor Gilbert           | 2006               | Keelan Jacobs                  | 2005-2006               |
| Pierre Duval                    | 2008                    | <b>Tiffany Gilchrist</b> | 2008-2010,<br>2012 | Daniel Jackson                 | 2009                    |
| <b>Réjean Duval</b>             | 2010-2013               | Josée Girard             | 2006               | Marie-Eve Jacques              | 2005                    |
| <b>Simon Duval*</b>             | 2007-2014               | Jude Girard              | 2010               | Jukka Jantonen                 | 2009                    |
| Kate Earl                       | 2006,2008               | Thomas Glover            | 2011               | Stacey Jarema                  | 2008                    |
| Bob Edwards                     | 2007-2008               | Sean Godwin              | 2011-2012          | <b>Malcolm Johnson</b>         | 2008-2014               |
| Tammy Elliott                   | 2011-2012               | Robin Goldstein          | 2005               | Norsola Johnson                | 2012                    |
| Matthew Emrich                  | 2009                    | Ian Goodfellow           | 2011               | Lindsey Jones                  | 2011                    |
| Jenia Faibusovitch              | 2009-2010               | Alain Goulet             | 2010               | Isabel Julian                  | 2005-2006,<br>2009      |
| Luc Farly                       | 2008                    | Raphael Goulet           | 2006               | Marie-France Julien            | 2010-2011               |
| Kate Farrell                    | 2007                    | Thierry Grandmont        | 2014               | <b>James Junda*</b>            | 2008-2009,<br>2012-2014 |
| Dominique Fauteux               | 2007                    | Christine Gray           | 2006-2007          | Greg Kaiman                    | 2011                    |
| Adam Feller                     | 2013                    | <b>Emily Gray</b>        | 2006-2009          | <b>Marie-Melissa Kalamaras</b> | 2007-2011               |
| Kristian Fidrych                | 2011                    | Herb Greenslade          | 2008               | Pia Kaukoranta                 | 2010                    |
| Isaac Finkelstein               | 2010                    | Jacinthe Gregoire        | 2005               | Lima Kayello                   | 2011-2012               |
| Max Finkelstein                 | 2010                    | Jean Gregson             | 2009-2010          | <b>Lisa Keelty*</b>            | 2011-2014               |
| Jessica Fiset                   | 2012                    | Richard Gregson          | 2009-2010          | Sharon Kelly                   | 2009                    |
| <b>David Fishman</b>            | 2006-2009,<br>2012      | Pedro Grillo             | 2014               | Tricia Kerr                    | 2005                    |
| Linda Fishman                   | 2007,2009               | Monique Groulx           | 2012-2013          | <b>Kristen Keyes*</b>          | 2008-2011               |
| <b>Michael Fleming</b>          | 2008-2009,<br>2012-2013 | <b>Gay Gruner*</b>       | 2005-2014          | Gillian Kinsman                | 2006-2008               |
| <b>Nicola Fleming</b>           | 2008-2013               | Jennifer Gruner          | 2009               | Shelley Kirk                   | 2012                    |
| Maryse Forest-Tremblay          | 2011                    | <b>Peter Gruner</b>      | 2005-2010          | Diana Kirkwood                 | 2010-2011               |
|                                 |                         |                          |                    | Demetrios Kobiliris            | 2007-2008               |

|                          |            |                           |            |                        |           |
|--------------------------|------------|---------------------------|------------|------------------------|-----------|
| Alessia Kockel           | 2007-2008  | Victoria Lukasik          | 2005       | Chloé Nadeau-Perrier   | 2008-2009 |
| Helen Kohler             | 2014       | Kristen Lynn              | 2010       | Karen Nassi            | 2012      |
| Genki Kondo              | 2008       | Geneviève Lussier         | 2007       | Armin Nazemi           | 2011      |
| Johanna Koppes           | 2010       | Marie-Pier Lussier        | 2011       | Tash Nicholson         | 2012      |
| Tony James Kouach        | 2011       | <b>Barbara Macduff</b>    | 2005-2014  | Marie Nicole           | 2008      |
| Jessica Krohner          | 2010       | <b>Don Macduff</b>        | 2005-2014  | Ian Niu                | 2006      |
| Julia Kucharski          | 2005       | Alyssa Macleod            | 2007       | Marissa Nolan          | 2009-2010 |
| Erik Kudelka             | 2011       | Jennifer MacWilliam       | 2006-2007  | Ken Nomura             | 2008      |
| Vivek Kumar              | 2010       | Asya Malinova             | 2012,2014  | Joey O'Connor          | 2011      |
| Jeremy Labrecque         | 2006       | Charlotte Maloney         | 2011       | Mark O'Connor          | 2006-2007 |
| Joane Lafontaine         | 2012       | Barry Mantal              | 2008       | David Oldacre          | 2013      |
| Louis-Philip Lafrance    | 2006       | Helen Marchand            | 2009       | Robert Oligny          | 2005-2006 |
| Marjolaine Lagacé        | 2008-2009  | Christine Marcoux         | 2013       | Kenn Olivier           | 2011      |
| Benoît Laliberté         | 2011-2012  | <b>Francine Marcoux</b>   | 2005-2014  | Jennifer Orr           | 2005      |
| Marie-Pier Lambert       | 2006-2007  | Melanie Marier            | 2009       | Daniel Ouellette       | 2006      |
| Line Lamontagne          | 2013-2014  | Meghna Marjadi            | 2009       | Daniel Oyama           | 2006-2007 |
| Le Duing Lang            | 2010-2011  | Daniel Martin             | 2011-2012  | Raymonde Palardy       | 2014      |
| Catherine Langevin       | 2012       | Rudi Markgraf             | 2005       | <b>Mariner Palmer</b>  | 2010,     |
| Meg Langley              | 2009       | Eve Marshall              | 2005,2007, |                        | 2012-2014 |
| Patrick Laniel           | 2012       |                           | 2009       | George Panciuk         | 2012      |
| Dominique Lantier        | 2008       | <b>Sarah Marteinson</b>   | 2006-2009  | Aubrey Paolino         | 2012      |
| Joëlle Lapalme           | 2007-2009  | Dara Mashones             | 2008       | Frederic Paquet        | 2005      |
| Marie-Pier Laplante      | 2012       | Poonam Maskeri            | 2006-2007  | Johanne Paquette       | 2010      |
| Noémie Laplante          | 2005,2011  | Laurie Maurais            | 2006       | Annie-Claude Paradis   | 2006-2007 |
| Colette Laprade          | 2005       | <b>Michael Mayerhofer</b> | 2005-2009  | Guillaume Passavy      | 2005      |
| Meghan Larivée           | 2005       | Gracey Hlywa Mayta        | 2008       | Kasper Pater           | 2010      |
| Gabrielle Laurent        | 2009       | Sophie Mazowita           | 2007-2008  | Andrew Patterson       | 2012      |
| Ghislaine Laurin         | 2013       | Melanie McCormack         | 2008       | Charla Patterson       | 2012      |
| <b>Lance Laviolette*</b> | 2005-2014  | Meaghan McDermott         | 2009       | Jeremy Pauté           | 2009      |
| <b>Meghan Laviolette</b> | 2005,2007, | Dan McDonough             | 2009       | Charlotte Payette      | 2013      |
|                          | 2009-2013  | <b>Betsy McFarlane</b>    | 2005-2014  | Yves Payette           | 2012-2013 |
| Agathe Lebeau            | 2014       | Shawn McNamee             | 2009       | Jennifer Pearson       | 2007      |
| Marcel Lebeau            | 2014       | Sandy McNeil              | 2006       | Joe Peck               | 2008      |
| Caroline Lecoœur         | 2006       | Marjorie Mercure          | 2009       | Emily Pedersen         | 2011      |
| Louise Lebel             | 2011-2012  | Raymond Michaud           | 2014       | <b>André Pelletier</b> | 2006-2010 |
| Céline Lecompte          | 2008,2010  | Lynn Miller               | 2005-2006  | Scott Pemberton        | 2011-2012 |
| Seabrooke Leckie*        | 2006       | Christina Miller          | 2008-2010  | Casey Pendergast       | 2011      |
| Steve Leckman            | 2006       | France Millette           | 2010       | Julie Pépin            | 2005-2007 |
| Catherine Leclerc        | 2011-2012  | Heather Milligan          | 2007       | Amélie Perez           | 2010      |
| Melisa Lefebvre          | 2009       | Marina Milligan           | 2007       | Marie Perkins          | 2013      |
| Marylise Lefevre         | 2005       | Richard Milligan          | 2009       | Alysse Perrault        | 2011      |
| Marie-Lise Legaise       | 2008       | Anthi Mimidakis           | 2005-2006  | Geneviève Perreault    | 2010      |
| Camille Legall-Payne     | 2010       | Ed Minotti                | 2009       | Jérôme Petigny         | 2007-2008 |
| Catherine Legault        | 2014       | Sandra Minotti            | 2006,2009  | Lucile Pic             | 2010      |
| Irene Lépine             | 2006       | Julia Mlynarek            | 2005-2006  | Leigh Piercey-Brunet   | 2007      |
| Helen Leroux             | 2007-2008, | Mahmoud Moghrabi          | 2009-2010  | <b>Benoît Piquette</b> | 2010-2014 |
|                          | 2010       | Pierre Molina             | 2011       | Francine Piquette      | 2010,2012 |
| Martin Lessard           | 2012       | Kevin Mongey              | 2011       | Andrew Plimer          | 2006-2007 |
| Steph Letendre           | 2007       | Allison Moore             | 2009       | Kevin Poirier          | 2011      |
| Stéphanie Levesque       | 2008       | Ana Morales               | 2012-2014  | Yves Poirier           | 2012      |
| Alex Liautaud            | 2007       | Harriel Morgan            | 2012       | Majorie Poirier        | 2005      |
| Juliana Lisi             | 2005-2006  | <b>Chris Murphy</b>       | 2005-2013  | Geneviève Potvin       | 2012      |
| Emma Loosigian           | 2008       | Claire Murphy             | 2010       | Sophie Price           | 2010      |
| Andréanne Lortie         | 2005       | Dan Murphy                | 2010       | Kristy Putnam          | 2005      |
| Christie Lovatt          | 2008,2011, | Ted Murphy-Kelly          | 2009,2014  | Fred Racine            | 2009      |
|                          | 2013       | Jim Murray                | 2008-2009  | Victor Benjamin Ramos  | 2009      |
| Valentin Lucet           | 2014       | Nashat Mustafa            | 2009       |                        |           |

|                            |                    |                          |                         |                             |           |
|----------------------------|--------------------|--------------------------|-------------------------|-----------------------------|-----------|
| <b>Greg Rand</b>           | 2006-2011,<br>2014 | Shawna Sévigny           | 2013-2014               | Alex Tran                   | 2011      |
| <b>Crissy Ranellucci</b>   | 2005-2008          | <b>Ahmad Shah</b>        | 2011-2014               | Bruno Tremblay              | 2012      |
| Khaled Rashid              | 2011               | <b>Marilou Skelling</b>  | 2011-2014               | Christiane Tremblay         | 2014      |
| Bronwyn Rayfield           | 2010               | Steven Skipper           | 2005                    | Rae Trenchard               | 2007-2008 |
| Natacha Raymond-Bleau      | 2005               | Roman Skorko             | 2010                    | Fernanda Triconi            | 2013      |
| Michelle Reeves            | 2011               | Jillian Slater           | 2013-2014               | Jessica Turgeon             | 2012,2014 |
| Limoilou-Amélie Renaud     | 2005-2006          | Carolynne Smith          | 2014                    | Denis Vachon                | 2007      |
| Charles Regnier            | 2011-2012          | Jennifer Smith           | 2008                    | Élodie Vajda                | 2010      |
| Sabrina Richard-Lalonde    | 2006,2008          | David Soares             | 2005                    | Joost Valkenburg            | 2012      |
| <b>Ian Ritchie</b>         | 2005-2009          | Anna Solecki             | 2007                    | Jay VanderGaast             | 2012-2014 |
| Katleen Robert             | 2006-2008          | Jane Sorensen            | 2010,2012               | Virginie Vaudine            | 2008      |
| Mark-André Robert          | 2007               | Lily Soucy               | 2009                    | Monique Venne               | 2011-2013 |
| Mary Robichaud             | 2011-2012          | <b>Clémence Soulard</b>  | 2005-2014               | Rachel Verkade              | 2005-2007 |
| Kate Robinson              | 2006               | Bonnie Soutar            | 2010-2012               | Kaja Verret-Holding         | 2009      |
| Julien Robitaille          | 2010               | Gordon Southward         | 2011                    | Mieke van der Heyde         | 2010      |
| Sabrina Rochefort          | 2011-2012          | Audrey Speck             | 2010                    | Gijs van Tol                | 2012      |
| Jean Rogez                 | 2013               | Cat Spina                | 2008-2009,<br>2011      | <b>Matthew von Bornhoft</b> | 2009-2012 |
| Amanda Rollinson           | 2011               | Vince Spinelli           | 2005,2010               | Anne-Marie von Geenhoven    | 2011      |
| Mark Romer                 | 2010               | Katie St-Jean            | 2010-2011               | Michel Vorasane             | 2014      |
| Cindy Romero               | 2010               | Laurie St-Onge           | 2008                    | Phong Vuong                 | 2010      |
| Nicole Rose                | 2005               | Réal Ste-Marie           | 2007                    | Audrey Wachter              | 2005-2006 |
| Lisa Rosenberger           | 2011-2014          | Stephanie Steeves        | 2006-2007               | Guillaume Wachter           | 2006      |
| Amelie Rousseau            | 2006               | <b>Alex Stone</b>        | 2009-2012               | Michael Waddes              | 2013      |
| Sonia Rousseau             | 2010               | <b>Patricia Stotland</b> | 2010-2014               | Corrine Waheed              | 2013      |
| François Rousseu           | 2011               | Katie Sullivan           | 2006                    | Roland Wahlgren             | 2009      |
| Marie-Claude Roy           | 2006               | Alexandra Summer         | 2011                    | Tegan Wahlgren              | 2009      |
| <b>Emilie Roy-Dufresne</b> | 2006-2009          | Stephanie Surveyer       | 2005                    | Maria Waldron               | 2008      |
| Brittney Roughan           | 2007-2008          | Krystal Swift Dumesnil   | 2007-2008               | Yifu Wang                   | 2012-2014 |
| <b>Catherine Russell</b>   | 2010-2014          | Arnaud Tarrowx           | 2005                    | Jessica Ward                | 2011      |
| Joanne Ryan                | 2013               | Chick Taylor             | 2012                    | Sandra Warren               | 2006-2007 |
| Michelle Saint-Martin      | 2005               | Chris Taylor             | 2012                    | Shona Watt                  | 2007      |
| Sarah Saldanha             | 2011               | Pierrot Tellier-Machabée | 2010-2011               | Geoffrey Webster            | 2012      |
| Christina Saliba           | 2007               | Kim Tendland-Frenette    | 2005                    | John Webster                | 2006      |
| France Salvaille           | 2009               | Nathalie Tessier         | 2013                    | Sylvia Wees                 | 2010      |
| Marie-Odile Samson         | 2010               | Sophie Tessier           | 2014                    | Fredella Weil               | 2008      |
| Léo Sarrazin               | 2013               | Rachel Theoret-Gosselin  | 2007                    | Brian Wilson                | 2011      |
| Kathleen Sary              | 2008               | Alain Theriault          | 2005                    | Mona Wizenberg              | 2005      |
| Audrey Saumure Di Fruscia  | 2008               | Raphaëlle Thomas         | 2009-2010               | Alan Wongkee                | 2014      |
| Melissa Scerbo             | 2010               | Victor Thomasson         | 2008,2012               | Linda Wongkee               | 2014      |
| Helena Scheffer            | 2006-2007          | Dara Thompson            | 2010                    | Davis Wood                  | 2009      |
| Marylise Schmidt           | 2008               | Alexis Thorbecke         | 2009-2010               | Sarah Woods                 | 2007      |
| Brian Schmucker            | 2007               | <b>Elise Titman</b>      | 2011-2014               | James Young                 | 2006      |
| <b>Daniel Schmucker</b>    | 2007-2010          | <b>Rodger Titman</b>     | 2005-2014               | Ryan Young                  | 2009,2012 |
| Ted Scodras                | 2009               | Gijs van Tol             | 2005                    | Brigitte Zacharczenko       | 2008      |
| Luke Scott                 | 2006               | <b>Carine Touma</b>      | 2008-2009,<br>2012-2013 | Tim Zarins                  | 2011      |
| Charles Séguin             | 2010               |                          |                         | Tiera Zukerman              | 2011      |

## Appendix H: Seasonal occurrence of species

The table below summarizes the frequency of all species observed at MBO in each of the time periods throughout the year (weekly in spring and fall, monthly in winter and summer), based on data compiled from 2005 through 2014. The cumulative total number of species observed during each period is listed at the bottom of the chart; note that effort is much more standardized and extensive in spring and fall than in summer and winter, therefore species status estimates are likely to be most accurate during spring and fall. To date only 21 species (Cooper's Hawk, Red-tailed Hawk, Rock Pigeon, Mourning Dove, Downy Woodpecker, Hairy Woodpecker, Pileated Woodpecker, Blue Jay, American Crow, Common Raven, Black-capped Chickadee, White-breasted Nuthatch, American Robin, European Starling, Cedar Waxwing, Northern Cardinal, Song Sparrow, White-throated Sparrow, Red-winged Blackbird, House Finch, and American Goldfinch) have been observed during all time periods throughout the year. See Appendix D for the legend to spring (S) and fall (F) dates.

Legend:

|                      |                                                                                       |
|----------------------|---------------------------------------------------------------------------------------|
| <b>Very rare</b>     | Generally limited to one occurrence (single individual or flock) per period           |
| <b>Rare</b>          | Generally occurring in a period in at least two years, but with a mean daily count <1 |
| <b>Uncommon</b>      | Generally occurring in a period annually, with a mean daily count between 1 and 4.9   |
| <b>Fairly common</b> | Generally occurring in a period annually, with a mean daily count between 5 and 9.9   |
| <b>Common</b>        | Occurring in a period annually, with a mean daily count between 10 and 49.9           |
| <b>Abundant</b>      | Occurring in a period annually, with a mean daily count >50                           |

| Species | JAN | FEB | MAR | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | JUN | JUL | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | NOV | DEC |
|---------|-----|-----|-----|----|----|----|----|----|----|----|----|----|-----|-----|-----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| GWFG    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| SNGO    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| ROGO    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| ATBR    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| CACG    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| CANG    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| TUSW    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| WODU    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| GADW    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| AMWI    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| ABDU    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| MALL    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| BWTE    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| NSHO    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| NOPI    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| AGWT    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| RNDU    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| GRSC    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| LESC    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| USCA    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| WWSC    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| COGO    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| HOME    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| COME    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| RBME    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| RUGR    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| COLO    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| PBGR    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| NOGA    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| DCCO    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| AMBI    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| GBHE    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| GREG    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| GRHE    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| BCNH    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| TUVU    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| OSPR    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| BAEA    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| NOHA    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |







