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MIGRATION MONITORING AT

CABOT HEAD

SPRING 2011

*by*

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*prepared*

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BRUCE PENINSULA BIRD OBSERVATORY

June 2011

Table of Contents

Preface 3

Executive Summary 4

1.0 Methods 5

2.0 Season Summary 5

April 5

May 9

June 16

3.0 Unusual Records 17

4.0 Banding Data Analysis 18

4.1 Weather 23

4.2 Recaptures 24

4.3 Net Analysis 27

5.0 Mist net coverage 29

6.0 Personnel 29

7.0 Conclusion 30

Acknowledgements 31

Literature Cited 32

Appendix 33

Table 1. Banding totals of early migrant species in springs 2002 to 2011. 9

Table 2. Number of species banded in spring 2011 at Cabot Head Research Station. 20

Table 3. Total recaptures by species in relation with the year of banding. 28

Table 4. Banding totals of birds captured in spring 2002-2011 34

Table 5. Volunteer effort, spring 2011. 36

Table 6. Estimated Total of species observed in spring at Cabot Head Research Station 37

Figure 1. Daily and cumulative numbers of species of warblers detected at Cabot Head Research Station in spring 2011. 16

Figure 2. Weekly capture rates at Cabot Head Research Station for springs 22

Figure 3. Weekly number of banded birds at Cabot Head Research Station for springs. 22

Figure 4. Weekly proportion of realized mist net hours at Cabot Head Research Station for springs. 23

Figure 5. Daily number of captured and recaptured birds at Cabot Head Research Station, spring 2011. 23

Figure 6. Wind pattern at Cabot Head Research Station, spring 2011. 25

Figure 7. Capture rates per mist net for springs. 29

Figure 8. Coverage (in mist net hour) at Cabot Head Research Station, spring 2011. 30

**Citation:**

Menu, S. September 2011. Migration Monitoring at Cabot Head, Spring 2011. Unpublished report for Bruce Peninsula Bird Observatory

# Preface

Cabot Head is a promontory of the northeast headland of the upper Bruce Peninsula in south-central Ontario. Cabot Head Research Station (CHRS) is situated on the western side of Wingfield Basin (at 45°15’N, 81°18’W) near the community of Dyer’s Bay. In 2001, Cabot Head was designated as an Important Bird Area (IBA) by Birdlife International for its significant concentrations of migratory bird species (Cheskey and Wilson, 2001). Ontario Parks and Bruce Peninsula Bird Observatory (BPBO) manage Cabot Head Research Station.

 The Breeding Bird Survey (BBS) is the principle method for monitoring bird populations in the United States. However, breeding ranges of many species in northern Canada are inaccessible to roadside surveys and are therefore poorly monitored by the BBS method. The Canadian Migration Monitoring Network (CMMN) is a nation wide Bird Studies Canada initiative, enacted to assess changes in populations during migration. There are 21 stations across Canada where data are being collected for each bird species during the spring and fall migrations, typically through a standardized capture and observation protocol. Bruce Peninsula Bird Observatory has demonstrated through data collection since 1998 that Cabot Head is a significant site for monitoring migrating landbirds. In recognition of its importance and established migration monitoring effort, BPBO became a member of the CMMN in fall 2003.

Bruce Peninsula Bird Observatory was incorporated as a non-profit charitable organization in 2001 to initiate and direct ornithological assessments and monitoring at Cabot Head and surrounding areas.Migration monitoring has been the primary focus of bird research at Cabot Head since 1998. This document reports on results of the spring, 2011, migration monitoring season at Cabot Head Research Station.

# Executive Summary

 In this document are summarized the results of migration monitoring at Cabot Head in spring, 2011. Spring fieldwork began on April 17 and ended on June 10 for a total of 55 consecutive days of coverage. A total of 165 species were detected during the monitoring period. A total of 1,446 birds of 66 species were banded and 100birds of 23species were recaptured. Recapture data indicates that overall stopover rates at Cabot Head are low. Analysis of capture rate per net location indicates a large degree of variation associated with habitat characteristics.

The defining characteristic of spring 2011 was of a cool and wet weather throughout much of the season. There were very many periods of rain or strong winds during the monitoring period. As a consequence, there were many days without any banding (almost a day out of 5, for a total of 10) and only 32 days (58% of the monitoring period) with very good coverage (more than 80 mist net hours in a day for a potential of 90). Nonetheless, the banding total is the 4th highest in 10 years. Four species, Black-capped Chickadee, Ruby- and Golden-crowned Kinglets, and American Redstart, represent 40% of the banding total, with about 10% for each species. For most species, banding totals were around average compared to previous springs (see Appendix). There were 8 days with banding total over 50 birds, with the highest day for the spring being May 31 with 105 birds banded. On May 21, 99 species were detected – the highest diversity in spring of all years, beating the year-old record of 93! -, including 23 species of warblers. No new species were added to the BPBO checklist this spring.

The 2011 spring migration monitoring season was a success thanks to the efforts of the 8 volunteer field biologists who contributed their time to this project.

# 1.0 Methods

The migration monitoring program at Cabot Head like all CMMN stations follows a field protocol (established by Heagy et al, 2003, modified from Heagy 2002) as it is essential for the production of population indices that data collection be consistent over the long term. At Cabot Head Research Station, fifteen mist nets are operated for 6 hours commencing no later than 1 half hour before sunrise, weather permitting. Personnel also complete a census done for one hour along a fixed route starting an hour after sunrise, where all birds seen or heard are recorded. Supplemental surveys such as visible migration counts and bay watches are completed when circumstances permit, but casual observation occurs all throughout the count period of 7 hours.

# 2.0 Season Summary

## April

Fieldwork for spring migration monitoring began at Cabot Head Research Station on April 17 with 14 nets of the normal array set up. One net, C13, could not be put up as a massive snow bank occupied the lane! It was only on May1 that this net was set up, even though that still required some snow shoveling. Weather was mostly cold and cloudy, with frequent strong winds and periods of rain (and even a snowstorm on April 20! With the nets still frozen the following day, 2 days of banding were lost to the snowstorm). As a consequence, more than half of the potential net hours were lost in April: with only 44% of the potential mist net hours, it is the second-lowest of the 10 years of monitoring. In April, 90 species were detected (54% of the season total), of which 6 species were detected only this month. A daily average of 38 species were detected (range: 18 – 62 species seen on any given day, except for the snowstorm and rainstorm, with 8 and 6 species detected, respectively). Despite the poor conditions, a total of 385 birds of 25 species were banded in April (the 4th highest total). 70% of the total is composed of only three species: Golden-crowned Kinglets, with 33.5%, Ruby-crowned Kinglets, with 20%, and Brown Creepers, with 15.6%. High number of early spring migrants like Brown Creeper and Golden-crowned Kinglet were captured during these 2 weeks in April, indicating a later migration than usual, with birds being frequently blocked by bad weather. It is particularly striking for Golden-crowned Kinglet, as banding totals for this species can vary from highs of 431 (in 2009) or 129 (this spring) to lows of 50 (in 2010) or even 3 (in 2008)!

Weather was bad during the first week of monitoring, allowing for only 3 days of banding and very few birds were captured. With weather somewhat improving, conditions were better for migrants: 90 birds were banded on April 25 and a high of 104 birds were banded on both April 27 and 29.

Yellow-rumped Warblers, usually observed at the beginning, or shortly after, of the monitoring period, were detected for the first time only on April 20, with 20 individuals, after which this species was observed almost daily. Shortly afterwards, pine warblers were observed daily as well, with the first on April 24. On April 27, three new species on warblers were detected: Palm Warbler, Black-and-white Warbler, and, more unexpected, Yellow Warbler. It is the earliest date ever for a Yellow Warbler and this species was not observed again until May 12 this spring! In previous springs, dates of first arrival narrowly range from May 5 to 8. Surprisingly, the 6th warbler to be seen in April was a Black-throated Blue Warbler, on April 29, which is the earliest date ever at Cabot Head for this species. As for the Yellow Warbler, the next Black-throated Blue Warbler seen was much later, on May 9. In 2009, the first Black-throated Blue Warbler was detected on April 30 but in all other years, it was in early May (as early as May 2 and late as May 12). Finally, the last warbler to be detected in April was a Black-throated Warbler on the 30th.

As opposed to most years, there were no big movements of birds in April. It is usually a time when impressive numbers (with daily totals in the hundreds) of American Robins, Northern Flickers, Blackbirds (Common Grackles and Red-winged Blackbirds), and Yellow-rumped Warblers are commonly seen. This spring, however, numbers were quite small in comparisons: Maximum Estimated Totals were of 50 American Robins on April 21, 350 Common Grackles and 100 Red-winged Blackbirds on April 22, 100 Yellow-shafted Flickers, 100 American Crows, and 50 Myrtle Warblers on April 24 No single day in April was prominent in its migration. However, diversity was relatively good, especially on April 24 and 25, with 62 and 59 species respectively, as well as on April 30, with 56 species. A combination of several species of raptors, ducks, and blackbirds, among others, made for the good diversity of these days.

A steady flow of Sharp-shinned Hawk was noted throughout April, with daily Estimated Totals from 10 to 30, except during bad weather days. This flow continued well into May, changing into a huge burst on May 1, with an Estimated Total of 400 “Sharpies”! It was not unlikely, throughout this morning, to see up to a dozen of these little accipiters at once in the air! The strong passage this spring is reflected in the highest rate of captures in 10 years, with 34 individuals banded, almost twice as much as the average.

Bad weather conditions allowed for a poor to fair monitoring coverage in April as a depressing average of 44% of potential net hours were completed. Banding was not possible for 5 days (out of 15!), i.e. 30% of the time, and was fairly reduced for 3 extra days!

Waterfowl migration through the Great Lakes region typically peaks in March and April. As in the previous 5 springs, no big flocks of Long-tailed Duck (maximum of 10 ET on April 25) were observed this spring. Notably, almost all the observations were of ducks flying through: no birds rafting offshore as was seen earlier in the decade. Similarly, almost no Scoters were seen this spring, despite a good observation effort. Few Red-necked Grebes were seen off Cabot Head, whereas the Red-necked Grebe Survey reported numbers in the hundreds on Dyer’s Bay, albeit for only a few days (Don Douma, *pers. com*.). These discrepancies in observation probably result from difference in available food in waters separated by less than 10 km! Buffleheads and Common Goldeneyes were present in Wingfield Basin in relatively small numbers until early May (maximum DT of 20 Buffleheads on April 23, last individual seen on May 11. Surprisingly, a small flock of 13 was seen on May 7! Only 6 Common Goldeneyes at the maximum on April 19 but, like last year, a pair stayed on Wingfield Basin from mid-April to mid-May). Mergansers (a mix of migrants and residents) were observed throughout the entire spring (maximum ET of 14 Red-breasted on May 7 and June 10 and 13 Common Mergansers on May 29 and June 5). It is likely that the Mergansers seen later in the season are non-breeders or young: females, especially Common, are frequently observed investigating cavities – or the used Canada Goose’s nest! - in the shipwreck. This spring, after 5 faithful years, there was no Canada goose sitting on the shipwreck nest when we arrived. It was with sadness to realize that our “own” little goose pair would not raise any goslings this year. It is more than likely that Mother Goose died over the winter, as they are extremely faithful to their breeding site, especially such a safe and secure as this one. But nature is a constant cycle of death and life, of renewal, and already we observed this spring eager young goose couples investigating the shipwreck, not sure where to go and what to do yet. I am hopeful, though, that next spring, we’ll see again a goose sitting on eggs there, carrying on…

Early migrant species, such as Brown Creeper and American Tree Sparrow, have been caught in good numbers only in a few springs, most notably in 2007 and 2009 (Table 1). It is certainly the consequence of colder springs in early April in those years, as strikingly shown by the Golden-crowned Kinglet sex-ratio. Male Kinglets migrate earlier than females and are almost completely missed every spring at Cabot Head, with 3 to 5 times more females caught than males. Even in late springs like 2006 and 2007, twice as many females were captured than males. In 2011, Brown Creepers were captured in record numbers, even though other early migrants were not.

Table 1. Banding totals of early migrant species in springs 2002 to 2011.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Brown Creeper | American Tree Sparrow | Slate-colored Junco | Golden-crowned Kinglet | Ruby-crowned Kinglet |
| n | sex-ratio |
| 2002 | 6 | 5 | 65 | 6 | 0.2 | 79 |
| 2003 | 30 | 3 | 29 | 77 | 0.28 | 145 |
| 2004 | 10 | 2 | 20 | 36 | 0.2 | 74 |
| 2005 | 20 | 2 | 19 | 33 | 0.32 | 81 |
| 2006 | 45 | 6 | 46 | 186 | 0.48 | 228 |
| 2007 | 65 | 17 | 150 | 241 | 0.53 | 222 |
| 2008 | 8 | 6 | 45 | 3 | - | 65 |
| 2009 | 55 | 18 | 109 | 431 | 1.2 | 154 |
| 2010 | 12 | 1 | 15 | 50 | 0.04 | 61 |
| 2011 | 86 | 3 | 53 | 149 | 0.58 | 124 |

sex-ratio: number of males divided by number of females

## May

May is usually the busiest and certainly the most diverse month for spring migration, which was still true this year. In May, 156 species were detected (94% of the season total), of which 42 species were detected only this month. A relatively low daily average of 52 species were detected in May but with a wide range: a low of 21 species on May 14 during a rainy morning; a record high of 99 species on May 21! This huge variation is, in part, the reflection of very variable weather throughout the month of May. A total of 976 birds of 56 species were banded in May, with Black-capped Chickadees and American Redstarts the most common (13% and 12%, respectively, of the total), followed by Magnolia Warblers (7%), Ruby-crowned Kinglets and Black-and-White Warblers (5% for both). Numbers caught on any given day were very variable: a handful of “big days” (4 days account for about 34% of the monthly total), a few very slow days, and most days with 20 to 50 birds captured.

Relatively clement weather, although frequently overcast, allowed for an excellent coverage of migration monitoring during the first half of the month of May. Conditions were more variable in the second half, with frequent episodes of rain and/or of strong wind. In total, weather precluded part or all of banding on 6 and 3 days, respectively. Without any strong winds and rain occurring only on 2 days (starting a few hours after sunrise) during the first 2 weeks of May, a well above-average number of mist net hours were realized (87% of potential mist net hours, the second-highest in 10 years for this period). As a consequence, at least partially, a fair number of birds were captured during these 2 weeks, with a daily average of 30 birds banded (range: 5 – 56) for the first week; and an average of 36 (range: 3 – 88) for the second week. The weekly totals were well above average, notably for the first week of May: with 213 birds banded during this week, it is the third-highest total of the 10 years of monitoring!Early May is usually a slow period for migration, a transition between the early migrants (like Golden-crowned Kinglet and Slate-colored Junco) and the bulk of migration in mid-May. However, it was particularly busy this spring, with still a good numbers of early migrants, probably a consequence of the cold weather in April. For example, a surprising 26 Brown Creepers were banded during these 2 weeks (only 10 Creepers were banded during this same period of time in 2007, the second-best year for this species)! Although diversity of birds captured was high during these 2 weeks, Black-capped Chickadees made for 22% of the total, with 104 individuals. The other frequently captured, in decreasing orders, were: Ruby-crowned Kinglets, with 45 birds; White-throated Sparrows, with 35; Western Palm warblers, with 29; Black-and-white Warblers with 28… Surprisingly, more Sharp-shinned Hawks (16) were banded than Myrtle Warblers (13) during these 2 weeks!

On May first, a strong East wind made hundreds of raptors fighting their way to gain grounds. There was a constant stream of Sharp-shinned Hawks all morning: not a minute would pass without at least one popping in sight, more often than not accompanied by a few more. We could see 4 or 5 "sharpies" in a loose flock closing on the station, while at the same time, more would be over the bluffs... In total, we detected 216 Sharp-shinned Hawks with the Estimated total put at 400! It was a hawk festival: besides the small Sharp-shinned Hawks, there were a few "kettles" of Broad-winged Hawks, with the biggest being approximately of 50 individuals, "boiling" in the strong updrafts of the cliffs. Quite a few Red-tailed Hawks were also observed, as well as 2 Red-shouldered and one Rough-legged Hawks. The fast fliers, the falcons, were represented by one Merlin and one American Kestrel. There were also several Northern Harriers, most impressively the 5 individuals "loosely" together at dawn: it is possible that they were in the same roost around or at Cabot Head. And once again, the 2 young Golden Eagles were observed, soaring together over West Bluff or perched on it (see Case study in Unusual Records). With Turkey Vultures and Bald Eagles detected, we had 13 species of birds of prey that day, as well as new arrivals for the season: Eastern Kingbird and Solitary Sandpiper.

Diversity was good several days in the first half of May, with 64 (on May 7 and 13) and 66 (on May 8) species detected. There were constant new arrivals during first 2 weeks of May, as migrants finally made their way up the Bruce Peninsula. However, visible numbers of migrants, notably songbirds, were low and we did not experience any big “waves” of movement. Except, that is, for Black-capped Chickadees: there were several days with strong movements of flocks of Chickaddes, sometimes 50 at a times. It is, in part, reflected in the number of Chickadees banded this spring, which is the second-highest in 10 years, with 166 birds. It was certainly a small invasion, when large numbers of young Chickadees disperse over a large area in search of available territories to settle in. Usually, in a more “normal” spring, only between 6 and 16 chickadees are banded.

With the cold and frequent rain, the bird migration in the spring of 2011 did seem late and slow. However, having now 10 years of constant monitoring at Cabot Head allows for some perspective. For example, this spring, it seemed that we had to wait a long time to see two easily detected species, the Common Yellowthroat and the Ruby-throated Hummingbird. They arrived, respectively, on May 13 and in the afternoon of May 11. The average date of arrival, based on the past 9 years, is May 9 for the hummingbird (range: May 5 in 2010; May 15 in 2003) and May 12 for the yellowthroat (range: May 6 in 2002; May 18 in 2005). So, at least for these 2 species, we can say that spring 2011 was indeed a bit late but not that much. Of course, it will be interesting to extend the analysis to more species, linked with weather data.

The second half of May experienced more variable weather conditions, some precluding all or part of the banding: 3 days with rain and 5 days of strong wind! As a consequence, many mist net hours were lost and birds were captured in below-average numbers, especially the last week of May (despite having the highest banding daily total of the season). A total of 506 birds were banded during these 2 weeks, the most abundant being American Redstarts (109 individuals or 22% of the total), followed by Magnolia Warblers and Swainson’s Thrushes (48 and 40 birds, respectively, or 9 and 8%).

The second half of May started with cold temperatures, strong North wind or fog, and sometimes rain: all weather conditions that could put a halt to bird migration. Indeed, there were little movements during a few days, at a time of spring when it is usually peak migration. For example, on May 17, with rain further south, a strong North wind at Cabot Head and cool temperatures, birds were scarce: during census, only 17 species were detected, which could easily be the number of warbler species seen at this time of year! The following day, May 18, was also a slow morning: it rained during the night and it was foggy in the morning. Sometimes, these conditions “ground” lots of birds in nets and trees, but not this time. Migration was happening nonetheless, as new species were still arriving: Yellow-bellied Flycatchers, Warbling Vireos, Swainson’s Thrushes, Tennessee and Canada Warblers, and Indigo Buntings on May 18. On May 19, the fog was so dense that even the Gargantua, the shipwreck in Wingfield Basin, was barely visible. It also rained at the same time for almost all morning. There was no banding. However, in late morning, during a break in the rain, a big, mixed flock of warblers, with a few chickadees, was observed moving quickly in the trees. A total of 16 species of warblers was detected (number of individuals in brackets): Orange-crowned Warbler (1); Nashville Warbler (20); Chestnut-sided Warbler (4); Magnolia Warbler (4); Cape May Warbler (4); Yellow-rumped Warbler (90! A high number for this time of year); Black-throated Green Warbler (5); Blackburnian Warbler (9); Pine Warbler (2); Palm Warbler (24); Bay-breasted Warbler (1); Blackpoll Warbler (1; first of the season); Black-and-white Warbler (3); American Redstart (10); Ovenbird (3); Common Yellowthroat (2).

After almost a week of cold weather, the temperature warmed considerably on May 21, under clear sky and a light West wind. Not surprisingly, migration resumed fully: even if visible numbers were not impressive, there was a constant and very diverse flow of birds: 99 species were detected! It is the highest total ever-recorded in 10 years of migration monitoring at Cabot Head. It includes 23 species of warblers, with the first Wilson’s Warbler of the spring. Other first for the season are: Philadelphia Vireo; Scarlet Tanager; Olive-sided Flycatcher; Northern Cardinal (!); American Bittern (while opening nets). There were a lot of raptors as well during that morning: big kettles of up to 50 Broad-winged Hawks; several Red-tailed Hawks; one Red-shouldered Hawk and one Rough-legged Hawk; lots of Sharp-shinned Hawk; one Cooper’s Hawk and one Northern Goshawk, as well as one Peregrine Falcon.

Sometimes, the conditions are just right! It could be an overcast sky and an oncoming rainstorm that lure birds to stop flying and find shelter. And then, dawn comes, nets are open and birds quickly fill them! On the morning of May 22, it played out perfectly for Swainson’s Thrushes: on the first net check, at 5:45 AM, every single net but one had at least one Swainson’s Thrush in it. As day kept taking over night, more thrushes got caught, including the first Gray-cheeked Thrushes, but warblers and chickadees were also getting captured in interesting numbers. However, it all came to an abrupt halt at 7:15am, when rain, relentless rain, started to fall. It then rained all morning and early afternoon. So, at 8am, banding was done for the day: with 67 birds banded of 19 species, in 2 hours, it was the highest capture rate of the season. The total includes 26 Swainson’s Thrushes, more in that single morning than in an entire spring season for most of the other years (for example, a season total of 12 in 2003 or 27 in 2009).

At the end of May, birds were starting to establish territories, singing and chasing potential competitors and mates. Migration always slows down at this time of year, with only the late migrants moving through.

Weather continued to be extremely variable and changing fast: on May 26, it rained all day, with a north and cold wind! There was obviously no banding and the highlight of the day was a Bufflehead in the basin! The next day, on May 27, a roaring NE wind under a clear sky was whipping Georgian Bay and sending a shivering chill down our spines: it was certainly at or near the freezing point with the wind chill. Not surprisingly, there were very few birds around: 33 species detected and 10 birds captured (including the 3 recaptures). On May 28, there was a heavy fog all morning and a light East wind. Again, birds were not detected in high number (only 44 species, with 14 species of warblers); however, the fog probably hindered the ability of birds to see the nets, as we caught a satisfying 41 birds of 15 species and 8 recaptures of 4 species. American Redstarts, very abundant locally, were dominant, with some recaptures from previous years. On May 29, finally, the weather turned back to something approaching seasonal. The day started calm, clear, and warm. A strong south wind picked up in mid-morning, though. Diversity increased sharply with a total of 72 species detected, with 10 species of birds of prey (including Turkey Vultures). Amazingly, a young Golden Eagle was seen again (see Unusual records)! Big kettles of Broad-winged Hawks were seen as well. One Peregrine Falcon was seen as well. Rarely seen at Cabot Head, we had 2 Chimney Swifts! And there was a good push of the late migrants, like Flycatchers and some warblers: quite a few Yellow-bellied Flycatchers; one Mourning Warbler; the first Wilson’s Warbler; a handful of Canada Warblers. On May 30, the weather seemed to behave as if it was late spring, with warmth (although fog rolled in at some point this morning)! There was definitively a strong movement of migrants today, with a few waves of warblers, vireos, and flycatchers moving through. In total, 105 birds of 22 species were banded (seasonal highest) and 8 recaptures (of only 3 species)! It is just 2 individuals less than the best day of the season (April 29), when recaptures are included. The most abundant was the American Redstart, with 33 individuals banded and 6 recaptures (some from the previous fall or even 2 years ago). The overall diversity of warblers was very good, with 20 species. There were lots of Wilson’s Warblers (10 banded!), Magnolia (13 banded), quite a few Chestnut-sided (6 banded) and Canada (4). As Canada and Wilson’s Warblers, the few Mourning Warblers detected this morning are a late migrant, usually moving through here in late May, early June. A few Blackpoll Warblers, another late migrant, were detected, with a male being captured and banded. Aside from warblers, there was a good diversity of Flycatchers, with, actually, only the Eastern Phoebe missing from the list: An Olive-sided Flycatcher sang most of the morning, as well as An Eastern Wood-pewee; Yellow-bellied, “Traill’s”, and Least Flycacthers were present in significant numbers; Vireos seemed to be everywhere on that day, mostly Red-eyed Vireos, but also, quite a few Philadelphia Vireos (8 were detected), and a Blue-headed Vireo captured. Other surprises included an Eastern Towhee banded and a Clay-coloured Sparrow observed. Huge flocks of Blue Jays (up to 150) were observed throughout the morning (for an Estimated Total of 500). Cedar Waxwings were also streaming through in good-sized flocks all morning as well (Estimated Total of 250). At dawn, the American Bittern was calling. And a Common Nighthawk called once, as we were opening the nets. In those 2 days of good weather (May 29 and 30), a total of 92 species were detected.

Diversity increased rapidly in the first part of May as many species arrive at this time on the upper Bruce Peninsula, most notably Warblers. This spring, new species of warblers arrived in a constant flow, with no marked “bursts” or “waves”: almost every day brought one or two new species, especially after April 27 (Fig.1). The only notable break in arrival was from May 14 to 16: it was one day of rain followed by 2 days of cold and strong North wind, putting a serious halt in migration. On May 23, all but the Golden-winged Warbler have arrived.



Figure 1. Daily and cumulative numbers of species of warblers detected at Cabot Head Research Station in spring 2011. (PIWA: Pine Warbler; MYWA: Myrtle Warbler; WPWA: Western Palm Warbler; BAWW: Black-and-White Warbler; YWAR: Yellow Warbler; BTBW: Black-throated Blue Warbler; BTNW: Black-throated Warbler; NAWA: Nashville Warbler; OCWA: Orange-crowned Warbler; OVEN: Ovenbird; BLBW: Blackburnian Warbler; CMWA: Cape May Warbler; NOWA: Northern Warbler; CSWA: Chestnut-sided Warbler; AMRE: American Redstart; MAWA: Magnolia Warbler; BBWA: Bay-breasted Warbler; MOWA: Mourning Warbler; COYE: Common Yellowthroat; CAWA: Canada Warbler; TEWA: Tennessee Warbler; BLPW: Blackpoll Warbler; WIWA: Wilson’s Warbler; NOPA: Northern Parula; BWWA: Blue-winged Warbler; GWWA: Golden-winged Warbler)

## June

Changing weather still prevailed during the migration monitoring period in June, allowing variable coverage (30% of mist net hour were lost due to high wind and rain). In the 10 days of monitoring in June, 85 species were detected (56% of the season total) with 3 species added this month to the seasonal total (Northern Mockingbird, Red-headed Woodpecker, and Willow Flycatcher). A daily average of 40 species were detected (range: 29 – 57 species seen on any given day). In June 5 and 6, 56 and 57 species were detected, respectively, for a combined total of 80 species, a respectable diversity at this time of year. Partly because of the variable monitoring conditions, the total numbers of banded birds for June were the lowest since 2002. Only 85 birds of 27 species were banded with 33% of them being American Redstarts and 16% Black-capped Chickadees. Between 2002 and 2009, it is an average of 213 birds that are banded in June (there were only 2 days of banding in June 2010), with the highest total of 364 in 2003 (when banding was done up to June 15) and the lowest of 107 in 2007 (with banding up to June 9).

 This June, banding was not possible for 2 days due to high wind and was fairly reduced for 2 other days because of rain and wind. However, it was not very different that previous springs in terms of potential mist net hours. Besides previously cited American Redstarts and Black-capped Chickadees, the other species were captured in very small numbers: only 3 Red-eyed Vireos. In fact, only one individual was captured for 15 of the 27 species captured in June!

No big movements of large flocks of Canada Geese were seen this spring, with highest ET of only 250 on June 6. These late movements are a molt migration, when failed breeders and non-breeders go north to a remote location to molt their flight feathers all at once. Being then flightless and very vulnerable to predators, they find solace by being in large groups, close to a large body of water like James Bay, in areas with potentially less predators. Despite being common in late May and early June, the Red-eyed Vireo was typically caught in small numbers because of its high canopy feeding habits. During the last week of banding, the birds detected were mostly singing, establishing territories and building nests. Most males caught (especially American Redstarts) had a well-developed cloacal protuberance at this time. Some females had started to show a brood patch. Migration was finally slowing winding to a close, even though Traill’s and Yellow-bellied Flycatchers were still moving through.

# 3.0 Unusual Records

No new species was added for the Cabot Head area this year. However, 5 species never before detected in spring were observed this year. A small flock of 10 Bohemian Waxwing flew fast across Wingfield Basin on April 19. A young Northern Shrike was a big surprise, when it was found in net C15 on April 30. On May 4, one American Black Duck was seen flying across Wingfield Basin. On May 7 and 8, among a big flock of Black-capped Chickadees, a Boreal Chickadee was first heard and then seen! A female adult Summer Tanager was captured on May 10 and was seen every day until May 14 afterwards, shivering in the cold and trying to capture insects around the house (even pecking at windows to get at the spiders inside!). It was last seen wet early morning just before heavy rain started for the day. It is sadly likely that it perished during the storm.

On April 27, a pair of Gadwall was seen on Wingfield Basin and on May 4, it was an American Black Duck, 2 species of ducks rarely seen at Cabot Head. One adult Great Black-backed Gull was seen on May 10 and 19, a species detected almost every spring. For the first time since 2002, no Blue-gray Gnatcatchers were detected this spring. First seen in 2007, Wild Turkeys continue to affirm their presence at Cabot Head. However, this spring, they were true to their reputation of wariness, as only one individual was detected on April 25.

Eastern Towhees, a species not frequent at Cabot Head, were detected in April 27, May 12 and 30. Bobolinks were observed only on 3 days this spring, albeit with a high of 20 ET on May 11. A Red-bellied Woodpecker was seen or heard on 4 occasions on May 10, 13, 20, and 21. A Red-headed Woodpecker was seen on June 6. A Northern Mockingbird was seen on the second last day of monitoring, June 9. Since Cabot Head does not have good shorebird habitats (i.e. mudflats or sandy beaches), it was a treat to see a fast-flying Semiplamated Sandpiper on May 27. Chimney Swifts were seen only one day, May 29, with 2 individuals. Olive-sided Flycatchers were heard or seen on only 2 occasions in May 21, and 30. A Blue-winged Warbler was heard on May 23 and 25. One was captured, the second-ever since 2002, on May 31, the same day than a Golden-winged Warbler.

Bald Eagles were seen every single day of the monitoring period this spring, as a pair was breeding nearby. Thus, they are not considered unusual anymore. A few immature birds were also seen throughout the season, most notably 4 together in the afternoon of May 8.

**Case study: the regal Golden Eagle!**

 Every spring since 2003, Golden Eagles are seen at Cabot Head. It usually consists of a few sightings (from one to 6) but this spring was exceptional with 10 sightings of at least 4 different individuals! The first sighting of the spring was on April 17 with 2 immature individuals together. These 2 birds were seen on 5 other occasions, from April 24 to May 4, most of the time flying together or perched on the bluffs. One memorable evening, one of the Golden Eagles was perched with a young Bald Eagle in the same tree, as an adult Bald Eagle was perched close by in another tree!

 Based on differences in plumage, a different immature Golden Eagle was seen briefly on May 7. It was previously the latest date (in 2007) for Golden Eagle sighting. It thus came as a shock to see yet another Golden Eagle on May 24 and 28. There is no way to know if it was the same individual or not in these 2 observations.

Since 2003, Golden Eagles have been mostly immature but one adult was seen in spring 2004. Likewise, one adult was seen with an immature on April 15, 2007 (before the “official” monitoring begins). Golden Eagles have been seen only 3 times in fall, all in October: in 2002, 2004, and 2010. It is possible that the fall migration of Golden Eagle occurs mostly after October, when monitoring at Cabot Head stops.

With these regular sightings in spring at Cabot Head, the Bruce Peninsula seems to be an important place for migrating Golden Eagles in Ontario. Given the limited breeding population in the province (10 to 20 pairs), even a few sightings of this species are significant and greatly improve our understanding of its migration and wintering patterns. For example, one adult Golden Eagle was observed at the Slough of Despond in the winter of 2007 (Jackie Lamport, Stéphane Menu).

# 4.0 Banding Data Analysis

Spring 2011 has the 4th banding total since migration monitoring started in its present form in 2002 with 1,446 birds banded of 66 species. Despite the bad weather, it is thus an average spring, both for number of banded birds and diversity, although there is great variation between years. The record spring of 2002 still holds, with 2,305 birds banded, more than twice the lowest years (1,145 both in 2008 and 2010).

Only 4 species, Ruby- and Golden-crowned Kinglets, American Redstart and Black-capped Chickadee, account for 40% of the banding total. Typically, only a few species are captured in numbers over 50 individuals while most species are banded in low to very low numbers (Table 2).

Table 2. Number of species banded in spring 2011 at Cabot Head Research Station according to their banding total.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Banding total | 1 - 10 | 11 – 50 | 51 – 100 | 101 – 200 |
| Number of species | 39 | 19 | 4 | 4 |

Most species have been banded in average numbers this year. Only a few species have been banded in record low numbers, most notably White-crowned Sparrows with only 4 individuals! Very few numbers of this conspicuous species were observed as well, indicating that they must somehow have avoided Cabot Head this spring. Other species in record low numbers are: Myrtle Warbler, with a scant 21 individuals, Ovenbird, and American Redstart. This latter was still abundant, reflected in the 146 individuals banded. However, it still almost twice as less than the record in 2009. Only 3 species, Sharp-shinned Hawk, Brown Creeper, and Swainson’s Thrush, reached a record number.

Numerous variables could affect the capture rates: population dynamics, weather conditions during migration, vegetation changes at the site, food availability, etc. As was noted in the 5-year report (Menu, 2007) local weather conditions have a major influence on migration patterns at Cabot Head. Pattern of capture rates and captures are obviously strongly influenced by the handful of species caught in high numbers and thus reflect more the pattern of these species.

Capture rates varied greatly on a weekly basis (Figure 2). The capture rate is determined by dividing the number of birds caught in a net, or a group of nets, by the number of hours for which the net or nets were operated. Thus, variation in capture rate reflects variation in those two parameters, which are themselves dependent upon various conditions (weather being the major one). Mist net hours are primarily lost when weather conditions (i.e. rain or strong wind) are unsafe to birds in nets, forcing net closure. Spring 2002 is not included in the average as this season was highly unusual in terms of capture. In spring 2011, weekly capture rates were very variable, with some well below or above average. The most dramatic variation occurred in April: The capture rate was at one of its lowest ever experienced during the first week of monitoring, from April 16 to 23. Then, it rose dramatically to the highest ever recorded for the week April 24 to 30 (with about 0.87 bird per mist net hour on average for the 7 days). For the rest of the season, capture rate was mostly at or below average, except in the weeks of May 1 to 7 and May 29 to June 4, when it was well above average.

Weekly numbers of banded birds were well below average for half of the weeks and well above average for the remaining half (Figure 3). The first week of monitoring is extremely variable: many birds can be missed if it is an early spring and many mist net hours can also be lost due to bad weather. Weekly banded totals for this week has ranged from 15 in 2004 to 640 in 2009. With 42 birds banded during this week in 2011, it is the second-lowest total ever. It should be noted, though, that only 3 days of banding were possible during this week of bad weather. Maybe as a consequence of the blocked migration, the following week has the second-highest ever number of birds banded, with 343 birds. The first 2 weeks of May also experienced higher than average numbers of banded birds, although not record breaking: excluding the exceptional spring of 2002, these numbers are nonetheless the second-highest (after spring 2007). Ironically, the second half of May, birds were banded in the second-lowest numbers ever! In the week between May 29 to June 4, birds were banded in above average number but it was followed by the lowest-ever number for the last week of monitoring (with only 58 birds). The large variation in numbers of birds banded in any given week is an expression of the fickleness of both weather and migration.

In spring 2011, 67% of the potential mist net hours were realized, compared to 58% to 92% for the other springs. Weather conditions were not very favorable in spring 2011 for banding. Rain, snow, and/or wind stopped banding on 10 days, almost 20% of the time. Banding operation were greatly affected for another 10 days by bad weather, resulting in less than half the potential mist net hours realized. Thus, weekly variations in mist net hours were relatively important this spring, from a low of 31% in the first week of monitoring to a high of 86 and 88% in the first 2 weeks of May (Figure 4). Daily numbers of banded birds at Cabot Head show extreme fluctuations, reflecting weather conditions and, at least to some extent, the high variability in volume of migrants aloft (Figure 5).



Figure 2. Weekly capture rates at Cabot Head Research Station for springs (2002, average 2003-2008 and 2011). Error bars show Standard Deviation.



Figure 3. Weekly number of banded birds at Cabot Head Research Station for springs (2002, average 2003-2008 and 2011). Error bars show Standard Deviation.



Figure 4. Weekly proportion of realized mist net hours at Cabot Head Research Station for springs (average 2002-2007 and 2011). Error bars show Standard Deviation.



Figure 5. Daily number of captured and recaptured birds at Cabot Head Research Station, spring 2011.

# 4.1 Weather

As mentioned earlier, the weather was extremely variable this spring, but usually cold and wet. The notable characteristics of the spring were many periods of precipitation and/or strong winds. There were 10 days with recorded precipitation, sometimes heavy and lasting all day, during the count period, with 2 more days of rain occurring in afternoon and/or evening. Spring 2011 was one of the wettest springs with precipitation above average for every month, but especially in April (94% above average!) and June (45%) (data from Bill Caulfeild-Browne). Periods of high wind also occurred very frequently this spring, mostly in the second half of the season: there were 20 days with storm-force winds (5 or more on the Beaufort scale)! These strong winds did not last all the time during the entire morning but they nonetheless affected banding operations, as nets in their paths had to be closed.

Weather has undoubtedly a major effect in migration. Because local bad weather impairs banding, it has a confounding effect. However, the monitoring done through census and casual observation show that migration is usually slowed or halted during bad weather conditions. Rain has a well-documented adverse effect on migration, grounding most migrants. The highest numbers of captures tend to occur on days following rain or fog.

With rain, wind is a major factor that influences migration. It is difficult to accurately quantify such a dynamic component of the weather, especially because wind strength and direction are recorded only at the start and end of the count period. To characterize wind strength (on the Beaufort scale) and direction, we considered only the strongest wind during the count period of 7 hours. Undoubtedly, this method would tend to over-represent strong winds. However, strong winds affect migration tremendously and their effect could probably be felt before they develop into a full windstorm. This spring, strong winds (at least 5 on the Beaufort scale) occurred on 20 days (36% of the season), almost half of them from the south. Another third of the season experienced moderate wind (3 to 4 on the Beaufort scale). Therefore, most of the monitoring period experienced strong or moderate winds. It is also noteworthy that winds were from the east for almost 30% of the time (Figure 6).



Figure 6. Wind pattern (strength on the Beaufort scale, direction and proportion of time) at Cabot Head Research Station, spring 2011.

# 4.2 Recaptures

The rate of recapture (recaptures include birds banded within the spring season and birds from previous years or other locations) at Cabot Head was moderately highin spring 2011. There were a total of 150 recaptures for one hundred individuals of 23 species from April 22 to June 7. Most of these birds (74 out of 100 individuals, i.e. 74% - of course!) were recaptured only once and 17% more were recaptured just twice. All but one of the 6 birds recaptured 4 times or more were American Redstarts, being certainly locally breeders at Cabot Head. The exception was a White-throated Sparrow recaptured 4 times. It was first captured on May 4, weighing 24.7 grams, then recaptured between May 5 and 18, with a weight increasing to 26g on its last recapture. Besides American Redstarts, the low rate of multiple recaptures demonstrates that birds are not heavily using this site as a stopover location for rest and refueling in the spring.

Even if recapture happened throughout the season, the majority of them occurred in two distinct periods, early and late in season (Figure 5), corresponding, respectively, at the passage of the Kinglets and the arrivals of the American Redstarts. Between April 28 and May 6, there were 55 recaptures, mostly of Golden- and Ruby-crowned Kinglets (all of them banded in 2011). Recaptures picked up again in late May: Between May 28 and June 8, there were 48 recaptures, mostly, this time, of American Redstarts. Once again, this species made the bulk of the late season recaptures, with 25 individuals (which also represents 25% of the season total of recaptures); being a locally abundant breeder increases the chance for this species to be captured often in our nets.

Of the 25 American Redstarts recaptured this spring, only 6 were newly banded (i.e. from spring 2011) and 13 were banded in the previous fall of 2010. The oldest recaptures this spring are of an American Redstart banded as a “second-year” female in spring 2008 (thus 4 year old) and an American Redstart banded as an “After-hatch-year” male in fall 2008 (thus at least 4 years old). Age and sex composition of recaptured American Redstarts differs greatly from the one of newly captured individuals (Figure 7). While only 14% of newly captured birds this spring are After-Second-Year males, they represent 40% of recaptured birds banded in previous years. Of the 15 recaptured Redstarts that were banded in fall 2010, 53% of them are ASY while adults made up 16% of the banding total in fall 2010. It is both an indication of the adult faithfulness (especially of males) to their breeding site at Cabot Head and the higher mortality rate of young birds. Interestingly, when newly banded birds are combined with recaptured birds from previous years, the sex-ratios are balanced equally among age classes (Figure 7). there are a disproportionate number of SY males banded in spring 2009 being recaptured throughout the season. It is possible that those young males trying to establish territories of their own, which involve chasing potential rivals, are thus more active and prone to being caught more as a consequence.



Figure 7. Age and sex composition of captures and recaptures (according to time of capture) of American Redstarts at Cabot Head in spring 2011 (sample sizes on top of bars).

This spring, as in most springs, a majority of recaptures came from birds banded during the same season (75%). The most recaptured species this spring was the American Redstart, with 25% of all recaptures. Birds banded in previous years and recaptured in the spring were local resident breeders, such as American Redstarts (18 in total, banded in 2008 and 2010), 2 Red-eyed Vireo from fall 2009, and one Black-capped Chickadees originally banded in spring of 2010. In all, 23 birds of 5 species previously banded at Cabot Head were recaptured. In addition, there was one “foreign” recapture of an American Redstart (Table 3).

Table 3. Total recaptures by species in relation with the year of banding. (Only one recapture per individual is included and within-season recaptures are excluded)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Species** | 2008 | 2009 | 2010 | unknown | **Total** |
|  | S | F | S | F | S | F |  |
| Red-eyed Vireo |  |  |  | 2 |  |  |  | 2 |
| Black-capped Chickadee |  |  |  |  | 1 |  |  | 1 |
| Magnolia Warbler |  |  |  |  |  | 1 |  | 1 |
| Black-throated Green Warbler |  |  |  |  |  | 1 |  | 1 |
| American Redstart | 1 | 1 |  |  | 3 | 13 | 1 | 19 |
| **Total Recaptures** | 1 | 1 |  | 2 | 4 | 15 | 1 | 24 |
| **Species Total** | 1 | 1 |  | 1 | 2 | 4 | 1 | 5 |

S: spring; F: fall.

#

# 4.3 Net Analysis

Mist net locations at Cabot Head have been permanently set in place and any changes to this array will have to be carefully considered with respect to protocol and existing data sets. The standard net array in spring, 2011 has not been changed since 2002 and is located primarily in forest edge assemblages although 2 nets are operating in relatively open, shrub habitat (A1-2). As has been the pattern, there was a significant amount of variation in capture rates for each net (Figure 7). The five nets with the highest capture rate (A1 & 2, C13, B9 and C15, in decreasing order) were scattered throughout the net array but with the best nets located in or close to the shrubby areas. The least productive nets this spring were the usual ones (from the least productive up: A5, C11, B6, B8, and C12). As per usual, captures were concentrated in a few nets this spring, as the five best nets accounted for 60% of the total capture (and the bottom 5 only 14%). Almost all nets have capture rates around average, except for A1&2 and – especially – C13, which have higher than average capture rates. As noted in previous years, Black-capped Chickadees get caught in disproportionate numbers in C13. With a small invasion of this species occurring this spring, it is no exception: 60% of birds captured in C13 were Black-capped Chickadees, representing 37% of the total of captures of this species. It is even more remarkable given that C13, being close to Georgian Bay, is frequently closed due to wind: this spring, it accounted for only 5% of the total of mist net hours realized.



Figure 7. Capture rates per mist net for springs (average 2003-2008 and 2011).A1-C15 are net codes referring to specific net locations.

# 5.0 Mist net coverage

Due to frequent bad weather, a third of mist netting coverage (in hours) was lost. This spring, there were an above-average number of days with no or very limited coverage (20 out of 55, i.e. 36%) (Figure 8). Only 20 days of complete mist net coverage were possible, the third lowest since 2003. Due to the density of habitat at Cabot Head, at least a portion of the nets can usually be operated on windy days. Nevertheless, a strong south wind has the potential of affecting all nets, especially early in season when the leaves are not yet out.



Figure 8. Coverage (in mist net hour) at Cabot Head Research Station, spring 2011.

# 6.0 Personnel

Eight volunteers contributed 85 person-days to the spring migration monitoring season (see Table 5 in Appendix). Even though the number of person-days was low this spring, we were fortunate to have mostly very experienced and dedicated volunteers. It is worth noting that 6 of the 8 volunteers were returning volunteers!

# 7.0 Conclusion

Despite a cold and wet spring, bird migration monitoring was done daily from April 17 to June 10, thanks notably to a dedicated team of volunteers. This spring marks a major milestone for the Bruce Peninsula Bird Observatory, as it was its 10th year of monitoring! We have now sufficient data to start exploring issues like population trends but also to provide a more detailed and precise picture of bird migration on the Bruce Peninsula.

As always with nature, this spring brought its share of surprises, like the Northern Shrike captured (a first for the spring season), or the lingering Golden Eagles. Being present every day during the spring (and the fall as well) is the key in not missing any unusual events, as migration is a highly variable phenomenon. It is paramount to monitor daily in order to get first sightings, big “waves”, and so on. This spring seemed “strange”: some species were detected extremely early compared to previous years (for example, the first Yellow warbler was seen on April 27, more than a week earlier than the previous earliest date!), while, at the same time, early migrants were still detected in significant numbers late in the season (i.e. Brown Creepers in May). Some species seemed to have shunned Cabot Head altogether, like White-crowned Sparrows, barely observed and even less banded this spring. Interesting “relationships” were also observed: for example, a Bald Eagle was seen twice feeding on a Double-crested Cormorant! The second time, the eagle caught the cormorant over Georgian Bay, and then, laden with its prey, it had to swim back to shore and safety. It was a sight I will never forget! The presence of a top predator like the Bald Eagle is certainly re-shaping the complex web of life. Once, as the Bald Eagle let go of a big fish in Wingfield Basin (after eating its fill), a crow grabbed the fish and tried to haul it on shore but an otter was quicker and snatched the fish from the unlucky crow. It swam some distance to go in the woods in order to peacefully enjoy its meal.

Cabot Head is such an amazing place to experience and share the beauty of Nature. Many groups and visitors were delighted to see banding up-close and to simply spend some time fully immersed in nature.

# Acknowledgements

 As a non-profit, volunteer-based initiative, the Bruce Penins ula Bird Observatory would not be operable without the overwhelming support of its membership, financial supporters and volunteers. BPBO wishes to thank Ontario Park and Parks Canada (Bruce National Park), for their continued support.

The author wishes to thank all the members of the Bruce Peninsula Bird Observatory, as well as Bob Lesperance of Ontario Parks for their support during the field season. I would also like to commend the 8 volunteers who helped make the field season efficient and enjoyable. A special thank to Bill Caulfield-Browne for his weather data.

# Literature Cited

Badzinski, D.S. and C.M. Francis. 2000. *An evaluation of species coverage by the Canadian Migration Monitoring Network*. Unpublished report by Bird Studies Canada.

Beheler, A.S., O.E. Rhodes, and P.W. Jr. Harmon. 2003. Breeding site fidelity in Eastern Phoebes (Sayornis phoebe) in Indiana. The Auk 120(4): 990-999.

Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier (eds.). 2007. Atlas of the breeding birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, xxii+706pp.

Cheskey, E.D. and W.G. Wilson. 2001. *Cabot Head Important Bird Area Conservation Plan*. Can. Nature Fed., Bird Studies Canada., Fed. Of Ont. Naturalists. 32 pp.

Derbyshire, D. G. July, 2002. Migration Monitoring at Cabot Head, Spring 2002.Unpublished report for Bruce Peninsula Bird Observatory

Heagy, A., E.D. Cheskey, and D. G.Derbyshire. March 2003. *Migration Monitoring at Cabot Head Research Station, Cabot Head, Ontario: Recommended Protocol for Monitoring Small Landbirds.*

Heagy, A.. April 2002. *Migration Monitoring at Cabot Head Research Station, Cabot Head, Ontario: Recommended Protocol for Monitoring Small Landbirds*.

Heagy, Audrey. January 2000*. Landbird Migration Monitoring at Cabot Head, Ontario, 2001*. Unpublished report by Bruce Peninsula Bird Observatory.

Hussell, D.J.T. and C.J.Ralph. *Recommended Methods for Monitoring Bird Populations by Counting and Capture of Migrants*. Report of Intensive Sites Technical Committee of the US/Canada Migration Monitoring Council.

Menu, S. June, 2003 to 2009. Migration Monitoring at Cabot Head, Spring 2003 to 2009. Unpublished report for Bruce Peninsula Bird Observatory

Menu, S. 2007. Bird Migration Monitoring at Cabot Head: The First Five Years (2002-2006). Report for Bruce Peninsula Bird Observatory

# Appendix

Table 4. Banding totals of birds captured in spring at Cabot Head Research Station, 2002-2011

|  |  |  |  |
| --- | --- | --- | --- |
| Species | Spring |  |  |
| 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
| American Woodcock |  |  |  |  |  |  | 1 | 1 |  |  |
| Sharp shinned Hawk | 29 | 20 | 12 | 10 | 14 | 16 | 22 | 14 | 24 | **34** |
| Merlin |  |  |  |  |  |  | 1 |  |  |  |
| Black-billed Cuckoo | 1 |  |  |  |  | 2 | 4 | 2 |  |  |
| Yellow bellied Sapsucker |  | 1 |  | 2 |  | 2 |  | 5 | 1 | 2 |
| Hairy Woodpecker |  |  |  | 1 |  |  |  | 2 | 3 |  |
| Yellow-shafted Flicker | 1 | 1 |  | 8 | 4 | 12 | 6 | 5 | 5 | 4 |
| Intermediate Flicker |  |  |  |  | 1 |  |  |  |  |  |
| Pileated Woodpecker |  | 1 |  | 1 |  |  |  |  | 1 | 1 |
| Whip-poor-will |  |  |  | 1 |  |  |  |  |  |  |
| Eastern Wood-Pewee |  | 8 | 1 | 2 | 1 |  | 2 | 3 | 1 |  |
| Yellow-bellied Flycatcher | 15 | 22 | 17 | 22 | 7 | 10 | 5 | 20 | 4 | 16 |
| Traill's Flycatcher | 14 | 13 | 11 | 18 | 13 | 6 | 26 | **32** | 31 | 16 |
| Least Flycatcher | 9 | 17 | **22** | 20 | 8 | 14 | 12 | 16 | 11 | 13 |
| Eastern Phoebe | 5 | 2 | 3 | 4 | 4 | 3 |  | **10** | 1 | 3 |
| Great-crested Flycatcher |  |  |  |  |  |  |  |  | 1 |  |
| Northern Shrike |  |  |  |  |  |  |  |  |  | 1 |
| White-eyed Vireo |  |  | 1 |  |  |  |  |  |  |  |
| Blue-headed Vireo | 6 |  |  | 1 | 3 | 4 | 4 | **5** | 7 | 4 |
| Philadelphia Vireo | 2 | 2 |  | 1 |  |  | 4 | **6** | 1 |  |
| Warbling Vireo | 3 |  |  |  |  | 1 |  | 1 |  |  |
| Red-eyed Vireo | 10 | 14 | 14 | 10 | 15 | 13 | **25** | 12 | 9 | 14 |
| Blue Jay | 13 | 21 | **88** | 16 | 14 | 28 | 62 | 24 | 11 | 10 |
| Tree Swallow |  |  | 1 |  |  |  |  |  |  |  |
| Barn Swallow | 1 | 1 |  | 2 |  |  |  |  |  |  |
| Black-capped Chickadee | **342** | 6 | 14 | 6 | 22 | 10 | 76 | 9 | 16 | **166** |
| Red-breasted Nuthatch | **17** | 1 | 2 | 2 | **17** | 2 | **17** | 5 | 2 | 9 |
| Brown Creeper | 6 | 30 | 10 | 20 | 45 | 65 | 8 | 56 | 12 | **86** |
| House Wren | 2 |  |  | 2 | 1 | 2 |  | 1 |  | 1 |
| Winter Wren | 2 | 2 | 3 | 1 | 2 | 1 | 3 | 2 | 2 |  |
| Golden-crowned Kinglet | 6 | 77 | 36 | 33 | 186 | 241 | 3 | **431** | 50 | 149 |
| Ruby-crowned Kinglet | 79 | 145 | 74 | 81 | **228** | 222 | 65 | 154 | 61 | 124 |
| Blue-gray Gnatcatcher | 1 |  |  |  |  |  |  |  |  |  |
| Veery | 1 | 4 | **22** | 6 | 21 | 12 | 5 | 7 | 10 | 12 |
| Gray-cheeked Thrush | 1 | 2 | 5 | 4 | 1 | 3 | 1 | 4 | 8 | 6 |
| Swainson's Thrush | 13 | 12 | 21 | 27 | **42** | 18 | 14 | 27 | 29 | **43** |
| Hermit Thrush | 8 | 14 | 6 | 16 | 12 | **21** | 18 | 12 | 14 | 11 |
| Wood Thrush | 1 | 1 | 1 | 2 | 4 | 3 | 2 | 2 | 5 | 2 |
| American Robin | 8 | **15** | 5 | 6 | 10 | 12 | 3 | 5 | 6 | 5 |
| Gray Catbird | 11 | 16 | 11 | 16 | **18** | 9 | 14 | 7 | 13 | 8 |
| Northern Mockingbird |  |  |  | 1 |  |  |  |  |  |  |
| Brown Thrasher | 3 | 7 | 7 | 8 | 6 | 2 | **12** | 8 | 7 | 3 |
| Cedar Waxwing |  | 4 |  | 2 | 7 |  |  | **21** |  |  |
| Blue-winged Warbler | 1 |  |  |  |  |  |  |  |  | 1 |
| Golden-winged Warbler | 3 |  | 1 |  |  |  |  | 1 |  | 1 |
| Tennessee Warbler | 6 | 1 |  |  | 1 |  | 1 | 2 |  |  |
| Orange-crowned Warbler | **29** | 5 | 8 | 8 | 6 | 23 | 11 | 4 | 4 | 6 |
| Nashville Warbler | **227** | 61 | 18 | 49 | 34 | 37 | 24 | 23 | 33 | 41 |
| Northern Parula | 3 | 9 |  | 1 |  | 1 |  | 1 | 1 | 1 |
| Yellow Warbler | **22** | 16 | 8 | 4 | 11 | 7 | 12 | 13 | 9 | 4 |
| Chestnut-sided Warbler | **26** | 20 | 14 | 12 | 12 | 12 | 8 | 13 | 21 | 16 |
| Magnolia Warbler | **184** | 144 | 109 | 116 | 81 | 121 | 63 | 73 | 83 | 73 |
| Cape May Warbler | **9** | 1 |  | 2 | 8 | 6 |  | 2 | 3 | 1 |
| Black-throat. Blue Warbler | 36 | **64** | 21 | 19 | 29 | 23 | 20 | 26 | 25 | 27 |
| Myrtle Warbler | **244** | 68 | 49 | 28 | 34 | 111 | 27 | 27 | 31 | **21** |
| Black-thr. Green Warbler | **38** | 27 | 25 | 15 | 25 | 27 | 17 | 27 | 19 | 22 |
| Hermit Warbler |  | 1 |  |  |  |  |  |  |  |  |
| Blackburnian Warbler | **13** | 4 | 2 | 5 | 3 | 3 |  | 2 | 11 | 3 |
| Pine Warbler | **4** | 1 | 2 | 1 | 1 | 3 |  | 2 |  | 4 |
| Western Palm Warbler | **216** | 61 | 55 | 38 | 42 | 145 | 52 | 64 | 49 | 52 |
| Bay-breasted Warbler | **11** | 1 | 1 | 3 | 3 | 8 |  | 1 | 7 |  |
| Blackpoll Warbler | **4** | 4 | 1 | 1 | 3 | 3 | 1 |  | 2 | 1 |
| Black-and-White Warbler | **78** | 72 | 45 | 42 | 43 | 49 | 31 | 57 | 55 | 49 |
| American Redstart  | 204 | 171 | 223 | 152 | 197 | 147 | 195 | **273** | 190 | **146** |
| Worm-eating Warbler |  |  | 1 |  |  |  |  |  |  |  |
| Ovenbird | 37 | 27 | 26 | **40** | 31 | 29 | 19 | 38 | 30 | **19** |
| Northern Waterthrush | 2 | 3 | 2 | 7 | 5 | 6 | 1 | 2 | 13 | 5 |
| Connecticut Warbler |  |  |  |  | 1 |  |  |  |  |  |
| Mourning Warbler | 14 | 12 | 11 | 9 | 11 | 6 | 7 | **17** | 8 | 9 |
| Common Yellowthroat | 56 | **60** | 45 | 49 | 27 | 23 | 35 | 51 | 34 | 24 |
| Hooded Warbler | 1 |  |  |  |  |  |  |  |  |  |
| Wilson's Warbler | **32** | 25 | 20 | 16 | 11 | 17 | 21 | 19 | 11 | 12 |
| Canada Warbler | 19 | **24** | 22 | 13 | 19 | 16 | 11 | 21 | 17 | 16 |
| American Tree Sparrow | 5 | 3 | 2 | 2 | 6 | 17 | 6 | **18** | 1 | 3 |
| Chipping Sparrow | **47** | 14 | 17 | 19 | 16 | 10 | 7 | 13 | 15 | 7 |
| Clay-colored Sparrow | 2 |  |  | 1 |  |  |  |  |  |  |
| Field Sparrow | 1 |  |  | 1 | 3 | 2 |  | 1 | 1 |  |
| Savannah Sparrow | 1 | 3 | 1 | 1 | 4 | 4 | 2 | 1 | 2 |  |
| Fox Sparrow | 2 | 2 |  | 1 | 1 | 3 | 1 | 4 | 1 | 1 |
| Song Sparrow | 12 | 19 | 9 | 8 | 15 | 15 | 10 | **26** | 4 | 9 |
| Lincoln's Sparrow | 17 | 10 | 11 | **25** | 13 | 21 | 13 | 7 | 7 | 9 |
| Swamp Sparrow | 3 | 4 | 6 | 6 | 3 | 3 | 6 | **9** | 4 | 7 |
| White-throated Sparrow | 71 | 26 | 26 | **91** | 47 | 57 | 68 | 73 | 64 | 48 |
| E. White-crowned Sparrow | 17 | 19 | 14 | **69** | 39 | 38 | 20 | 19 | 15 | **4** |
| Slate-colored Junco | 69 | 25 | 20 | 19 | 46 | **150** | 45 | 109 | 15 | 53 |
| Eastern Towhee |  |  | 2 | 1 | 1 |  |  | 2 |  | 1 |
| Northern Cardinal  | 1 | 1 |  | 1 |  | 1 |  | 2 | 1 |  |
| Rose-breasted Grosbeak | 1 | 4 | 3 | 2 | 6 | 1 | 4 | **6** | 6 |  |
| Indigo Bunting | 3 | 1 | 5 | 4 |  | 3 | 3 | **6** | 5 | 2 |
| Rusty Blackbird |  |  |  |  |  |  | 1 |  |  |  |
| Common Grackle |  |  | 1 |  |  |  |  |  |  | 1 |
| Red-winged Blackbird |  |  |  |  |  |  | 1 |  |  | 1 |
| Brown-headed Cowbird |  |  |  |  |  |  |  | 1 |  |  |
| Baltimore Oriole | 8 | 2 |  |  | 2 |  |  |  |  |  |
| Purple Finch |  | 3 |  |  |  | 3 |  | 2 |  | 1 |
| Pine Siskin | 1 |  |  |  |  | 1 |  | **3** |  |  |
| American Goldfinch | 41 | 4 | 1 | 1 | 2 | 5 | 1 | 1 | 2 | 1 |
| Total (without Chickadees) | 2089 | 1475 | 1200 | 1228 | 1526 | 1881 | 1084 | 1962 | 1112 | 1290 |
| Total (with Chickadees) | 2431 | 1481 | 1214 | 1234 | 1548 | 1891 | 1160 | 1971 | 1145 | 1446 |
| Species Total | 74 | 69 | 61 | 73 | 66 | 67 | 61 | 75 | 66 | 66 |

**Bold**: Record **high** (period 2002-2011); species name highlighted in red

Record low (period 2002-2011): species name highlighted in dark blue

Data: for 2002: Derbyshire, 2002; for years 2003-2009: Menu, 2003-2009

Blue-w.x Golden-w.Warbler: Hybrid of Blue-winged and Golden-winged Warbler

Black-throat. Blue Warbler: Black-throated Blue Warbler

Black-thr. Green Warbler: Black-throated Green Warbler

E. White-cr. Sparrow: Eastern White-crowned Sparrow

Table 5. Volunteer effort, spring 2011.

|  |  |  |
| --- | --- | --- |
| **14+ Days** | **4-14 Days** | **1-3 Days** |
| Kate Prince | Theresa McKenzie | Don Douma |
| Maggie McNeil | Glenn Reed |  |
| Bill McMartin | Katherine StJames |  |
|  |  |  |

Table 6. Estimated Total of species observed in spring from 2002 to 2011 at Cabot Head Research Station (by decreasing yearly frequency of observation as expressed by number of years when the species was detected, starting with species observed in 2011)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | Freq. |
| Blue Jay | 3383 | 2233 | 6934 | 5115 | 5549 | 3941 | 6941 | 3978 | 7334 | 3634 | 10 |
| Black-capped Chickadee | 2362 | 266 | 374 | 242 | 1295 | 182 | 1674 | 292 | 485 | 3083 | 10 |
| Common Grackle | 596 | 630 | 968 | 729 | 2072 | 1085 | 1101 | 939 | 2390 | 1438 | 10 |
| Canada Goose | 3558 | 1236 | 1708 | 1260 | 1296 | 1212 | 1239 | 2145 | 905 | 1357 | 10 |
| Nashville Warbler | 2318 | 2110 | 647 | 930 | 4071 | 1840 | 15647 | 952 | 3604 | 1222 | 10 |
| Sharp-shinned Hawk | 273 | 684 | 606 | 450 | 546 | 494 | 485 | 606 | 700 | 1055 | 10 |
| American Redstart | 722 | 788 | 1440 | 1065 | 1180 | 863 | 1053 | 1673 | 1532 | 1013 | 10 |
| Golden-crowned Kinglet | 205 | 362 | 146 | 61 | 937 | 732 | 62 | 1659 | 262 | 921 | 10 |
| Ruby-crowned Kinglet | 685 | 808 | 619 | 724 | 1217 | 885 | 372 | 903 | 645 | 858 | 10 |
| American Crow | 503 | 338 | 592 | 447 | 479 | 621 | 263 | 893 | 459 | 664 | 10 |
| Red-winged Blackbird | 763 | 210 | 477 | 378 | 476 | 348 | 392 | 566 | 513 | 658 | 10 |
| Yellow-shafted Flicker | 340 | 463 | 309 | 468 | 827 | 781 | 450 | 371 | 554 | 595 | 10 |
| Common Loon | 481 | 458 | 638 | 480 | 543 | 389 | 338 | 546 | 678 | 592 | 10 |
| Ring-billed Gull | 1791 | 1247 | 578 | 674 | 1162 | 937 | 802 | 856 | 1371 | 578 | 10 |
| Cedar Waxwing | 636 | 619 | 913 | 750 | 551 | 219 | 538 | 1225 | 953 | 539 | 10 |
| American Goldfinch | 374 | 362 | 600 | 742 | 645 | 584 | 668 | 611 | 877 | 498 | 10 |
| American Robin | 339 | 1921 | 331 | 919 | 2528 | 1576 | 163 | 673 | 1586 | 483 | 10 |
| Western Palm Warbler | 1078 | 396 | 415 | 261 | 608 | 954 | 828 | 470 | 898 | 429 | 10 |
| Barn Swallow | 1261 | 398 | 794 | 506 | 1095 | 810 | 726 | 541 | 459 | 421 | 10 |
| Northern Cardinal | 725 | 253 | 116 | 177 | 294 | 122 | 133 | 116 | 204 | 372 | 10 |
| Turkey Vulture | 401 | 381 | 694 | 634 | 585 | 322 | 364 | 498 | 658 | 370 | 10 |
| Dark-eyed Junco | 517 | 133 | 170 | 127 | 375 | 420 | 293 | 359 | 180 | 348 | 10 |
| Double-crested Cormorant | 1522 | 1103 | 1187 | 920 | 1025 | 721 | 826 | 1014 | 824 | 342 | 10 |
| Brown Creeper | 52 | 64 | 14 | 70 | 197 | 193 | 22 | 204 | 51 | 338 | 10 |
| Black-throated Green Warbler | 399 | 288 | 551 | 345 | 613 | 257 | 793 | 471 | 612 | 337 | 10 |
| Magnolia Warbler | 504 | 354 | 498 | 334 | 342 | 368 | 268 | 325 | 545 | 335 | 10 |
| Herring Gull | 870 | 568 | 970 | 516 | 486 | 259 | 159 | 430 | 234 | 324 | 10 |
| Common Merganser | 551 | 285 | 372 | 363 | 735 | 700 | 489 | 474 | 476 | 305 | 10 |
| Broad-winged Hawk | 3 | 1006 | 509 | 481 | 212 | 303 | 758 | 203 | 432 | 297 | 10 |
| Black-and-white Warbler | 424 | 249 | 252 | 227 | 370 | 208 | 182 | 331 | 528 | 273 | 10 |
| Red-breasted Nuthatch | 285 | 11 | 64 | 152 | 464 | 116 | 385 | 207 | 298 | 271 | 10 |
| White-throated Sparrow | 534 | 415 | 255 | 472 | 319 | 255 | 428 | 420 | 600 | 230 | 10 |
| Chipping Sparrow | 620 | 160 | 241 | 269 | 382 | 207 | 197 | 280 | 268 | 199 | 10 |
| Common Yellowthroat | 188 | 141 | 259 | 173 | 130 | 109 | 224 | 283 | 235 | 181 | 10 |
| Red-eyed Vireo | 85 | 57 | 240 | 201 | 267 | 115 | 217 | 222 | 173 | 171 | 10 |
| Bufflehead | 312 | 298 | 314 | 324 | 336 | 210 | 185 | 200 | 135 | 165 | 10 |
| European Starling | 114 | 284 | 225 | 238 | 347 | 486 | 104 | 130 | 435 | 160 | 10 |
| Swainson’s Thrush | 30 | 15 | 42 | 30 | 95 | 43 | 39 | 98 | 98 | 160 | 10 |
| Common Raven | 137 | 93 | 195 | 185 | 122 | 153 | 194 | 144 | 191 | 138 | 10 |
| American Pipit | 1737 | 100 | 6 | 18 | 48 | 64 | 8 | 17 | 1074 | 124 | 10 |
| Red-breasted Merganser | 618 | 127 | 81 | 66 | 202 | 119 | 213 | 233 | 135 | 115 | 10 |
| Sandhill Crane | 28 | 29 | 71 | 95 | 26 | 52 | 107 | 152 | 82 | 100 | 10 |
| Pine Warbler | 76 | 66 | 106 | 78 | 191 | 127 | 90 | 74 | 208 | 97 | 10 |
| Song Sparrow | 253 | 142 | 240 | 164 | 194 | 207 | 99 | 214 | 99 | 97 | 10 |
| Black-throated Blue Warbler | 193 | 163 | 65 | 78 | 139 | 62 | 97 | 115 | 235 | 95 | 10 |
| Red-tailed Hawk | 2 | 166 | 118 | 131 | 48 | 112 | 52 | 88 | 76 | 95 | 10 |
| Ovenbird | 137 | 79 | 147 | 150 | 90 | 81 | 92 | 166 | 173 | 87 | 10 |
| Bald Eagle | 13 | 18 | 12 | 15 | 22 | 9 | 26 | 25 | 46 | 83 | 10 |
| White-crowned Sparrow | 287 | 309 | 121 | 242 | 377 | 247 | 303 | 185 | 273 | 80 | 10 |
| Chestnut-sided Warbler | 165 | 78 | 93 | 96 | 104 | 28 | 45 | 80 | 241 | 74 | 10 |
| Yellow Warbler | 241 | 92 | 153 | 55 | 159 | 53 | 105 | 168 | 253 | 74 | 10 |
| Mallard | 79 | 143 | 76 | 37 | 90 | 48 | 82 | 99 | 117 | 72 | 10 |
| Blackburnian Warbler | 37 | 19 | 55 | 40 | 121 | 23 | 34 | 34 | 257 | 71 | 10 |
| Yellow-bellied Flycatcher | 32 | 22 | 31 | 57 | 10 | 22 | 13 | 89 | 5 | 67 | 10 |
| Hermit Thrush | 26 | 28 | 14 | 42 | 66 | 34 | 49 | 19 | 53 | 60 | 10 |
| Least Flycatcher | 32 | 39 | 67 | 44 | 16 | 28 | 29 | 69 | 104 | 54 | 10 |
| Tree Swallow | 2089 | 590 | 1258 | 318 | 497 | 223 | 240 | 105 | 186 | 52 | 10 |
| Ruby-throated Hummingbird | 320 | 87 | 142 | 129 | 227 | 75 | 188 | 129 | 150 | 51 | 10 |
| Traill's Ffflycatcher | 53 | 15 | 23 | 25 | 13 | 13 | 116 | 145 | 84 | 49 | 10 |
| Northern Mockingbird | 12 | 41 | 62 | 30 | 24 | 16 | 39 | 37 | 34 | 48 | 10 |
| Brown-headed Cowbird | 65 | 136 | 55 | 108 | 227 | 96 | 113 | 11 | 234 | 47 | 10 |
| Wilson’s Warbler | 60 | 44 | 52 | 30 | 37 | 51 | 78 | 71 | 29 | 44 | 10 |
| Canada Warbler | 68 | 28 | 37 | 26 | 49 | 26 | 39 | 66 | 65 | 41 | 10 |
| Olive-sided Flycatcher | 162 | 1675 | 1422 | 880 | 121 | 156 | 65 | 67 | 44 | 41 | 10 |
| Merlin | 16 | 21 | 28 | 16 | 28 | 41 | 28 | 61 | 52 | 39 | 10 |
| Common Goldeneye | 57 | 182 | 117 | 44 | 129 | 58 | 40 | 32 | 36 | 38 | 10 |
| Spotted Sandpiper | 142 | 50 | 139 | 169 | 83 | 57 | 62 | 81 | 50 | 38 | 10 |
| Eastern Kingbird | 39 | 25 | 30 | 24 | 16 | 16 | 10 | 37 | 108 | 36 | 10 |
| Ruffed Grouse | 6 | 52 | 61 | 63 | 61 | 32 | 55 | 44 | 41 | 36 | 10 |
| Indigo Bunting | 5 | 2 | 37 | 37 | 26 | 20 | 19 | 62 | 98 | 33 | 10 |
| Common Tern | 49 | 4 | 16 | 38 | 78 | 53 | 64 | 50 | 57 | 30 | 10 |
| Purple Finch | 97 | 10 | 66 | 22 | 16 | 8 | 66 | 60 | 23 | 30 | 10 |
| Rose-breasted Grosbeak | 32 | 12 | 16 | 21 | 68 | 5 | 37 | 18 | 100 | 30 | 10 |
| Great Crested Flycatcher | 10 | 4 | 13 | 9 | 10 | 12 | 10 | 11 | 27 | 29 | 10 |
| Belted Kingfisher | 34 | 50 | 44 | 29 | 29 | 34 | 25 | 27 | 39 | 28 | 10 |
| Mourning Warbler | 30 | 15 | 30 | 10 | 20 | 8 | 37 | 68 | 33 | 28 | 10 |
| Veery | 13 | 4 | 51 | 17 | 53 | 25 | 9 | 43 | 41 | 28 | 10 |
| Pileated Woodpecker | 10 | 25 | 21 | 36 | 32 | 17 | 15 | 44 | 37 | 27 | 10 |
| Orange-crowned Warbler | 408 | 119 | 125 | 97 | 68 | 41 | 10 | 42 | 34 | 26 | 10 |
| Eastern Bluebird | 46 | 20 | 17 | 32 | 33 | 25 | 53 | 24 | 51 | 25 | 10 |
| Philadelphia Vireo | 17 | 2 | 6 | 2 | 1 | 1 | 20 | 41 | 23 | 25 | 10 |
| Lincoln’s Sparrow | 50 | 17 | 16 | 43 | 28 | 43 | 37 | 8 | 36 | 24 | 10 |
| Great Blue Heron | 29 | 49 | 28 | 44 | 81 | 36 | 25 | 40 | 39 | 22 | 10 |
| Brown Thrasher | 32 | 46 | 56 | 44 | 33 | 16 | 18 | 58 | 28 | 20 | 10 |
| Eastern Phoebe | 81 | 82 | 62 | 114 | 120 | 20 | 25 | 43 | 32 | 20 | 10 |
| Winter Wren | 50 | 9 | 54 | 19 | 40 | 11 | 8 | 24 | 19 | 20 | 10 |
| Gray Catbird | 53 | 60 | 29 | 53 | 96 | 24 | 64 | 19 | 47 | 17 | 10 |
| Killdeer | 46 | 26 | 19 | 36 | 48 | 54 | 50 | 30 | 30 | 17 | 10 |
| Yellow-bellied Sapsucker | 3 | 34 | 8 | 11 | 14 | 57 | 15 | 30 | 35 | 16 | 10 |
| American Tree Sparrow | 64 | 8 | 11 | 3 | 20 | 57 | 26 | 66 | 15 | 15 | 10 |
| Baltimore Oriole | 106 | 11 | 26 | 13 | 44 | 18 | 16 | 6 | 64 | 14 | 10 |
| American Kestrel | 9 | 32 | 28 | 13 | 30 | 26 | 35 | 49 | 14 | 13 | 10 |
| Gray-cheeked Thrush | 1 | 2 | 6 | 4 | 1 | 3 | 1 | 4 | 23 | 13 | 10 |
| Rough-legged Hawk | 2 | 41 | 20 | 18 | 7 | 9 | 9 | 16 | 5 | 13 | 10 |
| Blackpoll Warbler | 51 | 10 | 22 | 29 | 40 | 6 | 11 | 28 | 47 | 12 | 10 |
| Cape May Warbler | 26 | 7 | 6 | 6 | 81 | 19 | 48 | 18 | 66 | 12 | 10 |
| Eastern Wood-Pewee | 16 | 19 | 22 | 15 | 10 | 6 | 8 | 18 | 17 | 12 | 10 |
| Hairy Woodpecker | 8 | 5 | 19 | 28 | 22 | 11 | 9 | 24 | 20 | 12 | 10 |
| Mourning Dove | 33 | 24 | 21 | 55 | 40 | 37 | 13 | 23 | 24 | 11 | 10 |
| Orchard Oriole | 64 | 18 | 14 | 27 | 24 | 56 | 33 | 17 | 28 | 10 | 10 |
| White-winged Scoter | 144 | 716 | 275 | 162 | 68 | 26 | 82 | 1 | 26 | 10 | 10 |
| Eastern Meadowlark | 7 | 3 | 4 | 3 | 10 | 10 | 9 | 24 | 7 | 9 | 10 |
| Blue-headed Vireo | 13 | 7 | 5 | 12 | 6 | 6 | 7 | 12 | 49 | 8 | 10 |
| Greater Yellowlegs | 4 | 6 | 4 | 21 | 9 | 9 | 8 | 7 | 19 | 8 | 10 |
| Northern Rough-winged Swallow | 5 | 3 | 2 | 8 | 6 | 7 | 1 | 2 | 38 | 8 | 10 |
| Wilson’s Snipe | 5 | 8 | 13 | 27 | 16 | 3 | 1 | 4 | 8 | 7 | 10 |
| Scarlet Tanager | 3 | 3 | 3 | 5 | 9 | 1 | 3 | 1 | 64 | 7 | 10 |
| Swamp Sparrow | 5 | 4 | 8 | 12 | 5 | 7 | 7 | 10 | 14 | 7 | 10 |
| Bay-breasted Warbler | 47 | 12 | 11 | 24 | 19 | 24 | 1 | 12 | 61 | 6 | 10 |
| Bank Swallow | 18 | 9 | 29 | 8 | 19 | 3 | 14 | 11 | 25 | 5 | 10 |
| Osprey | 3 | 11 | 10 | 7 | 7 | 3 | 7 | 4 | 7 | 5 | 10 |
| Northern Waterthrush | 35 | 19 | 22 | 10 | 27 | 7 | 12 | 11 | 31 | 4 | 10 |
| Whip-poor-will | 2 | 1 | 4 | 18 | 9 | 3 | 5 | 7 | 3 | 4 | 10 |
| Downy Woodpecker | 30 | 8 | 3 | 2 | 3 | 9 | 5 | 6 | 3 | 3 | 10 |
| Field Sparrow | 9 | 2 | 4 | 9 | 4 | 2 | 3 | 5 | 8 | 3 | 10 |
| Red-necked Grebe | 164 | 21 | 14 | 20 | 57 | 26 | 14 | 1 | 18 | 3 | 10 |
| Savannah Sparrow | 43 | 13 | 10 | 9 | 9 | 8 | 4 | 8 | 10 | 3 | 10 |
| Wood Thrush | 2 | 2 | 5 | 3 | 36 | 4 | 3 | 3 | 7 | 2 | 10 |
| Caspian Tern | 31 | 43 | 11 | 6 | 2 | 12 | 2 | 3 | 2 | 1 | 10 |
| Horned Grebe | 31 | 20 | 5 | 15 | 4 | 18 | 8 | 7 | 8 | 1 | 10 |
| Warbling Vireo | 19 | 6 | 7 | 1 | 3 | 4 | 1 | 17 | 1 | 1 | 10 |
| Pine Siskin | 263 |  | 23 | 18 | 57 | 1 | 51 | 485 | 14 | 174 | 9 |
| Rusty Blackbird |  | 131 | 1 | 1 | 16 | 2 | 2 | 2 | 17 | 167 | 9 |
| Red-shouldered Hawk |  | 1 | 13 | 6 | 12 | 11 | 10 | 17 | 9 | 22 | 9 |
| Golden Eagle |  | 3 | 2 | 1 | 1 | 6 | 2 | 6 | 2 | 16 | 9 |
| Wood Duck | 8 | 8 | 3 | 9 | 1 | 4 |  | 18 | 22 | 13 | 9 |
| Peregrine Falcon | 1 | 4 | 6 | 1 | 2 | 3 |  | 5 | 12 | 7 | 9 |
| White-breasted Nuthatch | 13 | 1 | 2 | 5 | 19 | 4 | 8 |  | 2 | 7 | 9 |
| Eastern Towhee |  | 1 | 23 | 1 | 5 | 1 | 1 | 4 | 4 | 3 | 9 |
| Fox Sparrow | 7 | 3 |  | 1 | 3 | 3 | 1 | 11 | 1 | 3 | 9 |
| American Woodcock | 7 |  | 9 | 3 | 30 | 2 | 3 | 1 | 3 | 2 | 9 |
| Chimney Swift | 0 | 8 | 6 | 2 | 2 |  | 2 | 10 | 4 | 2 | 9 |
| House Wren | 3 | 1 |  | 3 | 2 | 4 | 12 | 3 | 12 | 2 | 9 |
| Tennessee Warbler | 17 | 9 | 6 | 4 | 9 |  | 3 | 15 | 9 | 2 | 9 |
| Common Nighthawk | 2 | 2 | 2 | 2 | 1 | 3 | 1 |  | 4 | 1 | 9 |
| Northern Goshawk | 2 | 3 | 2 | 5 |  | 1 | 1 | 3 | 6 | 1 | 9 |
| Blue-gray Gnatcatcher | 15 | 2 | 3 | 10 | 1 | 1 | 1 | 5 | 6 |  | 9 |
| Ring-necked Duck |  | 3 | 13 |  | 22 | 13 | 83 | 62 | 52 | 26 | 8 |
| Cooper’s Hawk | 1 | 5 |  | 4 | 2 |  | 2 | 3 | 12 | 6 | 8 |
| Red-bellied Woodpecker |  |  | 6 | 2 | 3 | 3 | 4 | 3 | 6 | 4 | 8 |
| Hooded Merganser | 6 | 24 | 3 |  | 9 | 3 |  | 5 | 3 | 3 | 8 |
| Great Black-backed Gull | 25 | 4 | 2 | 6 |  | 1 |  | 2 | 2 | 2 | 8 |
| Northern Harrier | 1 | 6 | 6 | 6 |  | 2 | 2 |  | 4 | 2 | 8 |
| Northern Parula | 4 | 6 | 4 | 4 | 2 |  | 6 |  | 1 | 1 | 8 |
| Solitary Sandpiper | 2 | 2 | 2 | 4 | 3 | 1 |  |  | 7 | 1 | 8 |
| Black-billed Cuckoo | 2 |  | 2 | 4 | 11 | 10 | 18 | 9 | 3 |  | 8 |
| Cliff Swallow | 99 |  | 5 | 4 | 4 | 11 | 4 | 7 | 5 |  | 8 |
| Bobolink | 83 | 10 | 5 | 9 |  |  |  | 2 | 129 | 23 | 7 |
| Blue-winged Teal |  |  | 4 | 1 | 3 | 2 | 2 | 9 |  | 2 | 7 |
| Clay-colored Sparrow | 9 | 3 | 4 | 1 |  | 6 |  | 2 |  | 2 | 7 |
| Great Horned Owl | 0 |  | 2 | 1 | 11 |  | 1 |  | 1 | 2 | 7 |
| Lesser Yellowlegs | 2 |  |  | 2 | 1 | 8 | 3 |  | 3 | 2 | 7 |
| Olive-sided Flycatcher | 3 |  |  | 3 | 1 | 1 |  | 0 | 3 | 2 | 7 |
| Alder Flycatcher |  |  | 2 | 7 | 13 | 3 | 2 | 1 | 2 |  | 7 |
| Golden-winged Warbler | 3 |  | 2 | 1 |  | 1 |  | 1 |  | 2 | 6 |
| Rock Pigeon | 2 | 1 | 5 | 7 |  |  |  |  | 2 | 1 | 6 |
| Black Scoter | 8 | 53 | 82 | 2 |  |  | 2 |  | 8 |  | 6 |
| American Bittern | 1 |  | 0 |  | 3 |  |  |  | 4 | 3 | 5 |
| Red-headed Woodpecker | 1 | 1 | 1 |  |  | 1 |  |  |  | 1 | 5 |
| Wild Turkey |  |  |  |  |  | 5 | 10 | 30 | 5 | 1 | 5 |
| American Green-winged Teal |  | 5 | 1 |  | 15 |  | 7 |  | 2 |  | 5 |
| American Wigeon | 5 | 3 |  | 4 | 2 |  | 1 |  |  |  | 5 |
| Evening Grosbeak | 102 |  | 28 | 12 | 3 |  | 3 |  |  |  | 5 |
| House Finch | 5 | 2 | 1 |  |  | 2 |  |  |  |  | 4 |
| Horned Lark | 25 |  |  | 25 |  |  |  | 3 | 3 |  | 4 |
| Pied-billed Grebe | 7 |  |  |  | 2 | 6 |  |  | 5 |  | 4 |
| Purple Martin | 9 |  | 1 |  |  | 10 | 1 |  |  |  | 4 |
| Blue-winged Warbler | 3 |  |  |  | 1 |  |  |  |  | 3 | 3 |
| Willow Flycatcher |  |  |  | 2 |  |  |  |  | 1 | 1 | 3 |
| Brewer’s Blackbird | 1 |  | 1 |  |  | 1 |  |  |  |  | 3 |
| House Sparrow |  |  |  | 2 | 2 | 4 |  |  |  |  | 3 |
| Surf Scoter |  | 24 |  | 1 | 4 |  |  |  |  |  | 3 |
| Vesper Sparrow |  |  |  | 1 | 1 | 3 |  |  |  |  | 3 |
| Whimbrel |  |  |  |  | 1 |  |  | 1 | 1 |  | 3 |
| White-winged Crossbill |  |  |  |  |  |  |  | 1 |  | 7 | 2 |
| Gadwall | 2 |  |  |  |  |  |  |  |  | 2 | 2 |
| Semipalmated Plover |  |  |  |  | 4 |  |  |  |  | 1 | 2 |
| Black-bellied Plover | 5 |  |  | 3 |  |  |  |  |  |  | 2 |
| Connecticut Warbler | 1 |  |  |  | 1 |  |  |  |  |  | 2 |
| Green Heron | 0 | 1 |  |  |  |  |  |  |  |  | 2 |
| Greater Scaup | 4 |  | 2 |  |  |  |  |  |  |  | 2 |
| Hooded Warbler | 3 |  | 2 |  |  |  |  |  |  |  | 2 |
| Lesser Scaup | 6 | 2 |  |  |  |  |  |  |  |  | 2 |
| Osprey | 1 |  | 1 |  |  |  |  |  |  |  | 2 |
| Red-throated Loon | 1 |  |  |  |  |  |  | 1 |  |  | 2 |
| White-eyed Vireo |  | 1 | 3 |  |  |  |  |  |  |  | 2 |
| Yellow-throated Vireo |  |  | 2 |  |  |  |  |  | 1 |  | 2 |
| Bohemian Waxwing |  |  |  |  |  |  |  |  |  | 10 | 1 |
| Summer Tanager |  |  |  |  |  |  |  |  |  | 5 | 1 |
| Boreal Chickadee |  |  |  |  |  |  |  |  |  | 2 | 1 |
| American Black Duck |  |  |  |  |  |  |  |  |  | 1 | 1 |
| Long-tailed Duck |  |  |  |  |  |  |  |  |  | 1 | 1 |
| American Coot | 1 |  |  |  |  |  |  |  |  |  | 1 |
| Black-billed Magpie |  |  |  |  |  | 1 |  |  |  |  | 1 |
| Black Brant | 5 |  |  |  |  |  |  |  |  |  | 1 |
| Black Tern | 0 |  |  |  |  |  |  |  |  |  | 1 |
| Bonaparte’s Gull |  |  |  |  |  |  |  | 24 |  |  | 1 |
| Dunlin |  |  |  |  |  |  | 20 |  |  |  | 1 |
| Forster's Tern | 1 |  |  |  |  |  |  |  |  |  | 1 |
| Glaucous Gull |  |  |  |  |  |  |  | 1 |  |  | 1 |
| Great Egret |  |  |  | 1 |  |  |  |  |  |  | 1 |
| Hermit Warbler |  | 1 |  |  |  |  |  |  |  |  | 1 |
| Lapland Longspur |  | 6 |  |  |  |  |  |  |  |  | 1 |
| Lark Sparrow |  |  |  |  | 1 |  |  |  |  |  | 1 |
| Lesser Black-backed Gull |  |  |  | 2 |  |  |  |  |  |  | 1 |
| Marsh Wren |  |  |  |  |  |  |  | 1 |  |  | 1 |
| Myrtle Warbler | 12 |  |  |  |  |  |  |  |  |  | 1 |
| Prairie Warbler |  |  |  |  |  | 1 |  |  |  |  | 1 |
| Sage Thrasher |  |  |  | 1 |  |  |  |  |  |  | 1 |
| Short-billed Dowitcher |  |  |  |  |  |  | 14 |  |  |  | 1 |
| Semipalmated Sandpiper |  |  | 1 |  |  |  |  |  |  |  | 1 |
| Snow Bunting | 0 |  |  |  |  |  |  |  |  |  | 1 |
| Snowy Owl |  |  |  |  | 1 |  |  |  |  |  | 1 |
| Upland Sandpiper |  |  |  |  |  |  |  | 1 |  |  | 1 |
| Western Meadowlark |  |  | 1 |  |  |  |  |  |  |  | 1 |
| Worm-eating Warbler |  |  | 1 |  |  |  |  |  |  |  | 1 |
| Yellow-throated Warbler |  |  | 1 |  |  |  |  |  |  |  | 1 |
| Species Total  | 174 | 156 | 168 | 166 | 163 | 159 | 154 | 157 | 162 | 165 | 217 |
| Species Frequency | 10 yr | 9 yr | 8 yr | 7 yr | 6 yr | 5 yr | 4 yr | 3 yr | 2 yr | 1 yr |  |
| # | 121 | 16 | 10 | 7 | 3 | 6 | 4 | 7 | 13 | 30 |  |
| % | 56 | 7 | 5 | 3 | 1 | 3 | 2 | 3 | 6 | 14 |  |