



BRUCE PENINSULA BIRD OBSERVATORY

THE VOICE OF BIRDS ON THE BRUCE

MIGRATION MONITORING AT CABOT HEAD

FALL 2022

by

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*prepared
for*

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Citation:

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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. Both Ontario Parks and Bruce Peninsula Bird Observatory (BPBO) manage the CHRS.

The Breeding Bird Survey (BBS) is the principle method for monitoring bird populations in the United States and southern Canada. 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 Canada-led initiative intended to assess changes in bird populations during migration. There are about 25 stations across Canada where data are collected for each bird species during the spring and fall migrations, typically through a standardized capture and observation protocol. Through continuous data collection since 2002, BPBO has demonstrated that Cabot Head is a significant site for monitoring migratory landbirds. In recognition of its importance and established migration monitoring effort, BPBO became a member of the CMMN in fall 2003.

BPBO 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 fall 2022 migration monitoring season at the CHRS.

Executive Summary

In this document are summarized the results of migration monitoring at Cabot Head in fall 2022. Fieldwork began on August 15 and ended on October 31 for a total of 78 consecutive days of coverage. A second-highest total of 148 species were detected during the monitoring period this fall (range of 120 to 154 species in 2002 - 2021). A complete list of all species observed, with season estimated totals, days with observation, maximum and minimum daily totals, is provided in Appendix I. For a casual view of the fall 2022 season, an edited version of the blog is reproduced in Appendix II. A record total of 2925 birds of 74 species were banded and 258 birds of 35 species were recaptured. Recapture data suggest that overall stopover rates at Cabot Head are low.

There was an extremely good migration overall in fall 2022, reflected both in the total numbers of birds banded and in daily observations. Bad weather, mostly in the form of strong winds sometimes accompanied by rain, completely precluded banding on nine days during the season (similar to the 2003-2021 average of 9.3 ± 5.1 days, range 1 - 22 days). Complete daily coverage for banding (i.e. 90 mist net hours, or six hours for all the 15 nets) was 34 days, very similar to the average, representing 44% of the season (2003-2021 average of 32.2 ± 8.7 days, range 21 - 47). In fall 2022, the banding total of 2925 is - by far - the highest in 21 years of monitoring, nearly 450 birds over the previous record of 2476 birds in fall 2005; fall 2022 is the fifth fall season with a total exceeding 2000 banded birds (2002 - 2021 average of 1652 ± 374 banded birds). Over half (52%) of the banding total was comprised of five species: Golden-crowned Kinglet, (about 26% of the total), Black-capped Chickadee (10% of the total), Ruby-crowned Kinglet, Slate-colored Junco, and Red-breasted Nuthatch (about 6% each). There were a remarkable 17 days with banding totals of over 50 birds and four days of over 100 birds, notably a record 290 birds of 12 species on October 18. Banding totals of less than 30 birds occurred on about a third of the days with full banding coverage (11 of 34 days). On September 8, 61 species were detected, the highest diversity of the fall and the fourth day during which over 60 species were detected in a fall season in the 21 years of monitoring.

The 2022 fall migration monitoring season was a success thanks to the dedication and efforts of the seven volunteer field biologists who contributed their time to this project.

1. Methods

The migration monitoring program at Cabot Head, like all CMMN stations, follows a field protocol as it is essential for the production of population indices that data collection be consistent over the long term. At CHRS, fifteen mist nets are operated for a maximum of six hours starting 30 minutes 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 seven hours.

2. Season Summary

Coverage

Fieldwork for fall migration monitoring began at CHRS on August 15 and ended on October 31, for a total of 78 consecutive days. Census and casual observation were performed every day. Banding is more affected by weather and there was a total of 9 days without any banding. Across the season, 26% of mist netting coverage (in hours) was lost. The number of days with complete coverage (i.e. 15 nets open for six hours) was around average (34 out of 78, i.e. 44%, compared to an average of $41\% \pm 11$; Fig.1).

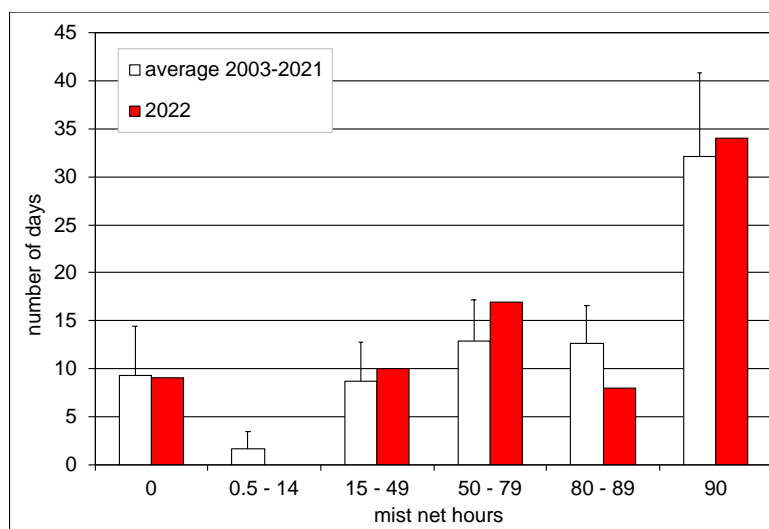


Figure 1. Coverage (in mist net hours) at CHRS, fall 2022.

Weather

Weather in fall 2022 was mostly fair and warm, well into October when 30% of the days of that month experienced light wind. There were eight days with precipitation during the monitoring period (i.e. 7 hours starting half an hour before sunrise), mostly in the form of short showers distributed throughout the season. However, rain precluded mist net operations on five days. Rain tremendously affects migration, grounding birds, and impacting their foraging abilities. Periods of high wind occurred regularly throughout the season: 37% of days experienced winds of at least 5 on the Beaufort scale throughout the season, with a notable period from August 29 to September 3 heavily impacted by strong wind (with a break on September 1).

Along 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 force and direction are recorded only at the start and end of the count period. To characterize wind force (on the Beaufort scale) and direction, we considered only the highest wind speed attained during the count period of seven hours. Undoubtedly, this method tends to over-estimate wind force. However, strong winds affect migration tremendously and their effect can probably be felt before they develop into a full windstorm. This fall, strong winds (at least five on the Beaufort scale) were predominantly from the south (55% of the days with strong wind) and occurred on 29 days (37% of the season). Another 27 days (35%) experienced moderate wind speeds (three to four on the Beaufort scale). Therefore, wind strength this fall was quite evenly distributed between moderate and strong (Fig.2). North winds occurred during 15% of the days, slightly more than west winds (14%) but much less frequently than east (21%) and south (37%) winds. Strong north winds occurred mostly in September. Snow fell on October 20 during the night and early morning with temperatures cold enough to allow for a thin blanket of snow on the ground. Snow changed into rain during the morning with clearing in the afternoon. Temperatures in late October were above average with more south winds than north winds.

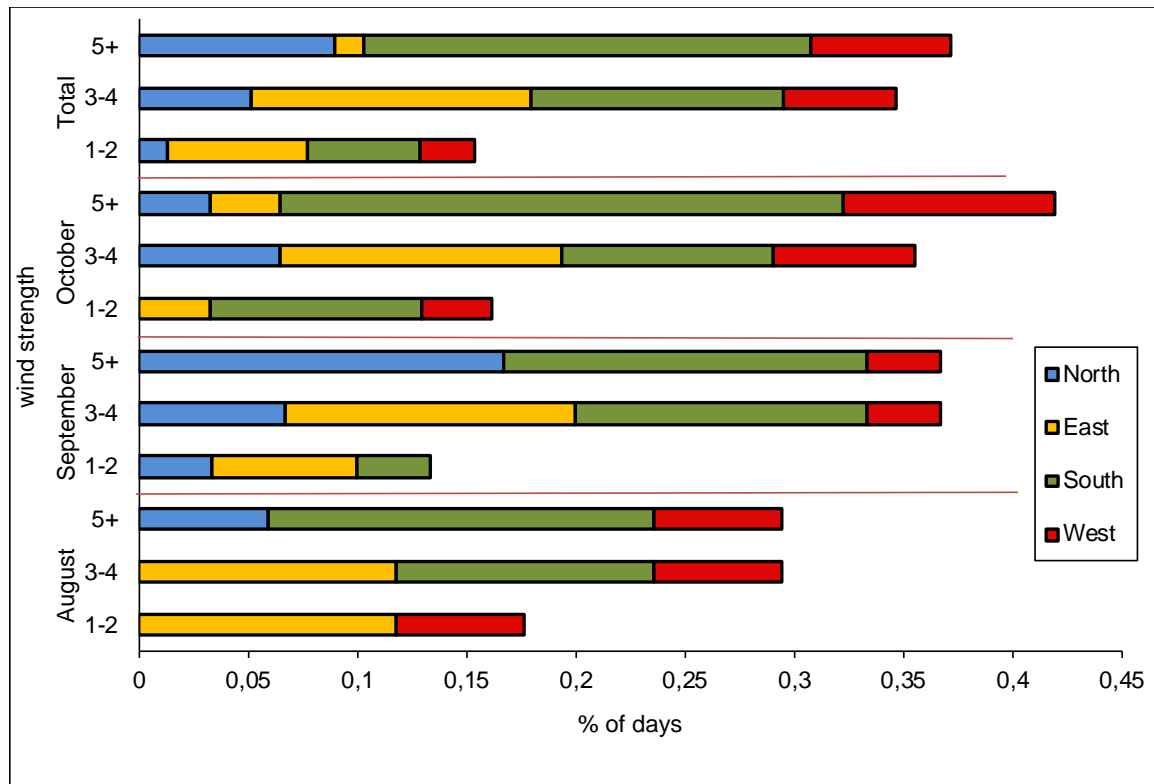


Figure 2. Wind pattern (strength on the Beaufort scale, direction and proportion of time) at CHRS, fall 2022.

Migration Monitoring

Migration Overview

Migration is an inherently dynamic phenomenon, greatly influenced by weather and food availability (both operating at different spatial scales). Fall 2022 at Cabot Head was marked by good diversity and record numbers of birds captured and banded throughout the season. A migration overview can be expressed graphically with daily numbers of visible migration of songbirds and species (Fig.3) and banded and recaptured birds (Fig.4) with the most numerous species highlighted. Finally, days of bad weather may be, in part, illustrated with daily mist net hours (Fig.5). A closer look at a few special days, the “boom” and “bust” days of migration, reveal the sheer magnitude of bird movement and also its inherent variability. There were 10 days with more than 40 species detected - none in October - with the most diversity on September 8 with 61 species and a total of 826 birds. On that day, 18 species of warblers were detected, as well as three of vireos and seven of sparrows (including Eastern Towhee). There were seven species detected

for the first time of the season on that day, notably the Arctic songbird American Pipit and Horned Lark and boreal breeder Gray-cheeked Thrush and Palm Warbler. A few season highs were observed on September 8: 140 Cedar Waxwings, 39 Blue Jays, and 20 Blackpoll Warblers. Banding on September 8, with 40 birds banded, was relatively low compared to most of the season but was the highest during this period (from August 31 to September 19). On the other hand, the 11 days following Sept. 8 were quieter both in numbers and diversity, especially on September 16 with 40 birds of 22 species. That changed on September 20 with a notably large movement of Myrtle (Yellow-rumped) Warblers that resulted in a season and all-time high of 43 birds of this species banded (previous one-day record of 34 Myrtle Warblers on September 27, 2003). Black-capped Chickadees were also seen in a record high number (for the 2022 season) on that day (75 birds counted), albeit without much capture (only one bird!). This species was seen in good numbers throughout the season but captured mostly toward the end (Fig.4). Kinglets started to arrive at the end of September with the bulk of the passage in October, notably during a few days. Diversity in October is always lower since most long-distance migrants have moved through. Nonetheless, 36 species were detected on October 31, the last day of monitoring, with several species of finches and waterfowl. A few other noteworthy species that day were Greater Yellowlegs, Eastern Screech Owl, and Blue-headed Vireo.

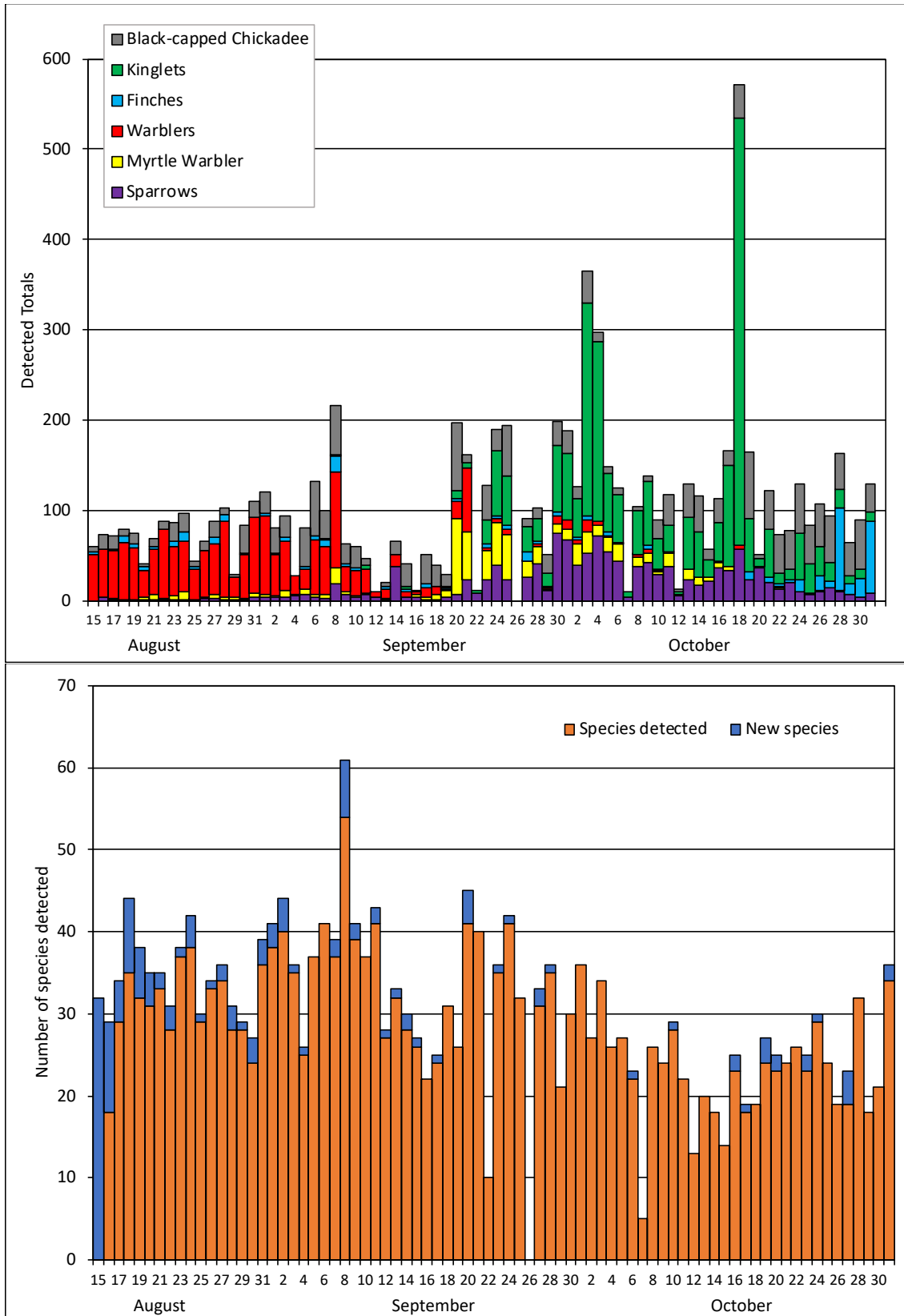


Figure 3: Detected totals (top) and diversity (bottom) at CHRS, fall 2022. (Kinglets: Golden- and Ruby-crowned Kinglets)

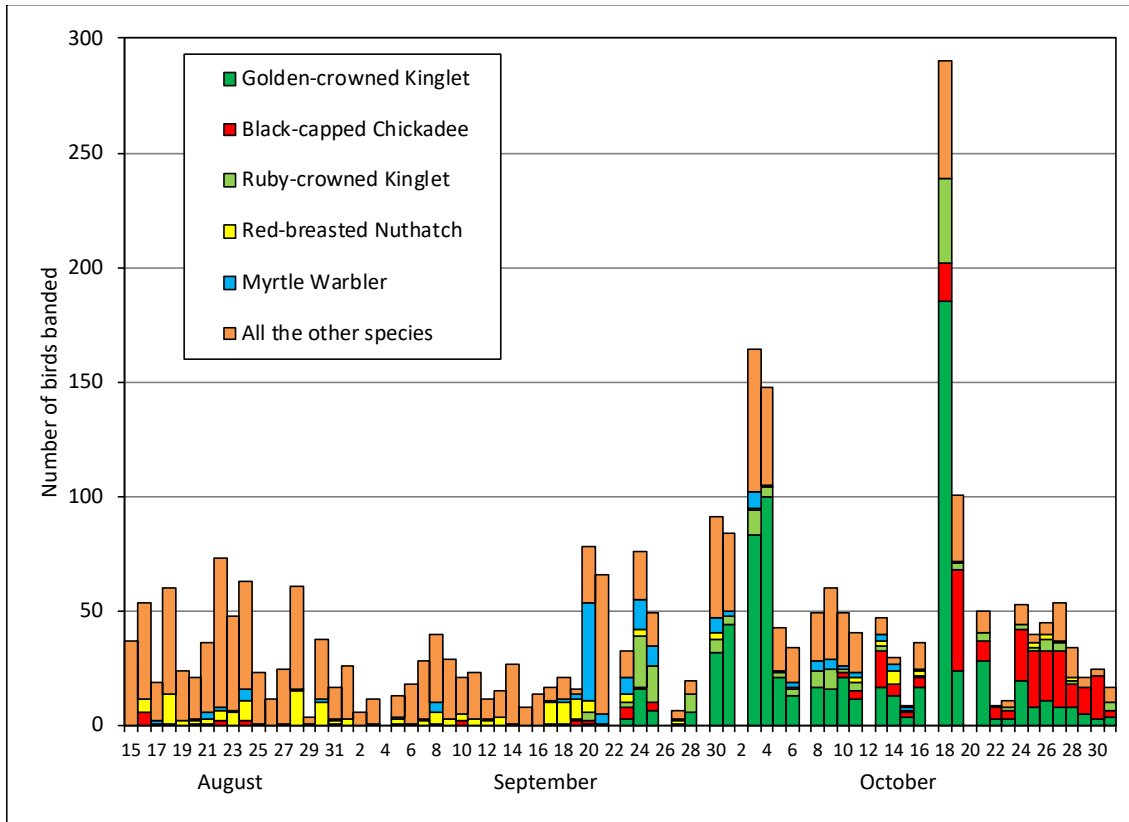


Figure 4: Daily banding totals at CHRS, fall 2022, with selected species.

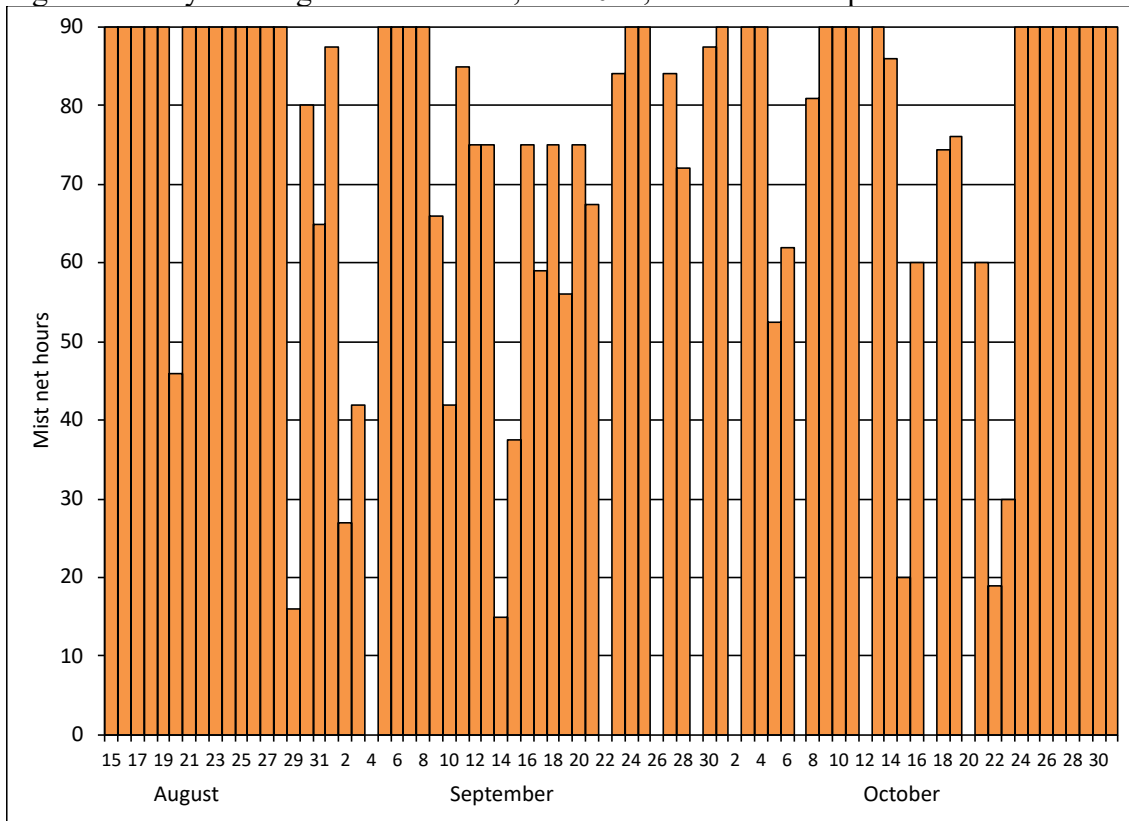


Figure 5: Daily numbers of mist net hours realized at CHRS, fall 2022.

Passerines and Near-Passerines

Long-distance migrants

Long-distance migrants include a wide variety of birds, from hummingbirds to flycatchers to vireos to warblers. The main characteristic involves the long distances flown between their breeding and wintering grounds, which are usually separated by thousands of kilometers. At Cabot Head, this diverse group is already on the move in mid-August when fall monitoring begins, with migration usually peaking in early- to mid-September. Stragglers are always a possibility later in the season.

Tyrant Flycatchers are early migrants (with the exception of Eastern Phoebe); among the first species to depart south in the fall, as early as August, they are never detected in large numbers at Cabot Head. Least Flycatcher was the most detected Tyrant Flycatcher this fall, with 15 birds (including nine banded) in 12 days from August 18 to September 12. A total of eight Traill's Flycatchers (combined Alder and Willow Flycatchers, which can only be distinguished by voice) were detected, with two through banding, from August 18 to September 9. This species is never numerous; banding totals are usually single-digit numbers, reaching a high of 16 in fall 2007. Detections of Yellow-bellied Flycatcher (on seven days from August 18 to September 14) occurred mostly through banding, with a record total of eight birds banded compared to only two birds observed. This species is never banded in large numbers; the previous record was seven birds in fall 2014, with none in three fall seasons. On August 15, one Eastern Wood-Pewee was detected through its characteristic song. This species is quite rare in the fall at Cabot Head, as reflected in the paucity of captures: none this fall and captures in only five previous fall seasons. One Great Crested Flycatcher was banded on September 3, the only record of the season, and the fourth ever banded in fall. No Eastern Kingbirds were detected this fall. This species is usually present at Cabot Head around the marshy margins of the shallow lakes at the base of West and Middle Bluffs and was missed only in four other previous fall seasons (2010, 2012, 2013, & 2014). Very few Eastern Phoebes were detected this fall: one bird on September 23 and two birds on September 24, with no observations in October (the sixth fall season without any in that month).

Ruby-throated Hummingbirds were seen every day from August 15 to September 14, with a day maximum of seven birds, and the latest observation on September 20.

Red-eyed Vireo is a local, and vocal, abundant breeder on the Bruce Peninsula, making it

difficult to determine a clear pattern of migration. Nonetheless, most of them move through Cabot Head in late August and early September. Daily observations of a few Red-eyed Vireos (from one to 36 birds) were steady and constant from August 15 to October 4. Daily observations dwindled quickly to single-digit numbers after early September. During peak passage this fall, though, numbers of Red-eyed Vireos were quite high, reflected in the third-highest banding total of 122 birds. There is a tremendous range in numbers banded in the fall, from a low of 24 birds in 2009 and a high of 239 birds in 2005. Conforming with the typical fall banding pattern for Red-eyed Vireos at Cabot Head, most birds banded this year were young born this summer (94% of total). In fall 2022, there was no observation of Warbling Vireo, as was the case in 10 of the previous 20 fall seasons. On the other hand, Philadelphia Vireo were seen on a record 17 days, spread out from August 17 to October 2. In the previous 20 fall seasons, this species was missed in three seasons and detected in less than ten days per season in the other seasons, except in 2014 when detections occurred in 13 days. A record 11 Philadelphia Vireos were banded in fall 2022, compared to totals of 1 to 6 previously (and none in four fall seasons). Both species of Vireos are always more uncommon at Cabot Head than Red-eyed Vireos.

Of the four species of *Catharus* thrushes seen at Cabot Head, three - Veery, Swainson's and Gray-cheeked Thrushes - are long-distance migrants with wintering ranges mostly in South America. All Thrushes are very secretive, most often detected through banding or singing. Only two Veeries were banded, on August 30 and September 18, accounting for the only detections of the season. This species is never banded in large numbers in the fall, ranging from one (in 2010, 2019, & 2020) to 10 (in 2015) and three seasons without captures. The number of Swainson's Thrushes banded this fall, 37 birds, is close to the 2002-2021 average (34 ± 19), although there are large yearly variations in banding totals for this species (Fig 6). Captures occurred almost daily from September 1 to October 4, with a high of seven birds on September 9, and three birds banded in the first few days of October. This species seems to have become more usual in October but with no clear trend of increase over the years after 2012 (Fig.7). A total of 12 Gray-cheeked Thrushes were banded this fall from September 8 to October 1, a species always less numerous than Swainson's Thrush but showing important yearly variations as well (Fig.6). This fall, one bird was banded on October 1 and there is no clear evidence of an increasing presence in October. In total, there have been nine seasons with detection of one or two Gray-cheeked Thrushes in October, always in the first few days (latest is October 8), scattered from 2003 to 2015 and again this fall.

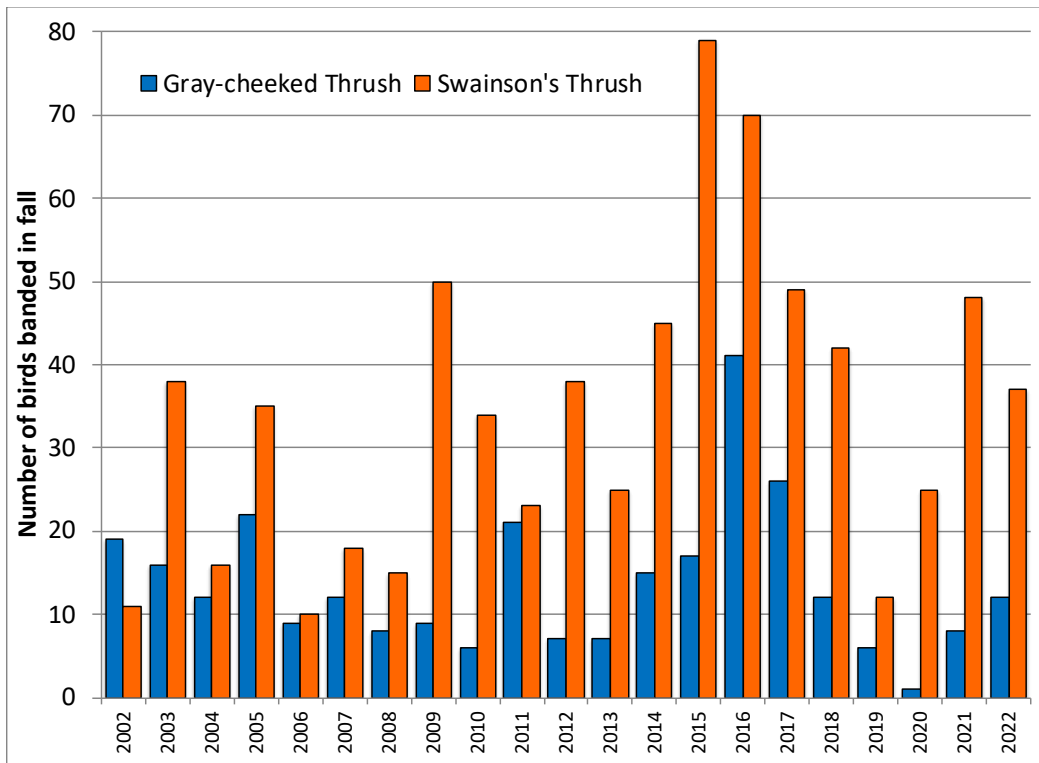


Figure 6. Banding totals of Gray-cheeked and Swainson's Thrushes at CHRS -fall 2002 - 2022.

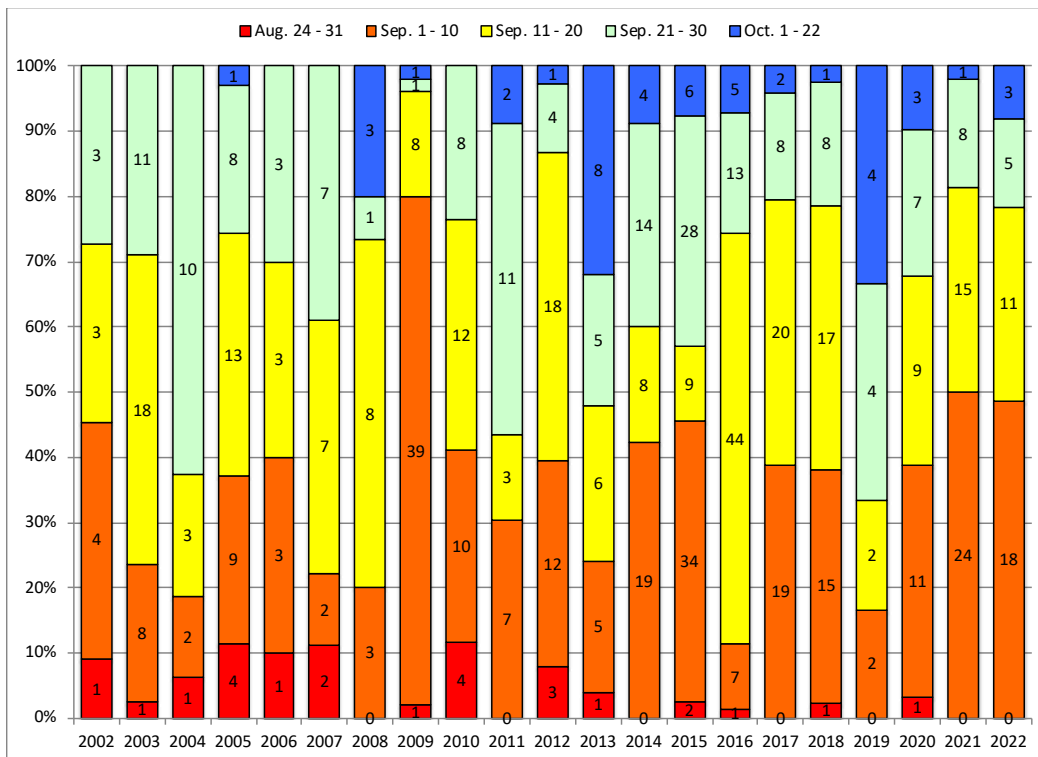


Figure 7. Proportions of banding totals of Swainson's Thrushes at CHRS in fall 2002 - 2022 by 10-day periods. Banding totals by period are indicated in the bars. The last period is 22 days long with only 4 birds in the last 12 days (one each in 2008, 2016, 2019, and 2020).

Diversity and abundance of warblers were at their highest in August and into early September this fall, showing a steady decline afterwards (Fig.8). There were 25 species of warblers detected in fall 2022, including a very uncommon Connecticut Warbler banded on August 27 and recaptured the following day. Connecticut Warblers were previously banded in the falls of 2003, 2005, and 2020 with one bird each. This species is very secretive during migration and has never been seen or heard at Cabot Head. The highest daily diversity was reached on September 8 with 18 species of warblers; the highest five-day diversity occurred between August 31 and September 4, when a total of 20 species of warblers were detected: American Redstart was the most abundant, with high numbers also for Common Yellowthroat, Black-throated Green, Black-and-white and Yellow-rumped Warblers. Abundance remained high until early September but dropped sharply between September 10 and 19. Subsequently, the strong migration of Yellow-rumped Warblers brought the overall number of birds up while diversity slowly declined as expected. A cumulative total of 23 species of warblers were already observed on August 31, with only two species not yet detected: Palm Warbler was detected first on September 8 and the first Orange-crowned Warblers on September 20. The latter species is usually among the last species of warbler to be detected but also the one with regular passage in October; the last detection was on October 22 this fall. Throughout the season, Myrtle Warbler, American Redstart, Black-throated Green Warbler, Common Yellowthroat, and, to a lesser extent, Nashville Warbler, were the species most often detected and in the highest numbers (in decreasing order). Bay-breasted Warblers were observed and banded in exceptional numbers almost every day from August 15 to September 24, with the last detection on October 4. Daily captures were in single-digit numbers, from one to nine birds, except on September 21 when a record-shattering total of 41 Bay-breasted Warblers were banded, more in a day than any previous season total. It is the second year in a row with record numbers of Bay-breasted Warblers, likely the result of a sharp population increase following spruce budworm outbreaks in the boreal forest.

The first individual(s) of Cape May and Tennessee Warblers were detected on August 16 and 18, respectively, whereas the first Blackpoll Warbler was detected on August 31. The first detections of these spruce budworm specialists, including Bay-breasted Warbler, are among the earliest over the 21 years of monitoring. Their banding totals were also high or were record-breaking highs, even though absolute numbers may seem small. A record 12 Cape May Warblers were banded (tied with fall 2017 and the only time banding totals were double-digit). Blackpoll

Warblers are on average banded in larger numbers than Cape May, reaching likewise a record high in fall 2022 with 32 birds. Tennessee and Blackburnian Warblers, other budworm specialists, were also banded in good numbers this fall.

American Redstart, alongside Myrtle Warbler, is the species of warbler most commonly captured and banded in the fall, albeit with large variations across the years (Fig.9) and despite the fact that the earliest part of its migration is not covered (see Menu 2022). The banding total in fall 2022 was below average and the eighth lowest of the 21 seasons of monitoring.

Yellow Warblers were detected on seven occasions, including five days with banding of one bird each, scattered from August 22 to September 8. A few other species of warblers were also detected only a few times: Mourning Warbler on August 22 and 23 and on September 12; Pine Warbler on four days from August 18 to September 20; Canada Warbler on seven days from August 15 to September 15; and Northern Parula, with four sightings in August and September and one bird banded each on October 3 and 28.

In October, most warblers have usually already gone through the area with the exception of Orange-crowned and Yellow-rumped (Myrtle) Warblers, which are late, short-distance migrants; it is therefore mostly stragglers that are observed. Nonetheless, an average of $9 (\pm 3)$ species of warblers have been detected every October between 2002 and 2021, ranging from a low of 5 species (in 2005, 2007, and 2011) to a high of 15 in 2014, for an overall total of 21 species of warblers. Three species (Orange-crowned, Nashville, and Myrtle Warblers) have been observed every October, with Palm Warbler only missed once in 2004. This fall, 12 species of warblers (which included long- and short-distance migrants) were detected in October; the highest diversity was on October 3 with six species. Orange-crowned, Nashville, and Myrtle Warblers were again the species most commonly detected, with Myrtle Warbler by far the most abundant. Palm and Tennessee Warblers were detected on three occasions each. A Tennessee Warbler was captured and banded on October 26, five days later than the previous record late date of October 21 in 2003. These detections in 2003 and 2021 represent the only two occasions when this species was recorded after October 15 at Cabot Head. However, this species is regularly seen in October: though there were detections during the first three years of fall monitoring, there was then a long gap from 2005 to 2012 without any sightings, followed by observations every October afterward. A Black-and-white Warbler on October 1 and a Bay-breasted Warbler on October 4 were the fourth observations in October for these two species.

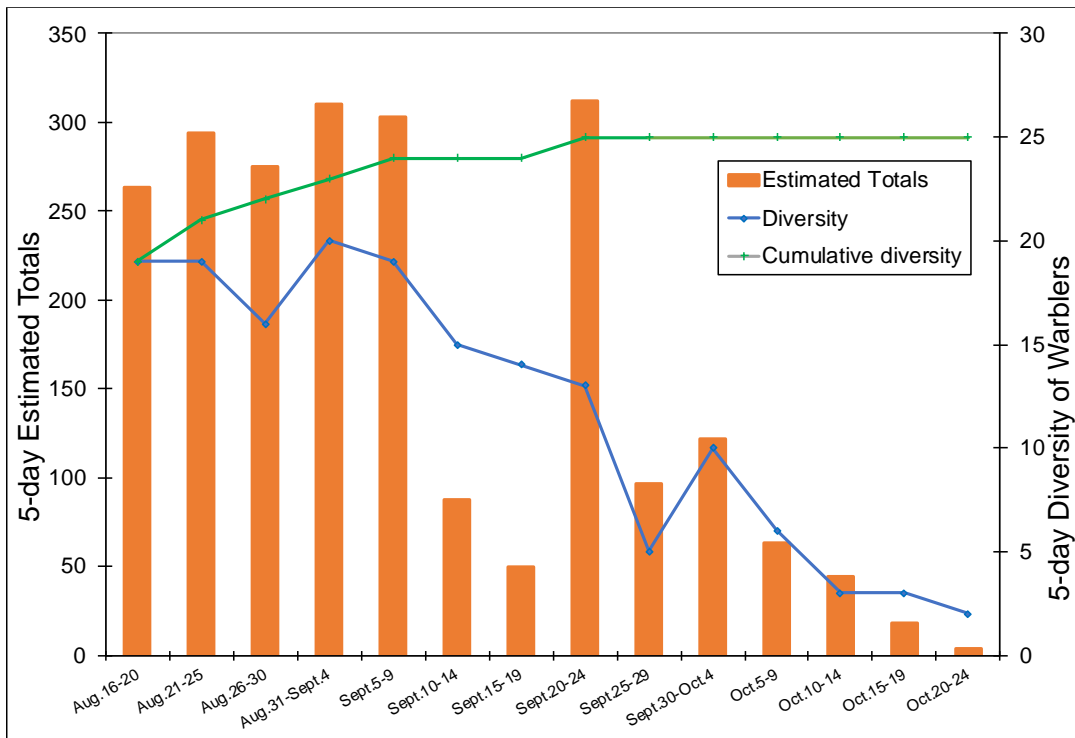


Figure 8. 5-day total numbers of warbler species (right Y-axis) and 5-day estimated totals of warblers (all species combined; left Y-axis) at CHRS in fall 2022.

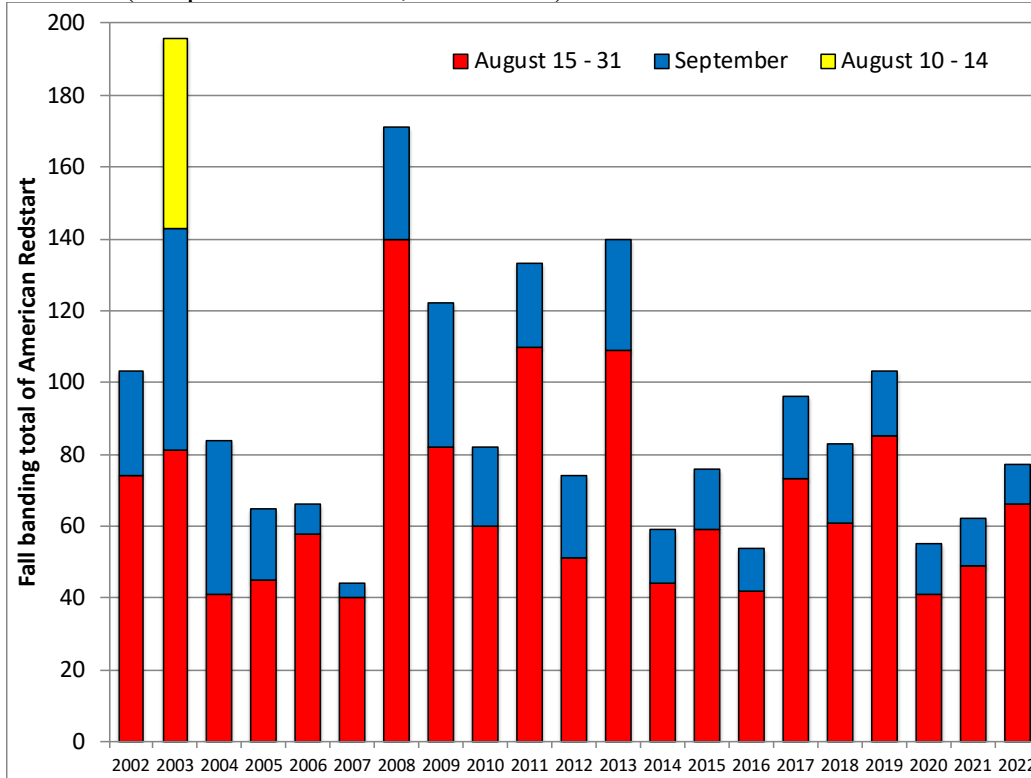


Figure 9. Banding total of American Redstart by month at CHRS in fall 2002 - 2022.

Short-distance migrants

Among passerines, the short-distance migrants are the latest birds in the fall to arrive and pass through Cabot Head, with some species even barely detected in late fall before the end of monitoring. For example, Northern Shrike was not observed in fall 2022 while observed in 14 of the previous 20 fall seasons, with first detections ranging from October 14 (in 2016) to 31 (in 2008).

Movements of Brown Creepers at Cabot Head start in mid-September, with a few local birds potentially seen and captured as early as mid-August. This year, the first detections were on August 24 and September 8 and 9. From September 14 onward, Brown Creepers were detected almost daily, mostly through banding (80% of detections), resulting in above-average totals for both banding and season totals. In all, 65 Brown Creepers were banded, the fourth-highest fall total (average of 43 ± 19 birds; range: 19 in 2009 to 83 in 2021).

With a migration pattern similar to that of Brown Creeper, Golden-crowned Kinglets are, however, much more numerous and more vocal. They are (almost) always the most numerous species banded in fall (though there were three seasons when Black-capped Chickadees had higher banding totals). In fall 2022, the banding total of 754 Golden-crowned Kinglets was four (4!) birds less than the record of fall 2013. This species shows extreme variations in banded numbers: from low of 113 birds in 2005 to a high of 758 birds in 2013 (average of 330 ± 169 birds). In fall 2022, the first Golden-crowned Kinglets were detected early in the season on September 11 (first detections range from September 10 in 2008 to 24 in 2009; with outliers of August 31 in 2003, and September 5 in 2020). The next detection was on September 20, with detections every day afterward and high numbers in two peaks (Fig.10). This is reflected in captures: 83 and 100 Golden-crowned Kinglets were banded on October 3 and 4, respectively, whereas 185 birds were banded on October 18. The latter is the second-highest daily total after 216 birds were banded on October 8, 2013. The overall total of these three days accounts for 48% of the season total of banded Golden-crowned Kinglets. Migration patterns for this species are very variable in the fall, with passage peaks potentially very different in timing and intensity across years (Fig.10). For example, barely any Golden-crowned Kinglets are counted before the end of September in some years (4% of the season totals in 2009 and 2019), whereas a third of the season total in 2012 was counted during this same period. In 2022, most of the passage of Golden-crowned Kinglets at Cabot Head happened in a few days in early and late October (Fig.10).

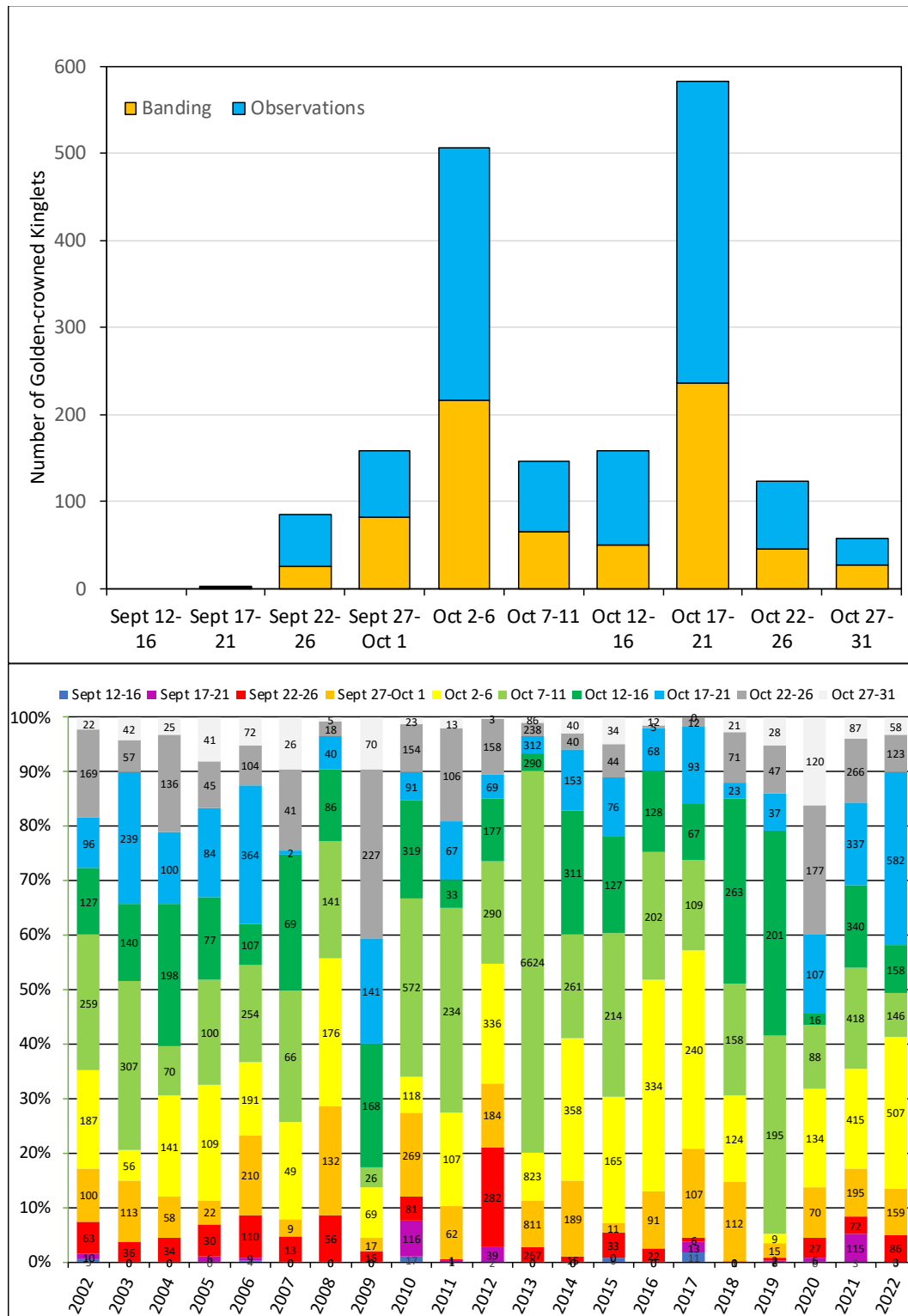


Figure 10. Banding and observation totals of Golden-crowned Kinglets in fall 2022 (top) and proportions of banding at CHRS in fall 2002 - 2022 (bottom) by 5-day periods. Banding totals by period are indicated in the bars.

Fall migration of Ruby-crowned Kinglet is quite similar to that of Golden-crowned Kinglet, though there are some differences. Numbers of Ruby-crowned Kinglets are usually lower than Golden-crowned Kinglets, as is the case again this fall. A total of 446 Ruby-crowned Kinglets (including a record of 171 birds banded) were detected from September 7 to October 31. The passage pattern this fall was significantly earlier than Golden-crowned Kinglets: by October 1, about 32% of the season total of Ruby-crowned Kinglets was already counted whereas it was only 14% for Golden-crowned Kinglets during the same time period. The difference slowly disappeared during the first two weeks of October: by October 16, 64% and 58% of the season totals of Ruby- and Golden-crowned Kinglets, respectively, were counted.

Red-breasted Nuthatches at Cabot Head are a mix of local and migrant birds, which obscures movement patterns. Furthermore, it is an irruptive species (i.e. at times moving out of its typical range due to fluctuating food sources), although seemingly less nomadic than other irruptive species. As a consequence, it is recorded in either low or high numbers in a somewhat cyclical fashion, south of its core breeding range in the boreal forest (Dunn, 2019). Based on banding data, movements at Cabot Head do not seem to follow a clear cycle: banding numbers have been relatively high in six of the last seven fall seasons, including the record high of 166 Nuthatches banded in fall 2022 (beating by six birds the previous record of 2013; Fig.9). This species was seen on 72 of the 78 days of monitoring this fall with higher numbers from mid-August to late September than in October (season highs of 54 and 59 birds on August 28 and September 17, respectively, and about 75% of season total counted by September 20). These counts indicate a strong movement through the area during that period. Movement strength, as expressed through banding counts, was particularly prominent in August this fall, notably compared to the other record falls of 2012 and 2018 (Fig.11).

Black-capped Chickadee is another potentially irruptive species, albeit in a more irregular pattern than Red-breasted Nuthatch. The presence of mostly sedentary local birds makes it challenging to precisely determine movements through Cabot Head. The frequency of recaptures of some banded birds certainly indicates a strong fidelity in this species. Based on banding data, it seems that irruption occurred only in fall 2005 and that 2003 and 2007 were very successful breeding years (see Menu 2022). The other fall seasons seem to alternate between very few Chickadees banded, likely local birds, and totals of around a hundred birds, possibly reflecting dispersal of young birds through the Bruce Peninsula in years of good breeding success (Fig.9).

The banding total of 281 chickadees in fall 2022 is the third-highest after the fall seasons of 2003 and 2005 (with 368 and 717 birds, respectively), but only 12 birds more than in 2007 (Fig.12). In fall 2022, there were 44 days when Black-capped Chickadees were banded, with 10 days having totals between 10 and 44 birds. Notably, there were seven consecutive days with double-digit banding totals from October 24 to 30. However, none of these days reached totals observed in the irruptive fall of 2005 (141 banded birds on October 17 and three days with between 54 and 68 banded birds). The temporal pattern in fall 2022 was relatively different from those in 2003 and 2007 but numbers of double-digit banding days were quite similar (Fig.12). In fall 2022, only 5% of banded Black-capped Chickadees were recaptured during the season, and only once for about half of them. The remaining six chickadees were recaptured between four and nine times, which could be an indication of them being local birds and/or of a local abundance of food. Based on numbers and patterns of banding, it appears that the breeding season in 2022 for Black-capped Chickadee was quite good, albeit without producing an irruption.

Blue-headed Vireos were detected throughout the season this fall from August 16 to October 31. The four detections (through banding) in August were likely from the small breeding population on the Bruce Peninsula. Overall, almost 70% of season detections came through banding, as birds in fall are mostly silent, which makes observations more difficult. A record total of 28 Blue-headed Vireos were banded this fall (see Table 2), more than double the previous fall record of 13 birds in 2015 and 2018 (see Fig.19).

At Cabot Head, Blackbirds (Common Grackles, Red-winged and Rusty Blackbirds) are observed in very small numbers in fall, as opposed to spring when large flocks are counted. Rusty Blackbirds have been detected in every fall season, sometimes with only one bird, most often in single-digit numbers, and with significant numbers only in six fall seasons (reaching a high of 91 birds in 2016). In fall 2022, 24 Rusty Blackbirds in total were observed on six occasions, from September 20 to October 23, with a high of 14 birds on September 21. A total of nine Red-winged Blackbirds were seen over three days (August 31 and September 1 and 20), whereas 11 Common Grackles were detected on seven days scattered between August 24 and September 24. Observations during the summer of 2020 seem to indicate an early movement of Common Grackles in mid- to late July at Cabot Head.

American Robins are commonly detected birds at Cabot Head, both as local and migrant birds, albeit not always in large numbers. They are seen regularly throughout the season in variable

numbers across the years, which usually peak in October during their main passage. This fall, there were numerous days with observations of a few American Robins (from one to eight birds) spread throughout the whole season. There were actually relatively few American Robins in October this fall, with almost 70% of the season total detected before September 11. Over the years, daily highs have ranged from less than 10 American Robins (in 2007, 2017, & 2018) to more than 100 birds (100 in 2002, 114 in 2013, and 217 in 2006).

The overwhelming majority of Blue Jays and Yellow-shafted Flickers usually migrate at Cabot Head in September, albeit with quite different phenology (Fig.13&14). In fall 2022, Yellow-shafted Flickers were detected in below average numbers, with 95 birds (2002-2021 average of 157 ± 98 ; low of 72 in 2007 and high of 394 in 2014). There were many fewer flickers than average observed in mid-September, which usually corresponds with the peak of passage. There was barely any movement of Blue Jays this fall with the lowest season count in 21 years (362 birds compared to an average of 940 ± 539 ; (previous) low of 415 in 2018 and high of 2825 in 2014). There were more jays observed in August and early September than average but the overall numbers were low during that period, except on September 7 and 8 with 35 and 39 Blue Jays, respectively. According to the winter finch forecast (<https://finchnetwork.org/winter-finch-forecast-2022-2023>), the flight out of the boreal forest is supposed to be good to strong, but this was not observed at Cabot Head.

Myrtle and Pine Warblers, and to a lesser extent, Orange-crowned and Palm Warblers, can be considered short-distance migrants, with a large part of their wintering grounds in the southern USA. Pine Warblers were detected on three days in fall 2022, with one bird each time. On the other hand, Myrtle Warblers were seen regularly, with detections on most days (76% of the 78 days of monitoring), from August 17 to October 22. The main passage of Myrtle Warblers was from mid-September to early October, with 68% of the season total counted from September 20 to October 6, including the highest daily count of 84 birds on September 20. This species, like Pine Warbler, breeds on the Bruce Peninsula: most detections in August and early September are likely of local birds. In contrast, Orange-crowned and Palm Warblers are boreal breeders and do not breed on the Peninsula. The first Palm Warblers were detected on September 8, with six birds, followed by a season high of 10 birds on September 9. This species was later observed somewhat regularly in small numbers up to September 21, with last detections on October 5 and 9. Orange-crowned Warbler is a late migrant: the first bird was detected on September 20, with relatively regular observations afterward until the final two birds detected on October 22.

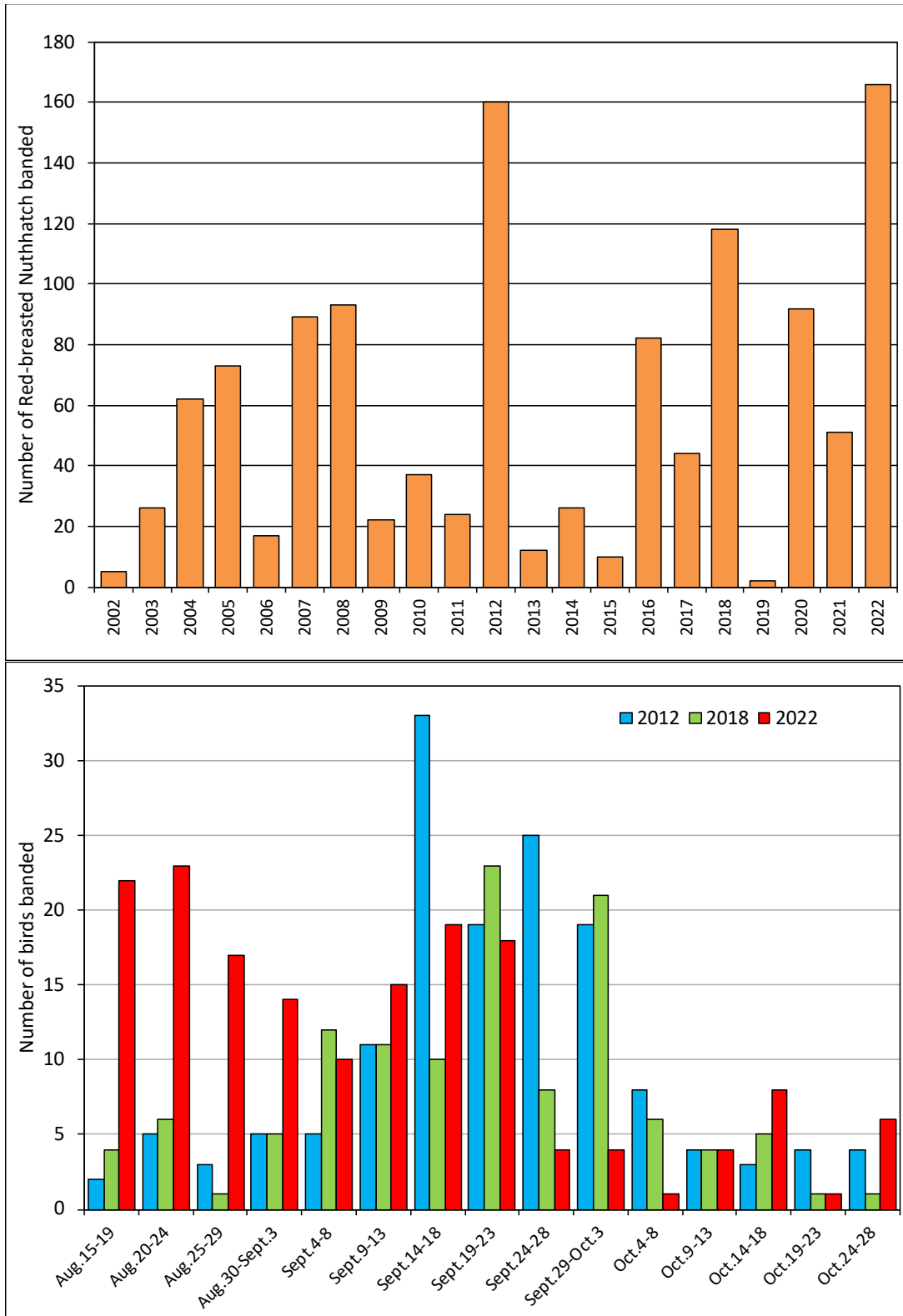


Figure 11. Banding totals of Red-breasted Nuthatches in fall 2002 - 2022 (top) and by 5-day periods in years 2012, 2018, and 2022 (bottom) at CHRS.

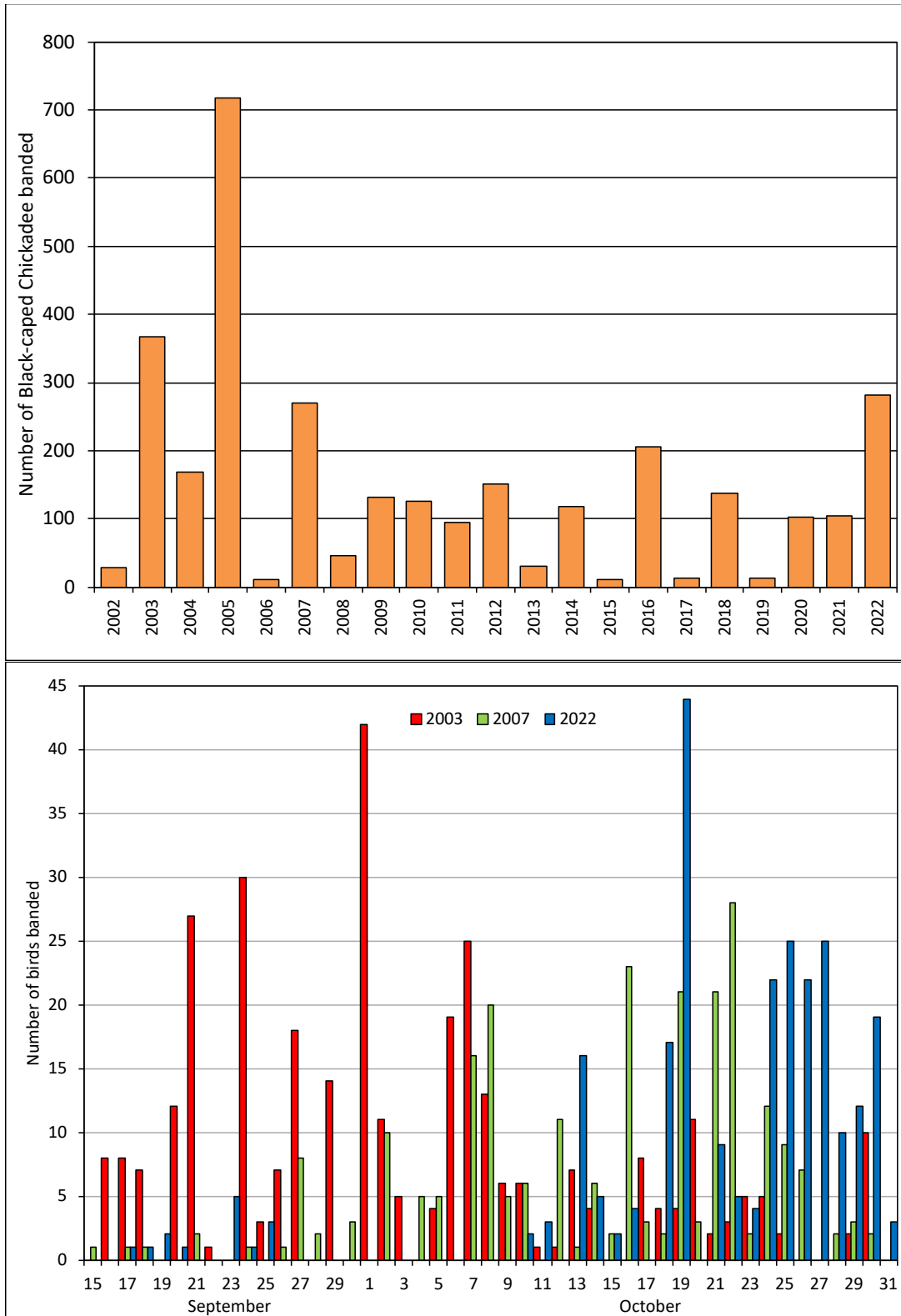


Figure 12. Banding totals in fall of Black-capped Chickadees by year (2002-2022; top) and by day for the years 2003, 2007, and 2022 (bottom) at CHRS.

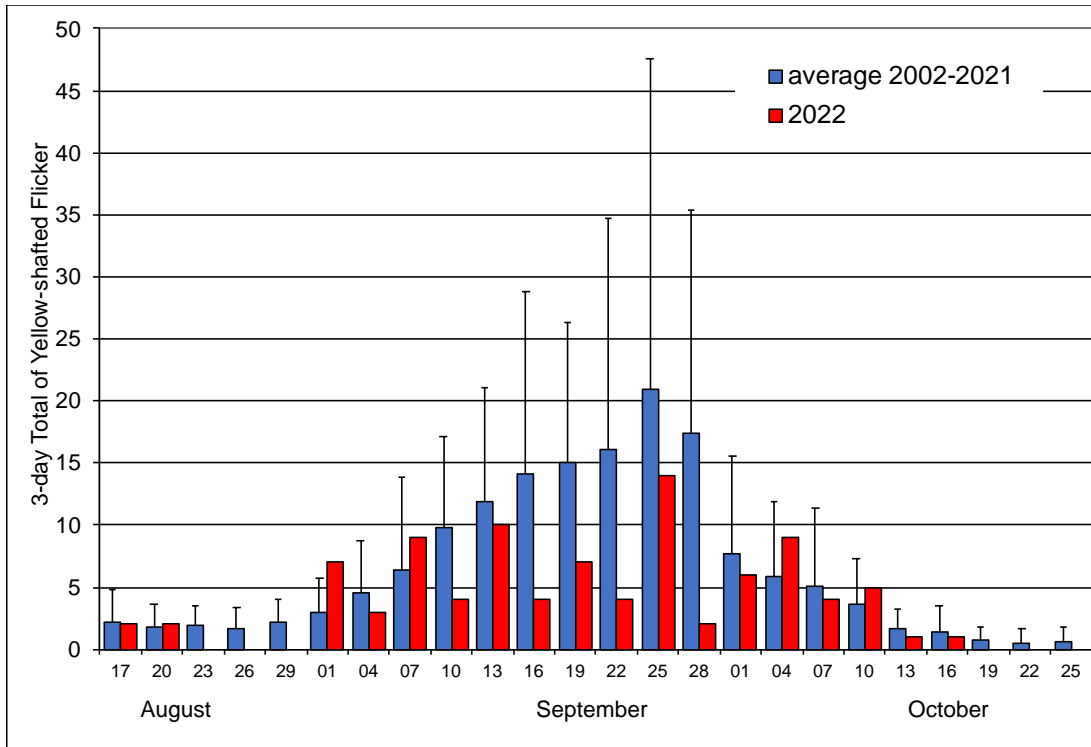


Figure 13. 3-day totals of Yellow-shafted Flickers for 2022 and the combined years of 2002 to 2021 at CHRS.

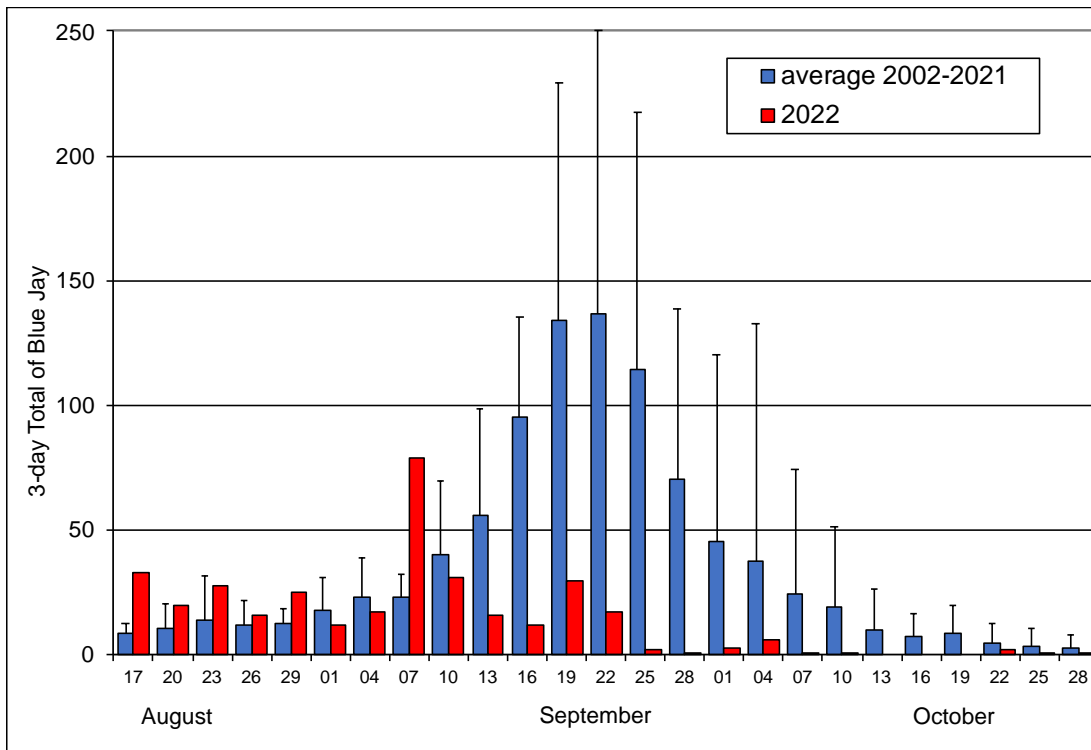


Figure 14. 3-day totals of Blue Jays for 2022 and the combined years of 2002 to 2021 at CHRS.

The sparrow species observed at Cabot Head are short-distance migrants, with wintering ranges confined mostly to southern Canada and the eastern USA. At Cabot Head, Song Sparrow is a local breeder which tends to obscure migration patterns for that species. It was observed this fall in small numbers (from one to eight birds) frequently from August 16 to October 31 (on 63% of monitoring days). It was also banded in good number this fall, with 15 birds, slightly above the average of 13 ± 5 birds. Only two Savannah Sparrows were observed this fall on September 21 and 28 and none were banded. This species is never captured in big numbers in the fall (one to eight birds, with 11 in 2020) with no captures in seven seasons (prior to 2022).

Fox Sparrow is a rather secretive species, foraging on the ground for food usually under thick cover. It is mostly silent during migration, especially in the fall, making its detection even more difficult. As a consequence, it is observed in very small numbers at Cabot Head during the fall, with one to eight detections per season from September 28 (in 2012) to October 31 (missed only in fall 2017). Detection dates across the falls are scattered throughout October. This fall, two Fox Sparrows were banded, one on October 1 (the second-earliest detection in 21 years) and the other on October 19, the only detections of the season. Based on average banding ranges (one to five birds per fall season), it is fair to say that populations of Fox Sparrows migrating through the Bruce Peninsula are relatively small compared to other species of sparrows.

The most abundant sparrows monitored in the fall are White-crowned and White-throated Sparrows and Dark-eyed Juncos, the latter two species also breeding in very low densities on the Bruce Peninsula. Very few birds, if any, of these two species are detected in August and early September at Cabot Head. This fall, one young Dark-eyed Junco was captured on August 21, likely hatched locally. This species was not detected again until September 8, with one bird observed and one capture of a young bird. Observations and captures were sporadic until September 20. Detections occurred daily thereafter in relatively consistent numbers throughout the season, with a daily high of 46 birds on September 30. The season total number of Juncos detected this fall is the third-highest of the 21 years of monitoring and the banding total of 170 birds is the second-highest, about double the average of 88 ± 36 (range: 24 in 2019 - 184 in 2021). Dark-eyed Juncos were banded almost daily from September 23 to October 31, with a high of 24 birds on October 3 and 19 birds the following day. This fall, the passage of Dark-eyed Juncos at Cabot Head was relatively early, with 41% of the season total of detections occurring by October 4 and 64% by October 11 (Fig.15). As with other species, the phenology of Junco migration is very variable across years: in

some fall seasons, more than 70% of the seasonal total is already counted by October 11, whereas in other years it is between 10 and 20%. In the last week of monitoring (October 25 - 31), numbers of Juncos detected can range from less than 10% of the seasonal total to 30% or more (with an extreme of 58% in 2019, a year of very low overall numbers). In fall 2022, only 5% of the season total of Juncos was counted in the last week. Migration can thus be “early” with 50 to 70% of the total passage happening before October 11 or “late” with 60 to 80% of counts coming after October 18 (Fig.12).

The first White-throated Sparrow was detected on August 24, involving the capture of a young bird likely from the small local breeding population. The next detection was on September 3; subsequently, this species was observed and/or banded almost daily up to October 24. The highest daily totals this fall were 33 birds (including 19 banded) on September 14 and 20 birds on September 28. Daily banding totals of 10 or more White-throated Sparrows are quite rare (4% of days with banding of this species in falls 2002-2021), with the highest totals of 31 birds on September 25, in 2008, 29 on September 23, in 2004, and 27 on September 19, in 2005: this fall’s season total of 19 birds is the fourth-highest overall. Fall 2022 also produced the second earliest daily banding total after September 9 in 2005 when 16 White-throated Sparrows were banded. However, the season banding total of 64 birds this fall is slightly below average (73 ± 42 ; range: 27 in 2019 - 199 in 2005).

The migration of White-crowned Sparrows generally happens slightly later than that of White-throated Sparrows. This fall, the first detection of White-crowned Sparrows was on September 20 with observations thereafter occurring daily up to October 26 (except on two days with no observations) and the last observation on October 30. Highest daily totals occurred on the last day of September and the first few days of October, with 31 birds counted on October 1. Numbers stayed relatively high until mid-October but dropped sharply afterward. The season banding total of 36 White-crowned Sparrows is below the average of 45 ± 28 but numbers have fluctuated wildly over the years (from a low of 17 in 2019 to a high of 126 in 2007).

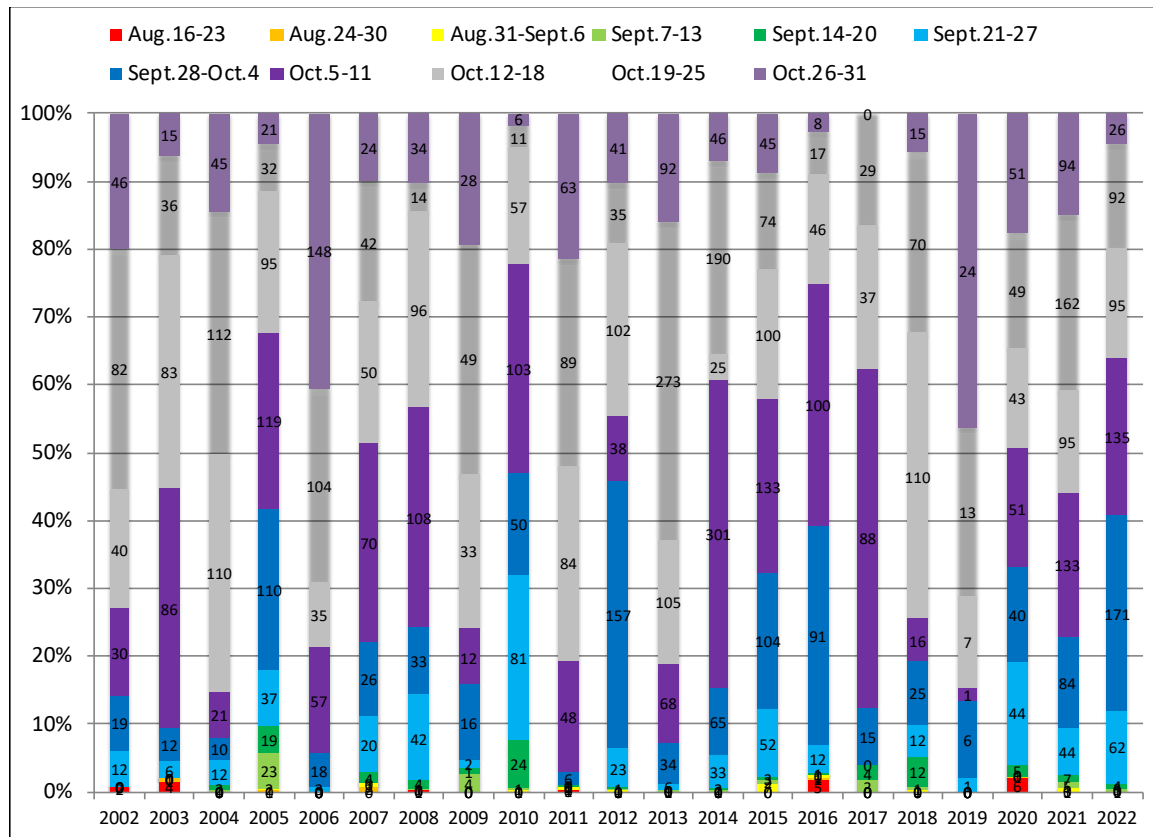


Figure 15. Proportions of detected totals of Dark-eyed Juncos at CHRS in fall 2002 - 2022 by 7-day periods. Detected totals by period are indicated in the bars.

Lincoln's and Swamp Sparrows are always detected in small numbers in the fall, very often through banding, as they are quite secretive. This fall, a total of 14 Lincoln's Sparrows (range from one in 2009 to 24 in 2021) were detected sporadically from September 8 to October 16, with six detections through banding (around average). The migration of Swamp Sparrows was slightly later, with eight birds (range from one in 2015 to 28 in 2003) detected from September 14 to October 18, including five banded.

American Tree Sparrow is a late migrant, with movements through Cabot Head starting in mid-October and likely continuing into November after the end of the migration monitoring period. In 2022, the first detection - of one bird - was on October 17, the third-latest date on record (October 18 in 2021 and October 22 in both 2018 and 2019). In 2022, American Tree Sparrows were detected daily from the date of first detection to the end of the monitoring period, except for a gap of four days, with one to 11 birds observed per day. A below-average total of 20 American Tree Sparrows were banded. This species, however, shows extreme variations in banded numbers,

from a low of four birds in 2018 to a high of 88 birds in 2010. Daily banding totals are usually single-digit, as was the case in 2022, except on October 27 with 11 birds banded. Occasionally, impressive numbers can be banded: 38 birds on October 26, 2004, 41 on October 28, 2010, and 37 on October 26, 2015.

This fall, a record seven species of Finches were detected, which marks 2022 as the fifth fall season with that many finch species seen during one season (after 2010, 2012, 2020 and 2021). Except for American Goldfinch and Purple Finch, finches spend most of their time in the boreal forest, depending on seed and cone crops of various specific trees and shrubs for food. When these resources fail, as they tend to in some years, it provokes a southward movement of finches, an irruption of variable amplitude. Predicting irruptions is as much science as art and is greatly awaited every year (see the Finch Network www.finchnetwork.org). As opposed to the previous two fall seasons, there was no massive movements of finches at Cabot Head this fall. The most notable event was the presence of one Evening Grosbeak for several days from October 24 to the end of the month. This bird was captured and banded on October 28, the first ever at Cabot Head. A small flock of 17 Evening Grosbeaks was seen on October 31, the last day of monitoring, seemingly validating the “finch forecast” of a strong movement south following an increase of the eastern populations in response to several spruce budworm outbreaks.

Unlike the massive movement of last fall, very few Crossbills were detected this fall, with one Red Crossbill on October 27 and five daily detections of White-winged Crossbills of one bird each throughout the season. Likewise, Common Redpolls were very sparse, with three detections at the end of the season for a total of seven birds. American Goldfinches were detected throughout the entire season: there were 46 days with observations, most of them of just a few birds, except for a strong movement during the last week of October, with daily highs of 43 and 84 birds on October 31 and 28, respectively. Such a strong late fall movement does not happen every fall but is not unusual: it was observed in 2004, 2006, 2014, 2016, and 2019 to different extents. The highest ever daily totals were 180 and 188 birds on October 30, 2006 and October 31, 2016, respectively. In contrast to American Goldfinch, Purple Finches are never observed in such large numbers, even though it is also a relatively common bird. There were 27 days with observations of Purple Finch in fall 2022 from August 16 to October 31 with a high daily count of eight birds on September 8. Pine Siskins were seen regularly from September 7 to October 31 in relatively low numbers (a daily high of 17 on October 31). No Pine Grosbeaks were observed this fall.

Arctic songbird migrants

A few songbird species breed in the Arctic in the summer and spend the rest of the year in mid-latitude areas (southern Canada and northern USA): they do migrate long distances but without going into tropical areas as do more typical long-distance migrants. At Cabot Head, the most commonly observed of the Arctic songbird migrants are Horned Lark, Snow Bunting, and American Pipit. These three species prefer open habitats and are usually detected at Cabot Head either flying overhead or along the shoreline and the open, shrubby tip.

In fall 2022, Horned Larks were first seen on September 8 when a large flock of 34 birds flew overhead. This species was detected - often by their calls without seeing the birds - during six other days from September 23 to October 20. American Pipits, more often heard than seen, were detected on 15 days from September 8 to October 24 (high of 10 birds on September 24). Snow Buntings were the last ones to arrive at Cabot Head, with the first five birds on October 27 and observations of one or two birds on the next four days.

Raptors

In contrast with spring, no substantial migration of soaring raptors occurs over the Bruce Peninsula in the fall. Georgian Bay presents a formidable barrier to cross, since no thermals used by these species can form over water. As a consequence, the most commonly seen species are the local breeding residents, notably Bald Eagle and Merlin. Bald Eagles were seen frequently from August 15 to October 31 (68% of the 78 days of monitoring), mostly the local breeding pair (which failed to produce young this year). A high of five eagles were counted on September 28.

Merlins breed every year at Cabot Head, exhibiting strong territorial behaviour and aggression against potential nest predators, making this species quite visible. This fall, it was detected on 52 days, or 68% of the time, from August 16 to October 31; many observations involved two young birds playfully chasing each other. Merlins were often seen perched on dead trees near the shoreline waiting for birds to arrive from the bay where the absence of cover makes them more vulnerable to attacks. A few successful and many unsuccessful attacks were observed during the season. Sharp-shinned Hawks were seen on only 15 days this fall, with a high of five birds on September 4 but no captures.

Other notable observations of raptors include: 20 Broad-winged Hawks on August 17;

one adult Northern Goshawk on August 27 (see blog for details); 10 days with observations of Peregrine Falcons, from August 16 to October 2 with one bird each day; one Red-shouldered Hawk observed on August 17 and 18 and, for the first time, on October 1 and 2 (previous latest date is September 15); one Osprey on August 17 and 18, September 4 and 28. These four days with observations of the last two species represents the highest number of detections in fall ever: previously, only one or two detections per season were recorded in eight seasons.

Waterfowl

Canada Geese usually migrate in early September but with large variations across the years (Fig.16). Large movements are strongly influenced by weather: north winds tend to bring numerous flocks flying through. This fall, limited movements in September were noted in early (150 birds on September 4) and late (69 and 119 birds on September 27 and 29) times of the month. Barely any Canada Geese were counted in October this fall, except for 29 birds on October 29.

A few Double-crested Cormorants were seen daily from the start of monitoring period until September 13 with regular observations after that date up to October 2. This species is typically observed roosting or fishing in Wingfield Basin and in Georgian Bay on water near shore. It is, however, rarely seen in active migration. The daily high of 47 birds on August 31 represents a number not reached since 2015. The season total for fall 2022 was quite low (Fig.17). Water levels, fish availability (or lack thereof), potential harassment and predation by Bald Eagles, and likely other factors (e.g. observation effort over the bay) influence the numbers of Double-crested Cormorants detected at Cabot Head.

Common Loons were seen throughout the entire season from August 15 to October 31 for a total of 39 days with detection (a 50% detection rate). Most daily totals were single-digit but four days had totals ranging from 10 to 19. There was no strong movement this fall, as opposed to the 72 Common Loons counted on September 12, 2021. The season total of 131 Common Loons in fall 2022 is relatively similar to totals since fall 2010 (with the exception of 2014 and 2021; Fig.18). This species is a strong flyer and moves through the area rapidly, making detection difficult. Issues influencing the probability of detection have likely stayed relatively constant over the years. However, in fall 2022, banding was very busy with a reduced team of only two most of the time, which greatly limited the time spent watching over the bay.

A large flock of 30 Surf Scoters was seen flying over Georgian Bay on October 20. A lone

female was later observed twice on the water, once in Wingfield Basin and once on Georgian Bay, on October 24 and 28. No Black Scoters were observed this fall. White-winged Scoters are much more common in general, with observations this fall from October 15 to 31, for a season total of 69 birds and a large one-day flock of 33 birds on October 20 (season totals range from nine in 2011 to 310 in 2014, with the highest one-day count of 152 birds on October 19, 2014). Scoters tend to be seen flying low and fast over the water of Georgian Bay and often quite some distance from the shore, making them easily missed. Long-tailed Duck is another waterfowl species with extreme fluctuations in numbers detected, from a low of five and six birds (in 2016 and 2017, respectively) to a high of 187 birds in 2008. Its migration happens mostly after mid-October and, very likely, extends into November. In fall 2022, a record number of 268 Long-tailed Ducks were counted on five days from October 19 to 31, with a one-day high of 110 birds on October 27, as well as 73 and 60 birds on October 31 and 19, respectively. Another late-migrant species, Buffleheads were seen in much smaller numbers, with the first bird on October 19 and four more birds in three days at the very end of monitoring. Likewise, Common Goldeneyes were observed on the very last days of monitoring, with a season total of 25 birds (11 and 12 on October 27 and 31, respectively). A few unidentified Scaups were detected this fall on October 26 and 27. Like Scoters and the other waterfowl species mentioned in this section, Scaups tend to fly fast and at a distance from shore, making detection and identification difficult.

Common Mergansers were observed on 25 days from August 20 to October 31, mostly in single-digit daily totals. A flock of 26 birds was observed fishing in Wingfield Basin on October 8. Likewise, observations of Red-breasted Mergansers were usually of a few birds, from September 12 to October 31; a daily high of 25 birds were seen on October 27, most of them seemingly in active migration over the bay on that day. There were observations of one to six Hooded Mergansers from August 17 to September 24.

Both Horned and Red-necked Grebes were seen in the second half of October in small numbers, often resting not far offshore on Georgian Bay. Up to 12, 13, and 14 Horned Grebes were counted, whereas the high one-day count for Red-necked Grebe was nine birds on August 22. This species was seen on another day in August 29. Observations in August of this species is quite infrequent, occurring on nine days in seven years between 2002-2021, representing 4.5% of all days with observations of Red-necked Grebe at Cabot Head.

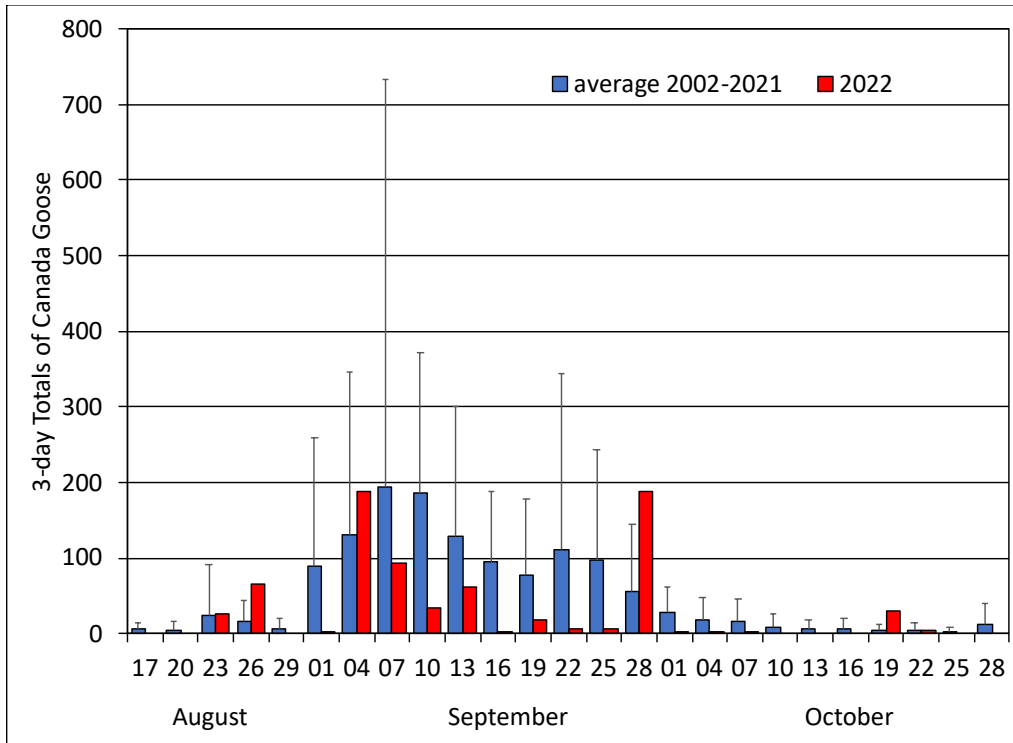


Figure 16. 3-day totals of Canada Goose for falls 2022 and average 2002 to 2020 at CHRS.

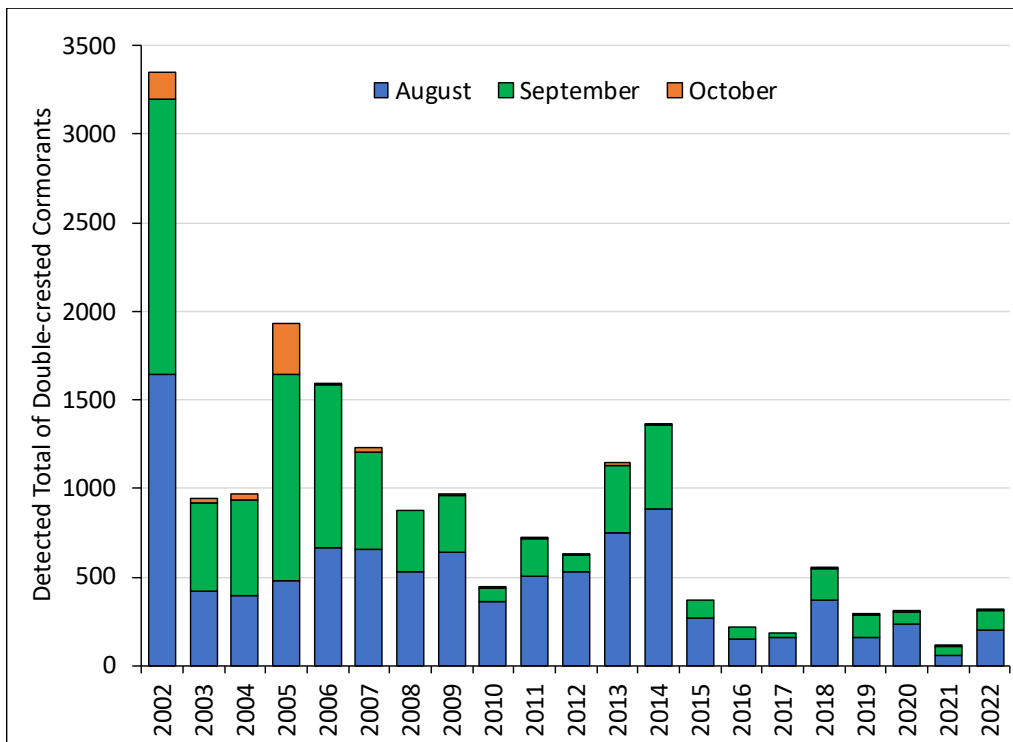


Figure 17. Detected totals of Double-crested Cormorants at CHRS, 2002 - 2022, in relation to year and month of monitoring.

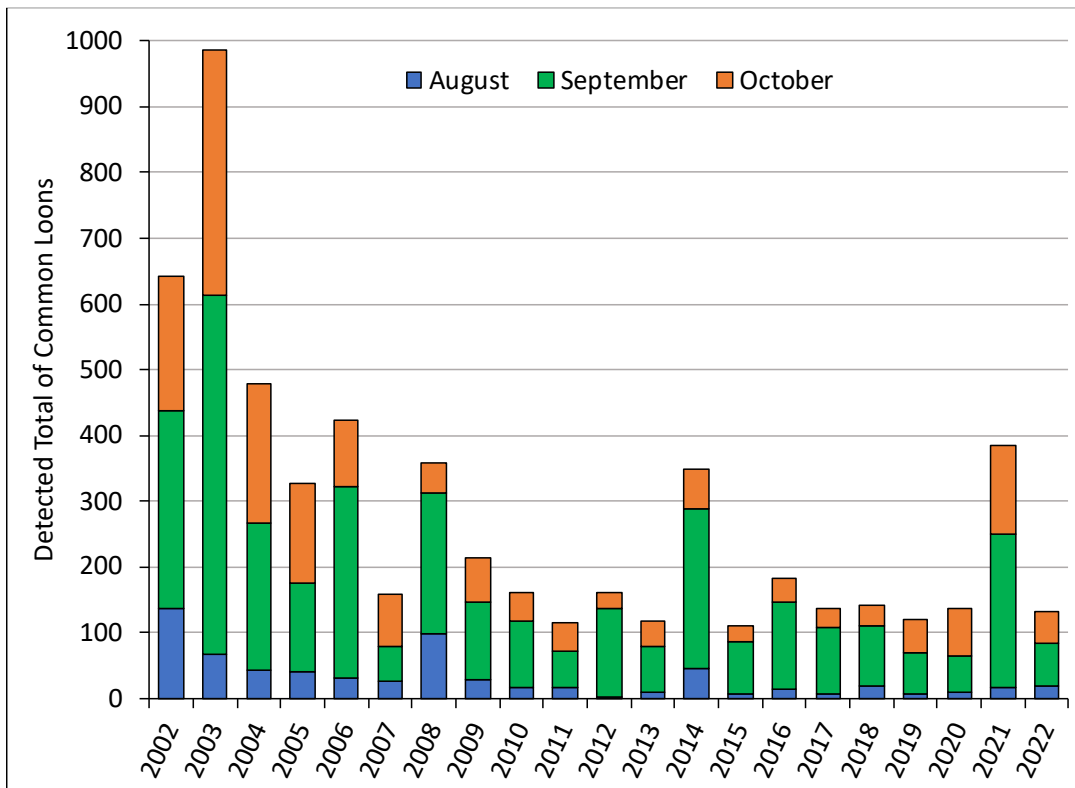


Figure 18. Detected totals of Common Loons at CHRS, 2002 - 2022, in relation to year and month of monitoring.

3. Unusual Records

An unusual record at Cabot Head can involve a bird: outside of range (either spatial, temporal, or numerical); whose species constitutes an overall low population on the Northern Bruce Peninsula; whose preferred habitats are not present at Cabot Head; whose species is rare overall, either at provincial or continental levels. Below in chronological order is the list of the fall 2022 unusual records (unless stated elsewhere in the document).

One Caspian Tern on August 19 and on four other days between August 28 and September 5. One Least Sandpiper on August 19. One roosting Great Horned Owl detected through alarm calls of American Crows in five days from August 19 to September 21. Two and one Red-bellied Woodpecker(s) on August 20 and October 8 respectively. One Semipalmated Sandpiper on August 21. One American Woodcock on August 23. One Blue-winged Teal and one Barn Swallow on August 31. Two Black-billed Cuckoos were banded on August 19 and September 9. This species is more sporadic than rare at Cabot Head, with detections in 10 previous fall seasons. Four Chimney Swift on August 28, a species detected only in eight fall seasons previously. One Green Heron on September 1. One Yellow-billed Cuckoo on September 2. It is a regular but rare species at Cabot Head, with one to three birds in each of 14 previous fall seasons. One Blue-gray Gnatcatcher on September 2 and 3, the 11th fall season with detections. Two Red-headed Woodpeckers each on September 2 and October 8. One red-throated Loon on September 17. Two Snow Geese in a flock of Canada Goose on September 27. This species was previously seen in the falls of 2006 and 2008 and in three spring seasons (2016, 2017, and 2018). Eastern Whip-poor-will were often heard very early in the morning (often before opening time) but one was almost caught on September 28 (latest recorded date: October 4 in 2021 and 12 in 2004). Northern Parulas were recorded on six days, including two days in October when one bird was banded each time, the second fall season with detections in October. An Eastern Screech-Owl heard on October 31, the seventh fall season with detections. Four Green-winged Teals over Georgian Bay on October 31. It is not really a rare species, being detected in 12 previous fall seasons but always in small numbers.

4. Banding Data Analysis

Fall 2022, with 2925 birds of 74 species banded, has been - by far - the highest banding total of the 21 fall seasons. With an average of 1653 ± 3574 birds, banding totals in the fall have been quite variable over the years, with lows of 1018 and 1037 banded birds (in 2019 and 2017, respectively) and highs over 2000 banded birds in four previous fall seasons (previous record high of 2475 in 2005). In fall 2022, banding totals for 41% of the days with banding ranged between 11 and 30 birds, with only six days producing totals of 10 birds or less. Among the latter group, only one day had good coverage consisting of 84 mist net hours. Remarkably this fall, about a quarter of the days with banding yielded banding totals of more than 50 birds per day, with four days reaching more than 100 birds (all-time fall record of 290 birds on October 18).

This fall, 14 species were banded in record high numbers (three of them tied with previous record). Most notable was Bay-breasted Warbler with 93 birds banded, as compared to the previous high of 25 birds of this species in fall 2021 (Fig.19). For another eight species, fall 2022 was the second- (or third-) highest banding total overall, with numbers sometimes very close to the record high (Fig.19). For example, 754 Golden-crowned Kinglets were banded this fall compared to 758 in fall 2013 (or about 0.5% difference). In contrast, no species was banded at record low levels this fall. However, eight species that have usually been banded (in 10 or more of the previous 20 seasons) were not captured at all: for example, Sharp-shinned Hawk (banded in 16 fall seasons), Chipping Sparrow (banded in 17), Eastern Phoebe and Scarlet Tanager (both banded in 12 fall seasons).

Golden-crowned Kinglet, with 754 birds banded, represents 26% of the seasonal total and - once again - was the species most banded in the fall (except in falls 2003, 2005, and 2007 when Black-capped Chickadees were banded in higher numbers). The top five most banded species account for 53% of the banding total this fall: Golden- and Ruby-crowned Kinglets, Black-capped Chickadee, Dark-eyed Junco, and Red-breasted Nuthatch, all with banding total over 100 birds; this number was also exceeded by Yellow-rumped Warbler and Red-eyed Vireo. Another seven species had banding totals between 50 and 100 individuals. On the other end of the spectrum, 12 species had only one individual banded and another 15 had banding totals between two and five birds (Table 1).

Numerous variables affect capture rates, including population dynamics, weather

conditions during migration, vegetation changes at the site, food availability, etc. Capture rates varied greatly on a weekly basis (Fig.20). The capture rate is determined by dividing the number of birds caught by the number of hours for which the nets were operated. Thus, variations in capture rate reflects fluctuations in those two parameters, which are themselves dependent upon various changing conditions (weather being the major one). Mist net hours are primarily lost when weather conditions (i.e. rain or strong wind) render it unsafe to capture birds, thus forcing net closure. In fall 2022, weekly capture rates were at record high or well above average throughout the season, except for the week of October 11-17 when it was below average. This fall, mist net hours were a mix of well below, around, or above average, with a perfect 100% during the last week (previous high of 86% in 2021). Maximum - or record - weekly mist net hours were all above 98% except for the last two weeks, with 92% and 86% respectively (Fig.21).

Weekly numbers of banded birds partially reflect variation in daily capture rates (Fig.20). Banded numbers were above average or at record high in every week, except on August 30 - September 5 and October 11 - 17. Numbers of birds banded were particularly impressive in the first week of the season and - especially - on October 18 -24, when totals were about four times the average and 139 birds more than the previous record (of 2021). It is during that week in 2022 that the record one-day banding total of 290 birds occurred, surpassing the previous record of 257 birds on October 8 in 2013. Of course, a week is a rather arbitrary temporal division, mostly useful to smooth the extreme daily variations in banding (see Fig.22) and to allow comparisons between years.

In fall 2022, 74% of the potential mist net hours were realized; the range is from 54% in fall 2007 to 85% in fall 2008, with an average of $72\% \pm 9$. Poor weather conditions precluded opening any mist nets for a total of nine days. Conditions allowed for a complete banding operation (all 15 mist nets opened for six hours, i.e. 90 mist-net hours a day) during 44% of the monitoring period (that is, 34 days). Coverage of 80 mist-net hours or more per day was realized during 54% of the monitoring period.

Table 1. Number of species banded in fall 2022 at CHRS according to their banding total.

Banding total	1 - 10	11 – 50	51 – 100	>101
Number of species	39	15	9	5

Table 2. Banding totals at CHRS in fall 2022, with 2002 - 2021 average (and Standard Deviation), maximum and minimum totals for 2002 - 2021, and number of previous falls with captures.

Group	Species	2022	Av.	StDev.	Max.	Min.	#
Cuckoos	Black-billed Cuckoo	2	2	2	5	1	5
Typical Owls	Northern Saw-whet Owl	1	1	0	2	1	9
Kingfishers	Belted Kingfisher	1	2	1	3	1	12
Woodpeckers	Red-bellied Woodpecker	1	1	1	3	1	5
	Downy Woodpecker	25	10	7	31	1	20
	Hairy Woodpecker	12	5	3	12	1	17
	Black-backed Woodpecker	1					
	Yellow-Shafted Flicker	3	4	2	8	1	19
	Pileated Woodpecker	2	1	1	3	1	11
Tyrant Flycatchers	Yellow-bellied Flycatcher	8	3	2	7	1	17
	Traill's Flycatcher	2	6	4	16	1	20
	Least Flycatcher	9	5	2	9	3	19
	Great Crested Flycatcher	1	1	0	1	1	3
Vireos	White-eyed Vireo	1	1		1	1	1
	Blue-headed Vireo	28	7	4	13	1	20
	Philadelphia Vireo	11	2	2	6	1	16
	Red-eyed Vireo	122	79	50	239	24	20
Crows & Jays	Blue Jay	17	5	4	16	1	19
Chickadees	Black-capped Chickadee	281	143	164	717	11	20
Nuthatches	Red-breasted Nuthatch	166	52	43	160	2	20
	White-breasted Nuthatch	1	1	0	2	1	6
Creepers	Brown Creeper	65	43	19	83	19	20
Wrens	House Wren	1	1	0	2	1	9
	Winter Wren	6	4	2	8	1	19
Kinglets	Golden-crowned Kinglet	754	330	169	758	113	20
	Ruby-crowned Kinglet	171	63	29	122	20	20
Thrushes	Eastern Bluebird	1					
	Townsend's Solitaire	1					
	Veery	2	4	3	10	1	17
	Gray-cheeked Thrush	12	14	9	41	1	20
	Swainson's Thrush	37	34	19	79	10	20
	Hermit Thrush	50	37	18	87	15	20
	American Robin	6	16	9	36	1	20
Mimidae	Gray Catbird	2	5	3	12	1	20
Waxwings	Cedar Waxwing	10	27	34	117	1	19
Finches	Purple Finch	6	4	4	17	1	18
	Pine Siskin	8	23	46	170	2	13
	American Goldfinch	5	9	10	30	1	13

	Evening Grosbeak	1					
Group	Species	2022	Av.	StDev.	Max.	Min.	#
New World Warblers	Tennessee Warbler	23	10	11	44	2	19
	Orange-crowned Warbler	15	15	8	28	3	20
	Nashville Warbler	63	34	16	78	14	20
	Northern Parula	2	1	1	2	1	7
	Yellow Warbler	5	4	3	13	1	17
	Chestnut-sided Warbler	8	2	1	5	1	18
	Magnolia Warbler	35	20	6	34	11	20
	Cape May Warbler	12	4	3	12	1	15
	Black-throated Blue Warbler	19	13	4	21	2	20
	Myrtle Warbler	145	82	41	204	34	20
	Black-throated Green Warbler	97	58	31	116	14	20
	Blackburnian Warbler	9	3	2	10	1	15
	Pine Warbler	2	2	1	3	1	10
	Palm Warbler	7	7	5	22	1	20
	Bay-breasted Warbler	93	9	7	25	1	18
	Blackpoll Warbler	32	11	8	31	3	20
	Black and White Warbler	40	26	17	91	9	20
	American Redstart	77	94	41	198	44	20
	Ovenbird	11	18	5	31	10	20
	Northern Waterthrush	9	6	4	15	1	20
	Connecticut Warbler	1	1	0	1	1	3
	Mourning Warbler	3	2	1	4	1	15
	Common Yellowthroat	47	26	6	39	17	20
	Wilson's Warbler	6	6	3	12	1	20
	Canada Warbler	7	4	2	7	1	20
New World Sparrows	American Tree Sparrow	20	28	25	94	2	20
	Fox Sparrow	2	3	2	7	1	18
	Song Sparrow	15	14	5	23	5	20
	Lincoln's Sparrow	6	6	3	13	1	19
	Swamp Sparrow	5	5	2	11	1	19
	White-throated Sparrow	64	73	42	199	27	20
	White-crowned Sparrow	36	45	28	126	17	20
	Slate-coloured Junco	170	88	36	184	24	20
Cardinals & allies	Northern Cardinal	3	1	1	3	1	11
	Rose-breasted Grosbeak	3	3	2	8	1	10

For 2022, record high captures in red, record low in yellow.

Av.: Average; StDev: Standard Deviation; Max: Maximum; Min: Minimum; #: Number of previous fall seasons with captures.

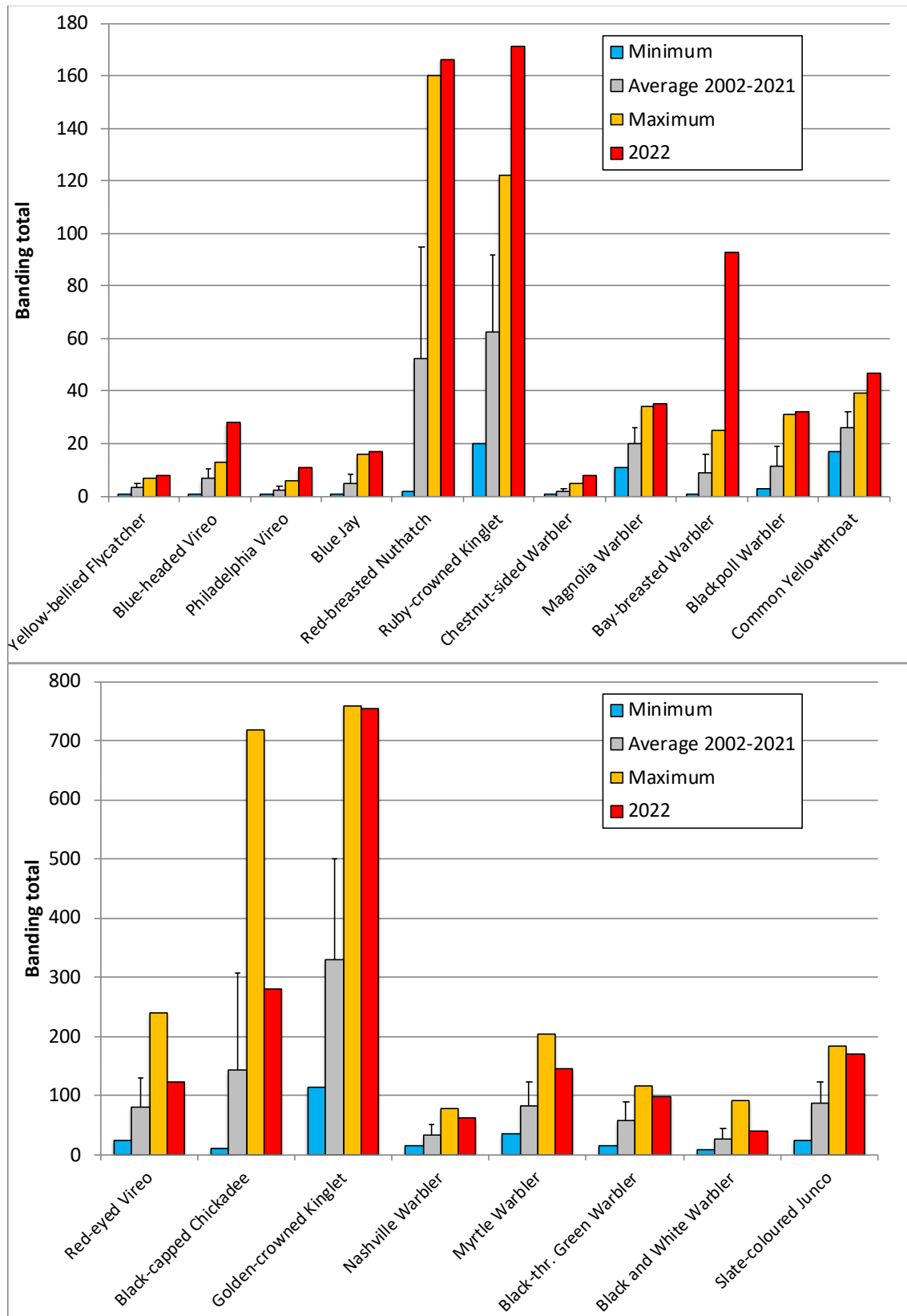


Figure 19. Banding totals of selected species at CHRS during the fall season (average 2002-2021, minimum and maximum and 2022). Error bars show Standard Deviation.

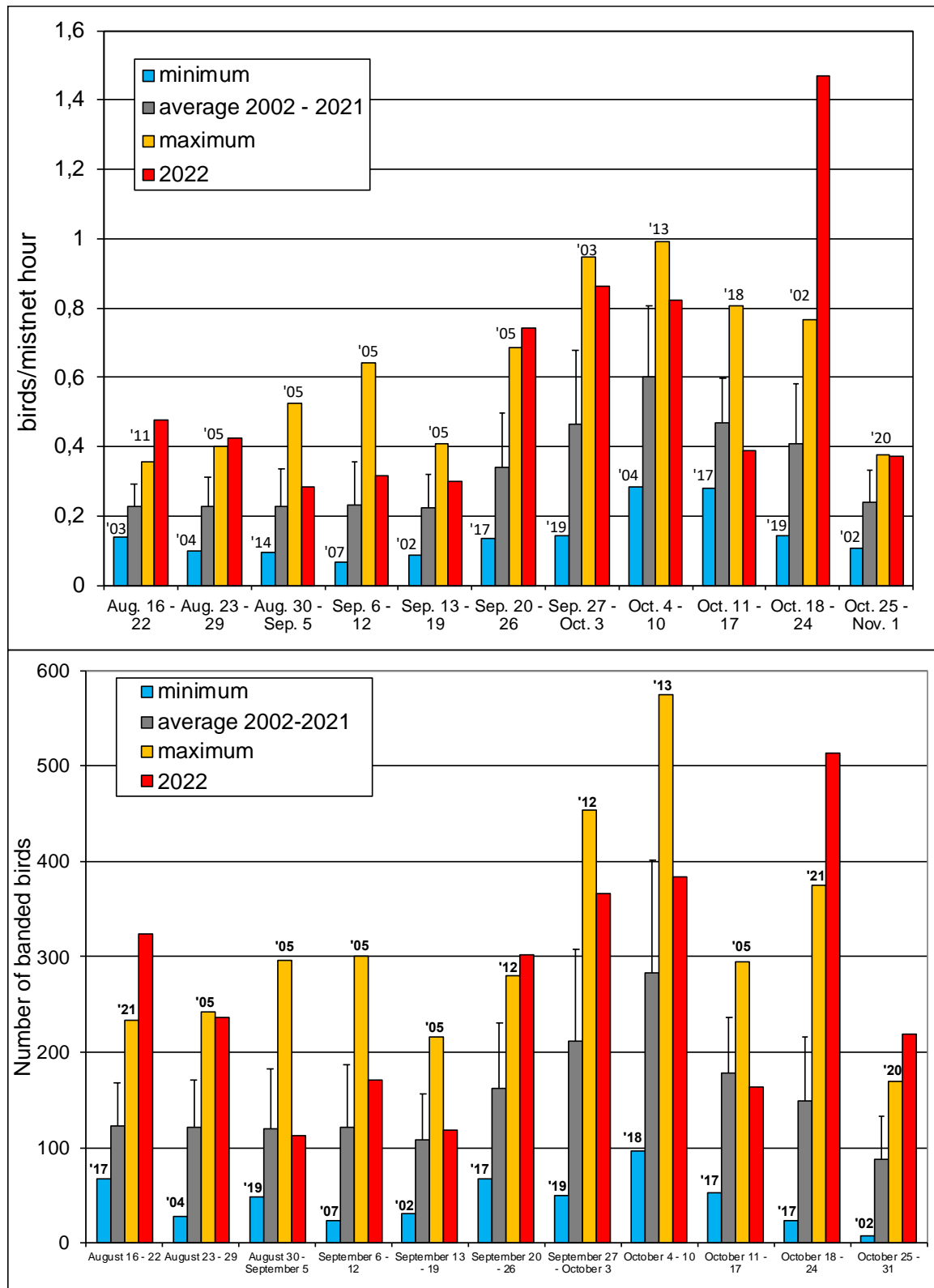


Figure 20. Weekly capture rates (top) and number of banded birds (bottom) at CHRS during the fall season (average 2002-2021, minimum and maximum with corresponding year and 2022). Error bars show Standard Deviation.

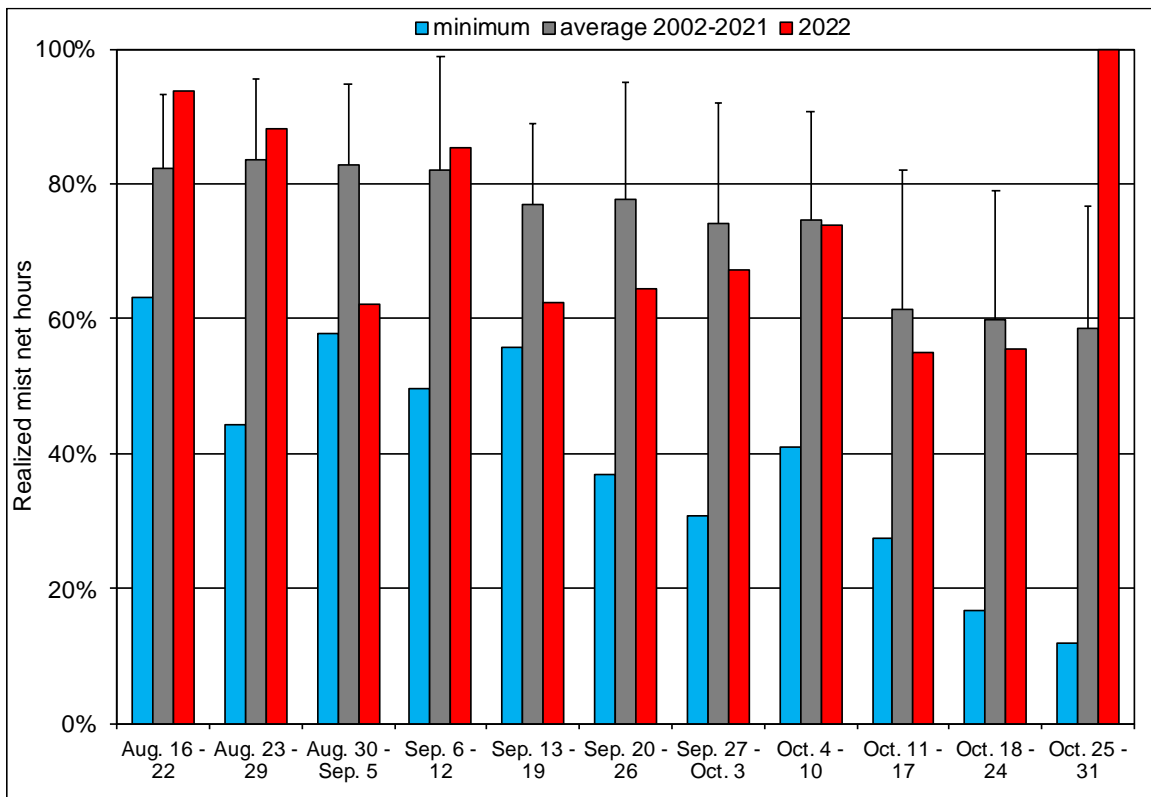


Figure 21. Weekly proportion of realized mist net hours at CHRS during the fall season (minimum, average 2002-2021 and 2022). Error bars show Standard Deviation.

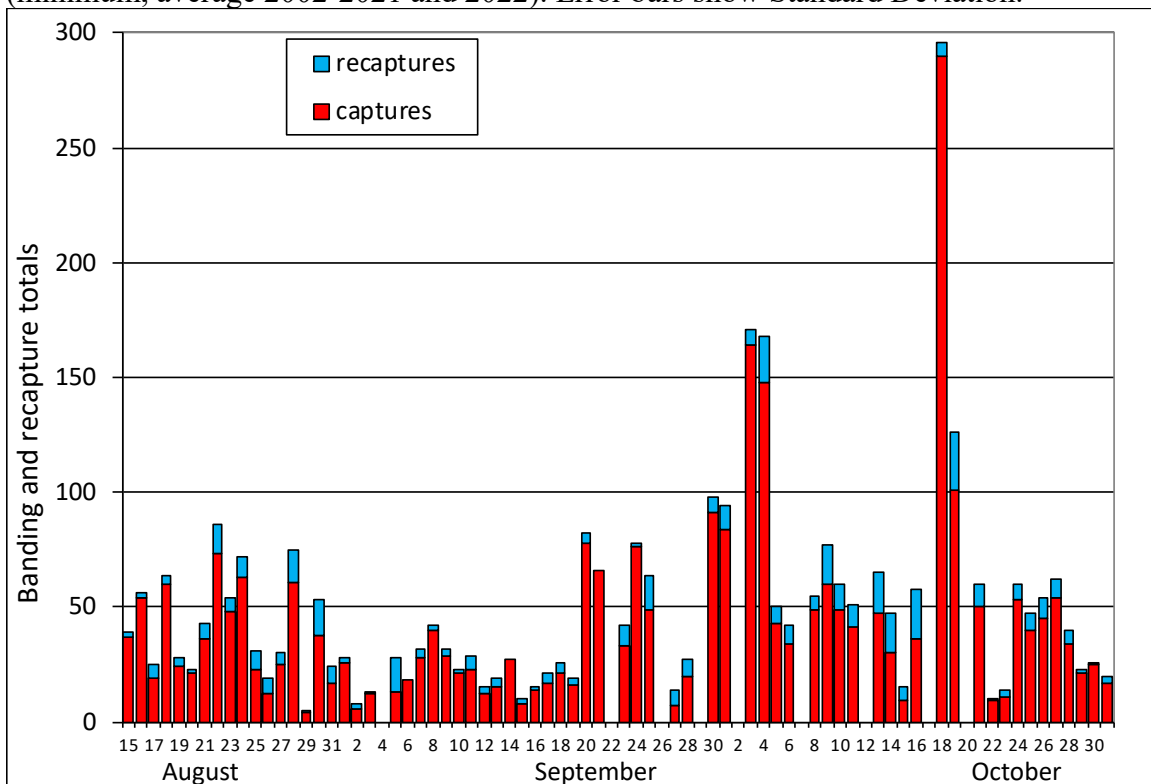


Figure 22. Daily number of captured and recaptured birds at CHRS, fall 2022.

Comparison between falls of 2003, 2005, 2013, and 2021

Besides fall 2022, banding totals have exceeded 2000 birds only in four other falls seasons (2003, 2005, 2013, and 2021). What are the similarities and differences between these remarkable seasons? All five fall seasons yielded a high diversity of species banded (68 to 74 species; Table 3) with a cumulative total of 95 species banded (50 species banded in each of the five seasons and 17 species banded in only one season). The five most banded species in each season account for more than 50% of the season total but these species have not always been the same across the years (Table 3) and all have shown large variations in total numbers during the five fall seasons (Fig.23). Across the five seasons, 10 species were among the five most banded per season; no one species was repeatedly in the top five in all five seasons, even the most numerous species, Black-capped Chickadee and Golden-crowned Kinglet (each of which missed achieving top-five status in one season). Remarkably, three species have been in the top five only once: Cedar Waxwing and White-throated Sparrow in fall 2005 and Red-breasted Nuthatch in fall 2022. The fall 2005 season seems to be the most unusual of these five years: there was an irruption of Black-capped Chickadee, resulting in the highest ever season banding total by far of this species (and any other species as well). At the same time, very few kinglets (of both species) were banded in fall 2005 which produced the lowest fall banding totals for kinglets across all years of monitoring (2002 to 2022). In contrast, like Black-capped Chickadee, the four other species in the top five this fall (Red-eyed Vireo, Cedar Waxwing, Yellow-rumped Warbler and White-throated Sparrow) achieved their highest fall banding totals ever in 2005, likely due to the abundance of chokecherries (Menu 2022). The high number of Golden-crowned Kinglets banded in fall 2013, with a record 758 birds (or 37% of the season total; Table 3), is likely the biggest reason that particular season achieved a high banding total; the other species (even those in the top five) did not reach remarkable totals in 2013 (except, perhaps, American Redstart with its third-highest fall total ever). In fall 2022, the banding total of Golden-crowned Kinglets is just four birds fewer than that in fall 2013 but that species accounts only for 26% of the season total in 2022 (as opposed to 37% in fall 2013): this is because Ruby-crowned Kinglet and Red-breasted Nuthatch reached their highest fall banding total ever and Black-capped Chickadee the third highest this year.

Table 3. Banding in falls of 2003, 2005, 2013, 2021, and 2022 at CHRS.

	Banding year				
	2003	2005	2013	2021	2022
Banding total	2044	2476	2039	2301	2925
Number of species	68	68	68	68	74
Top 5 species total	1125	1476	1185	1189	1542
% top 5 species	55%	60%	58%	52%	53%
% top 1 species	18%	29%	37%	27%	26%

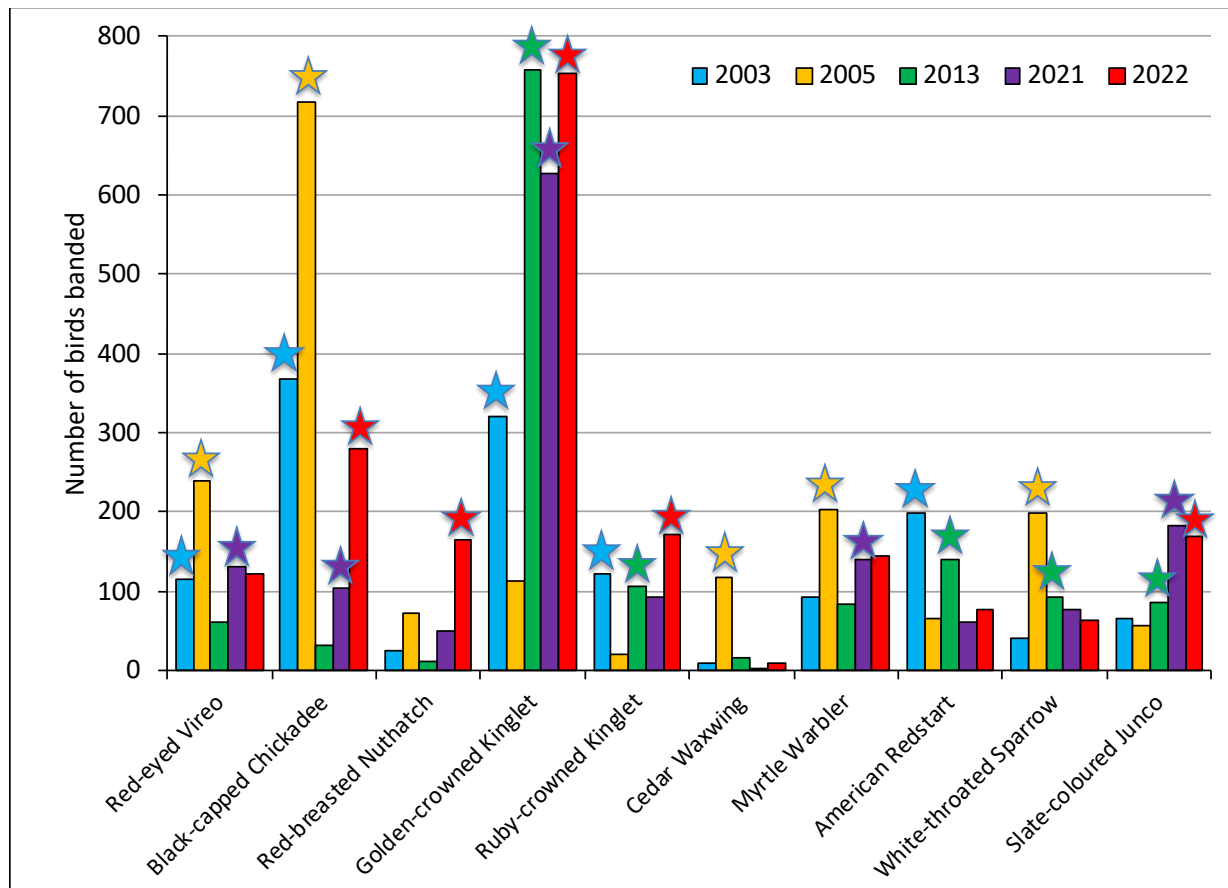


Figure 23. Banding totals of the five most banded species in at least one season in falls of 2003, 2005, 2013, 2021, and 2022. The stars indicate the five most banded species in each of the five fall seasons.

Species newly or rarely banded at Cabot Head:

This fall season, three species were banded for the first time ever at Cabot Head since the inception of formal migration monitoring: An adult male Black-backed Woodpecker on September 24 (although three young birds, two males and one female, were banded on September 18 and 22 in 2000 during preliminary banding work); one young Townsend's Solitaire on October 10; and, finally, one adult male Evening Grosbeak on October 28 (Photo 1). An adult Eastern Bluebird was banded on October 16, the first ever in fall (two birds in spring 2019 and one in spring 2021); one young White-eyed Vireo on October 28, the third ever (one in spring 2004 and one in fall 2012 (Photo 2).

A few other species rarely banded were also captured this fall; A young Connecticut Warbler on September 28, the fourth ever banded in fall (only one ever banded in spring; photo 2); one Great-crested Flycatcher on September 3, the fourth ever banded in fall (Photo 3); two Black-billed Cuckoos, a species more regular with banding in five previous fall seasons (Photo 3); and one young female Northern Saw-whet Owl captured in the first round on October 10. This species has been captured in nine previous fall seasons; it is always a nice surprise to encounter Northern Saw-whet Owl, a nocturnal species, in the mist nets. Belted Kingfisher is always another nice surprise in the nets: one bird was captured this fall on August 18 (Photo 3). A total of 18 Belted Kingfishers - all young - have been captured in 12 previous fall seasons.



Photo 1: Black-backed Woodpecker (left), Townsend's Solitaire (middle), Evening Grosbeak (right).



Photo 2: Eastern Bluebird (left), White-eyed Vireo (middle), and Connecticut Warbler (right).



Photo 3: Great Crested Flycatcher (left), Belted Kingfisher (middle) and Black-billed Cuckoo (right).

5. Recaptures

There was a total of 461 recaptures from August 15 to October 31 of 278 individuals of 35 species (Table 4). Almost all recaptures (92%) came from birds banded this fall. In total, 87% of the recaptured birds were recaptured once or twice during the fall (68% and 19%, respectively). Twelve birds of four species (Downy Woodpecker, Black-capped Chickadee, Ruby-crowned Kinglet, and Slate-coloured Junco), all banded this fall, were recaptured five times or more (up to 11 times for one Junco).

The 20 birds of five species banded in previous seasons and recaptured this fall are most likely local breeders, with 14 of them American Redstarts, the most common local breeder bird at Cabot Head. An American Redstart banded as a hatch-year in summer 2020 (the perfect definition of “local”) was recaptured for the first time this fall. The other recaptured birds were variously banded in fall 2020, spring and fall 2021, and spring 2022, which means that, this fall, histories of recapture at Cabot Head were not very different across individuals (Table 5).

Of the 2925 birds banded in fall 2022, a total of 258 were recaptured, i.e. 9%, with considerable variations between species. For species with more than 30 individuals banded, the within-season recapture rates varied from 2% (Bay-breasted and Nashville Warblers) to 34% (Common Yellowthroat). Recapture rates are usually highest for species that tend to forage mostly on the ground or low in the vegetation, which potentially increases the likelihood of capture. Common Yellowthroat is a good example, as recapture rates tend to be high to very high every fall. However, there are differences even among species that have similar feeding strategies. For example, only 6% of White-crowned and White-throated Sparrows were recaptured this fall, compared to 18% of Dark-eyed Juncos. Likewise, only two Swainson’s Thrushes of the 37 banded (5%) were recaptured, as opposed to 18% of Hermit Thrush (nine birds out of 50). Locally abundant breeding species tend also to be recaptured in high proportions: 9% of the 122 Red-eyed Vireos were recaptured, as well as 14% of American Redstarts. A remarkable 23% of the 40 Black-and-white Warblers netted this fall were recaptured. Despite being captured in high numbers, only 3 to 11% of Golden-crowned Kinglets (8% this fall) are ever recaptured during the same season, indicating a quick movement through Cabot Head.

One young Slate-coloured Junco, after its initial banding on September 25, was recaptured 11 times from September 30 to October 26, for an apparent stay of 31 days (i.e. there is no way to

know if this bird was present before its first or after its last capture). After an original measure of 18.3g, its weight increased and decreased during this period to reach a final measure of 21.7g, an 18% increase overall. Four other Juncos were recaptured from five to seven times, with apparent stays of nine to 25 days. Their respective weight trajectories were highly variable: two birds experienced fluctuating weight but the final measure was very close to the initial one. The bird with the shortest apparent stay (of nine days) increased its weight by 15%. In contrast, the Junco first captured on September 30 with a weight of 16.6g experienced a continuous decline in its weight up to October 14 at 14g but managed to gain back some weight to reach 16.4g at its last recapture on October 24. These examples show both the importance of high-quality stopover habitats and variation among species and individuals. Unlike Juncos, Black-capped Chickadees recaptured several times (three birds with seven, eight, and nine recaptures) show barely any variation in their weight, which is typical of sedentary species. One Ruby-crowned Kinglet, banded on October 3, was subsequently recaptured eight times from October 6 to 21 with no real changes in its weight. It is quite unusual to recapture a kinglet so many times.

Table 4: History of recaptures of birds banded before and recaptured in fall 2022. (Colour indicates recaptures)

B_year	B_season	Species	n	2020	2021		2022	
				Fall	Spr.	Fall	Spr.	Fall
2020	summer	American Redstart	1					
	fall	American Redstart	1					
		Black-capped Chickadee	1					
2021	spring	Black-and-white Warbler	1					
	fall	American Redstart	5					
		American Redstart	1					
		Black-and-white Warbler	2					
		Black-capped Chickadee	1					
2022	spring	American Redstart	6					
		Black-throated Green Warbler	1					
		Black-throated Blue Warbler	1					

B: Banding; Spr.: spring; n: numbers of individuals with the same history of recapture

Table 5. Total recaptures by species in relation to year and season of banding (only one recapture per individual is included) at CHRS, fall 2022.

Group	Species	2020		2021		2022		%
		Su.	Fall	Spr.	Fall	Spr.	Fall	
Woodpeckers	Downy Woodpecker						7	28%
	Hairy Woodpecker						3	25%
Vireos	Blue-headed Vireo						2	7%
	Philadelphia Vireo						1	9%
	Red-eyed Vireo						11	9%
Crows & Jays	Blue Jay						1	6%
Chickadees	Black-capped Chickadee		1		1		13	5%
Nuthatches	Red-breasted Nuthatch						14	8%
Creepers	Brown Creeper						6	9%
Kinglets	Golden-crowned Kinglet						61	8%
	Ruby-crowned Kinglet						5	3%
Thrushes	Gray-cheeked Thrush						1	8%
	Swainson's Thrush						2	5%
	Hermit Thrush						9	18%
Finches	Purple Finch						1	17%
New World Warblers	Orange-crowned Warbler						2	13%
	Nashville Warbler						1	2%
	Magnolia Warbler						7	20%
	Black-throated Blue Warbler					1	1	5%
	Myrtle Warbler						13	9%
	Black-throated Green Warbler					1	14	14%
	Blackburnian Warbler						1	11%
	Bay-breasted Warbler						2	2%
	Blackpoll Warbler						1	3%
	Black-and-White Warbler			1	2		9	23%
	American Redstart	1	1		6	6	11	14%
	Ovenbird						1	9%
	Connecticut Warbler						1	100%
	Common Yellowthroat						16	34%
New World Sparrows	Song Sparrow						1	7%
	Lincoln's Sparrow						2	33%
	Swamp Sparrow						1	20%
	White-throated Sparrow						4	6%
	White-crowned Sparrow						2	6%
	Slate-coloured Junco						30	18%

%; Proportion of birds banded in fall 2022 recaptured.

6. Personnel

Emma Stattelmann (from Minnesota) was present for most of the season (72 days). Tania Havelka, Philippe Hénault, Jake Nafziger, Miriam Oudejans, Madelaine Proulx, Ryan Smith (from Ontario and Québec) contributed between eight and 11 days. In total, the seven volunteers contributed 119 person-days to the fall migration monitoring season. A big thank to them!

7. Conclusion

Entering its third decade, bird migration monitoring at Cabot Head was done daily from August 15 to October 31, thanks notably to a dedicated team of volunteers. The continuing monitoring effort throughout the years continually adds details and refines and extends our knowledge the natural history of bird migration on the Bruce Peninsula.

This fall, a record number of birds were banded, shattering the previous 17-year record of fall 2005 by almost 450 birds. Many species were banded in record (or near record) numbers this fall, notably the spruce budworm specialists of the boreal forest (Bay-breasted, Cape May, Blackpoll, and Blackburnian Warblers). There was also an irruption of Red-breasted Nuthatches, with a strong movement in August and early September and record numbers of birds banded. Many Black-capped Chickadees were also banded but more likely as the result of a good local breeding season than an irruption. Based on 21 years of data, an irruption by this species appears to have happened only once, in fall 2005, one factor (among others) that contributed to the record high numbers of birds banded that fall. Local food availability may also explain differences between seasons, as in fall 2005 when an abundance of chokecherries led many berry-eating species to be banded in record numbers.

Despite observations being limited sometimes by the high volume of banding, 148 species of birds were detected, the second-highest level of diversity of all fall seasons. This includes species very rarely seen or banded at Cabot Head, notably Black-backed Woodpecker, White-eyed Vireo, Townsend's Solitaire, Connecticut Warbler, and Evening Grosbeak.

Cabot Head is truly an amazing place to experience and share the beauty of nature. Continuing migration monitoring at CHRS contributes to the efforts of the CMMN and ultimately to our general understanding and monitoring of bird populations as a whole.

Acknowledgements

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

The author wishes to thank all the members of the Bruce Peninsula Bird Observatory for their support during the field season. I would also like to commend the volunteers who helped make the field season efficient and enjoyable. It is an honour and a privilege to work for BPBO.

Land acknowledgement

“We acknowledge with respect, the history, spirituality and culture of the Anishinaabe peoples on whose traditional territories we gather and whose ancestors signed Treaties 82, 45 ½ and 72 with our ancestors. We recognize also, the Great Lakes Metis whose ancestors shared this land and these waters. May we all, as Treaty People, live with respect on this land, and live in peace and friendship with all of its diverse peoples.”

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Appendix I

Table 6. Season total of species observed in fall 2022 at Cabot Head Research Station, with maximum and minimum daily totals, number of days with observation, and dates of first and last observation.

Group	Species name	Season Total	Daily Max.	Daily Min.	Days with obs.	First date	Last date
Ducks, Geese & Swans	Snow Goose	2	2		1	27 Se.	
	Canada Goose	729	150	1	31	15 Au.	23 Oc.
	Tundra Swan	4	4		1	27 Oc.	
	Mallard	27	6	1	9	29 Au.	29 Oc.
	Blue-winged Teal	1	1		1	31 Au.	
	Green-winged Teal	4	4		1	31 Oc.	
	Ring-necked Duck	1	1		1	27 Se.	
	Surf Scoter	32	30	1	3	20 Oc.	28 Oc.
	White-winged Scoter	69	33	1	8	16 Oc.	31 Oc.
	Long-tailed Duck	268	110	10	5	19 Oc.	31 Oc.
	Bufflehead	5	2	1	4	19 Oc.	31 Oc.
	Common Goldeneye	25	12	2	3	27 Oc.	31 Oc.
	Hooded Merganser	27	6	1	7	18 Au.	21 Se.
	Common Merganser	114	26	1	25	20 Au.	31 Oc.
	Red-breasted Merganser	82	25	1	13	12 Se.	31 Oc.
Grouse & Turkeys	Ruffed Grouse	34	5	1	19	26 Au.	31 Oc.
Grebes	Pied-billed Grebe	3	2	1	2	13 Se.	29 Oc.
	Horned Grebe	57	14	3	6	20 Oc.	31 Oc.
	Red-necked Grebe	1	1		1	23 Oc.	23 Oc.
Pigeons and Doves	Rock Pigeon	25	9	1	8	22 Au.	
Cuckoos	Black-billed Cuckoo	2	1	1	2	19 Au.	9 Se.
	Yellow-billed Cuckoo	1	1		1	2 Se.	
Goatsuckers	Common Nighthawk	1	1		1	28 Au.	
	Eastern Whip-poor-will	2	1	1	2	9 Se.	28 Se.
Swifts	Chimney Swift	4	4		1	28 Au.	
Hummingbirds	Ruby-throated Hummingbird	94	7	1	29	15 Au.	20 Se.
Cranes	Sandhill Crane	11	2	1	10	30 Au.	15 Oc.
Sandpipers & Phalaropes	Greater Yellowlegs	10	1	1	10	16 Au.	31 Oc.
	Spotted Sandpiper	11	2	1	9	15 Au.	6 Se.
	Semipalmated Plover	1	1		1	21 Au.	
	Least Sandpiper	1	1		1	19 Au.	
	American Woodcock	1	1		1	23 Au.	
Gulls & Terns	Ring-billed Gull	402	87	1	49	15 Au.	31 Oc.
	Herring Gull	271	30	1	52	15 Au.	31 Oc.

Group	Species name	Season Total	Daily Max.	Daily Min.	Days with obs.	First date	Last date
Gulls & Terns	Caspian Tern	5	1	1	5	19 Au.	5 Se.
Loons	Red-throated Loon	1	1		1	17 Se.	
	Common Loon	131	19	1	39	15 Au.	31 Oc.
Cormorants	Double-crested Cormorant	311	47	1	41	15 Au.	2 Oc.
Hérons & Bitterns	Great Blue Heron	14	2	1	12	15 Au.	6 Oc.
	Green Heron	1	1		1	1 Se.	
Vultures	Turkey Vulture	30	6	1	13	15 Au.	7 Se.
Osprey	Osprey	4	1	1	4	17 Au.	28 Se.
Hawks, Kites & Eagles	Bald Eagle	101	5	1	53	15 Au.	31 Oc.
	Northern Harrier	3	3		1	14 Se.	
	Sharp-shinned Hawk	29	5	1	15	28 Au.	30 Oc.
	Northern Goshawk	1	1		1	27 Au.	
	Red-shouldered Hawk	4	1	1	4	17 Au.	3 Oc.
	Broad-winged Hawk	41	20	1	5	15 Au.	11 Se.
	Red-tailed Hawk	19	5	1	10	15 Au.	30 Oc.
Typical Owls	Eastern Screech-Owl	1	1		1	31 Oc.	
	Great Horned Owl	5	1	1	5	19 Au.	21 Se.
	Northern Saw-whet Owl	1	1		1	6 Oc.	
Kingfishers	Belted Kingfisher	51	2	1	35	15 Au.	5 Oc.
Woodpeckers	Red-headed Woodpecker	2	1	1	2	2 Se.	3 Oc.
	Red-bellied Woodpecker	3	2	1	2	20 Au.	8 Oc.
	Yellow-bellied Sapsucker	2	1	1	2	28 Se.	29 Se.
	Downy Woodpecker	133	11	1	54	17 Au.	31 Oc.
	Hairy Woodpecker	85	5	1	47	15 Au.	31 Oc.
	Black-backed Woodpecker	1	1		1	24 Se.	
	Northern Flicker	95	10	1	40	15 Au.	17 Oc.
	Pileated Woodpecker	61	3	1	37	15 Au.	31 Oc.
Falcons	American Kestrel	6	4	1	3	4 Se.	1 Oc.
	Merlin	95	5	1	52	16 Au.	31 Oc.
	Peregrine Falcon	10	1	1	10	16 Au.	2 Oc.
Tyrant Flycatchers	Eastern Wood-Pewee	1	1		1	15 Au.	
	Yellow-bellied Flycatcher	10	3	1	7	18 Au.	14 Se.
	Traill's Flycatcher	8	2	1	7	18 Au.	9 Se.
	Least Flycatcher	15	3	1	12	18 Au.	12 Se.
	Eastern Phoebe	3	2	1	2	23 Se.	24 Se.
	Great Crested Flycatcher	1	1		1	3 Se.	
Vireos	White-eyed Vireo	1	1		1	28 Oc.	
	Blue-headed Vireo	42	4	1	28	16 Au.	31 Oc.
	Philadelphia Vireo	30	7	1	17	17 Au.	1 Oc.

Group	Species name	Season Total	Daily Max.	Daily Min.	Days with obs.	First date	Last date
Vireos	Red-eyed Vireo	337	36	1	47	15 Au.	4 Oc.
Crows & Jays	Blue Jay	362	39	1	49	15 Au.	30 Oc.
	American Crow	243	11	1	53	15 Au.	29 Oc.
	Common Raven	90	9	1	42	25 Au.	31 Oc.
Larks	Horned Lark	45	34	1	7	8 Se.	20 Oc.
Swallows	Barn Swallow	1	1		1	31 Au.	
Chickadees	Black-capped Chickadee	1817	75	1	73	15 Au.	31 Oc.
Nuthatches	Red-breasted Nuthatch	957	59	1	72	15 Au.	31 Oc.
	White-breasted Nuthatch	18	10	1	8	11 Se.	24 Oc.
Creepers	Brown Creeper	80	12	1	36	24 Au.	31 Oc.
Wrens	House Wren	4	2	1	3	8 Se.	20 Se.
	Winter Wren	11	2	1	9	9 Se.	24 Oc.
Gnatcatchers	Blue-gray Gnatcatcher	2	1	1	2	2 Se.	3 Se.
Kinglets	Golden-crowned Kinglet	1825	385	1	42	11 Se.	31 Oc.
	Ruby-crowned Kinglet	446	88	1	41	7 Se.	31 Oc.
Thrushes	Eastern Bluebird	4	1	1	4	16 Oc.	22 Oc.
	Townsend's Solitaire	1	1		1	10 Oc.	
	Veery	2	1	1	2	30 Au.	18 Se.
	Gray-cheeked Thrush	13	2	1	11	8 Se.	1 Oc.
	Swainson's Thrush	47	9	1	21	1 Se.	4 Oc.
	Hermit Thrush	95	9	1	25	20 Se.	29 Oc.
	Wood Thrush	1	1		1	30 Au.	
	American Robin	77	8	1	30	16 Au.	29 Oc.
Mockingbirds	Gray Catbird	2	1	1	2	15 Se.	24 Oc.
Waxwings	Cedar Waxwing	404	140	1	26	16 Au.	16 Oc.
Pipits	American Pipit	42	10	1	15	8 Se.	24 Oc.
Finches	Purple Finch	51	8	1	27	18 Au.	31 Oc.
	White-winged Crossbill	5	1	1	5	20 Au.	10 Oc.
	Red Crossbill	1	1		1	27 Oc.	
	Common Redpoll	7	4	1	3	23 Oc.	31 Oc.
	Pine Siskin	54	17	1	18	7 Se.	31 Oc.
	American Goldfinch	292	84	1	46	15 Au.	31 Oc.
	Evening Grosbeak	22	17	1	6	24 Oc.	31 Oc.
Snow Buntings	Snow Bunting	10	5	1	4	27 Oc.	30 Oc.
New World Warblers	Tennessee Warbler	51	13	1	16	18 Au.	26 Oc.
	Orange-crowned Warbler	28	5	1	14	20 Se.	22 Oc.
	Nashville Warbler	107	14	1	33	16 Au.	18 Oc.
	Northern Parula	6	1	1	6	19 Au.	28 Oc.
	Yellow Warbler	8	2	1	7	22 Au.	8 Se.

Group	Species name	Season Total	Daily Max.	Daily Min.	Days with obs.	First date	Last date
New World Warblers	Chestnut-sided Warbler	9	3	1	7	15 Au.	18 Se.
	Magnolia Warbler	88	8	1	28	16 Au.	6 Oc.
	Cape May Warbler	25	6	1	11	16 Au.	17 Se.
	Black-throated Blue Warbler	24	5	1	14	15 Au.	3 Oc.
	Myrtle Warbler	609	84	1	59	17 Au.	22 Oc.
	Black-throated Green Warbler	307	25	1	36	15 Au.	27 Se.
	Blackburnian Warbler	31	9	1	13	15 Au.	17 Se.
	Pine Warbler	6	2	1	4	19 Au.	20 Se.
	Bay-breasted Warbler	138	51	1	29	15 Au.	4 Oc.
	Blackpoll Warbler	62	20	1	15	31 Au.	8 Oc.
	Black-and-white Warbler	100	10	1	32	15 Au.	1 Oc.
	American Redstart	382	28	1	33	15 Au.	21 Se.
	Western Palm Warbler	31	10	1	10	8 Se.	9 Oc.
	Ovenbird	17	5	1	12	18 Au.	21 Se.
	Northern Waterthrush	9	2	1	7	18 Au.	16 Se.
	Connecticut Warbler	2	1	1	2	27 Au.	28 Au.
	Mourning Warbler	3	1	1	3	22 Au.	12 Se.
	Common Yellowthroat	234	17	1	35	15 Au.	1 Oc.
	Wilson's Warbler	12	2	1	11	20 Au.	11 Se.
	Canada Warbler	7	1	1	7	15 Au.	15 Se.
New World Sparrows	Eastern Towhee	11	2	1	10	16 Au.	18 Oc.
	American Tree Sparrow	43	11	1	11	17 Oc.	31 Oc.
	Chipping Sparrow	6	2	1	5	2 Se.	17 Oc.
	Savannah Sparrow	2	1	0	3	8 Se.	28 Se.
	Fox Sparrow	2	1	1	2	1 Oc.	19 Oc.
	Song Sparrow	105	8	1	49	16 Au.	31 Oc.
	Lincoln's Sparrow	14	2	1	11	8 Se.	16 Oc.
	Swamp Sparrow	8	1	1	8	14 Se.	18 Oc.
	White-throated Sparrow	198	33	1	40	24 Au.	24 Oc.
	White-crowned Sparrow	349	31	1	35	20 Se.	30 Oc.
	Dark-eyed Junco	589	51	1	47	21 Au.	31 Oc.
Cardinals & allies	Northern Cardinal	8	2	1	6	18 Au.	31 Oc.
	Rose-breasted Grosbeak	3	1	1	3	24 Au.	13 Se.
New World Blackbirds	Red-winged Blackbird	9	6	1	3	1 Se.	20 Se.
	Rusty Blackbird	24	14	1	6	20 Se.	23 Oc.
	Common Grackle	11	4	1	7	24 Au.	24 Se.

Appendix II

An edited (for brevity and clarity) version of the blog published during the fall 2022 monitoring season.

A great start to the fall migration monitoring! August 18

As per tradition, fall starts on August 15 at Cabot Head when a new season of monitoring begins. For the next 78 days, we will rise before dawn to open the mist nets, with our eyes and ears open to any sign of birds, checking the nets every 30 minutes for 6 hours (weather permitting), banding every bird captured. We will witness the slow moving of seasons and the procession of migrant birds.

For now, it is still very much summer, with a strong sun and warm temperatures. But birds are already a-moving! The loud call of a Greater Yellowlegs on August 16th was a clear sign that migration is already under way for many species. These first four days have been quite productive for banding, with an overall total of 170 birds banded already. Many of the birds are of course local ones, notably American Redstart, Common Yellowthroat, Black-throated Green Warbler, and Red-eyed Vireo (mostly young being captured, with their characteristic brown eyes). But boreal birds have also been present in our nets: Cape May, Bay-breasted, and Tennessee Warblers are on the move. We've actually already detected 16 species of warblers, their numbers inflated by all the young born this summer.

It is a time of youth. On the morning of the 17th, four young Bald Eagles were soaring together, joined by a young Peregrine Falcon. Other raptors seen these last few days include the first small "kettles" of Broad-winged Hawks, the occasional Osprey, one or two Red-shouldered Hawk as well as the ubiquitous Red-tailed Hawks and Turkey Vultures.

A little burst of flycatchers was notable on the 18th, with 3 Yellow-bellied and one Least Flycatchers captured. The former has one of the shortest stays in the summer breeding grounds among songbirds, arriving in June and leaving in August. On that day, we were surprised and delighted to catch a young female Belted Kingfisher! It is certainly unusual but over the years, a total of 18 kingfishers in 12 fall seasons have been banded, all of them hatch-year birds.

So. Many. Birds! A very busy start of monitoring. August 25

It has been a very busy first 10 days of the fall monitoring with high banding totals almost every day. Usually banding is relatively relaxed in mid-August when a big day would be about 40 birds captured. This summer though, we have been kept busy with waves of birds moving through, sometimes continually during the morning, sometimes in one or two big waves filling up a handful of nets (for example, 13 birds in C13!). In fact, we've had the 1st, 3rd, 4th, 5th, and tied 6th highest daily totals for August of all years, with totals from 48 to 73 birds. Consequently, the weekly total for the first week is the highest ever with 323 birds, compared to an average of 123 birds (range: 67 in 2017 - 233 in 2021). The mathematically inclined among you would have noticed that more birds were banded during the highest day in 2022 (73 birds banded of 22 species on August 22) than during the entire first week of fall monitoring in 2017 (67 birds).

Among birds captured there were many Cape May, Bay-breasted, and Blackburnian Warblers, the so-called spruce budworm specialists. Breeding in the boreal forest, they take advantage of spruce budworm outbreaks, which boost their populations. This is possibly what we're experiencing this

fall. A budworm outbreak has been reported for Northeast Ontario, as well as good numbers of these species at a banding station in that area.

Red-eyed Vireos are also caught in large numbers this fall, mostly young birds but with the occasional adults. We even caught two very young Red-eyed Vireos still moulting out of their juvenile plumage, likely coming from the common local population. The many Common Yellowthroats, Black-throated Green Warblers, and American Redstarts captured these days are also most likely from the local populations.

A moulting adult female Rose-breasted Grosbeak was captured on the 24th, the first and only detection of this species so far. On that same day, a young White-throated Sparrow was banded, still mostly into its very streaky juvenile plumage. A Philadelphia Vireo was banded on the 25th after visual detections of one bird on the 17th and 24th. This species is never seen in big numbers at Cabot Head despite being quite common in the boreal forest.

Away from the nets, we heard and even saw one White-winged Crossbill on 3 occasions (on the 15th, 23rd, 24th). Bald Eagles are naturally a daily presence with our local pair, quite often augmented with young or immature birds. On the 20th there were two young (hatch-year) and two immature Bald Eagles soaring together, briefly joined by a young Peregrine Falcon. The latter species was seen during 3 other days: on the 17th, an adult was seen carrying a prey in its talons which it endeavored to devour on the wing. It was amazing to watch it soar on thermals with stiff wings and effortlessly pluck feathers then take bite after bite.

The first (small) flocks of Canada Geese were seen on the 25th.

Slowing down but still very good! September 1

The frenetic banding pace of the first 10 days of the season has slowed down, albeit with still good numbers in our nets from time to time. It is becoming more and more clear that we have a Red-breasted Nuthatch irruption in the making this fall. With already 74 birds banded (notably 10 birds on August 30), it is more Red-breasted Nuthatches banded than 14 of the past 20 fall seasons, and September has just begun. This species tends to have somewhat cyclical irruptions, although this is not quite the case at Cabot Head. For example, banding numbers were relatively high in 5 of 6 consecutive fall seasons (from 2016 to 2021) with totals ranging from 44 to 118 banded birds but only 2 (two!) in 2019.

On August 28, we banded 9 Bay-breasted Warblers, more birds in a day than the season total of 12 previous fall seasons. This fall, it is already a record 31 Bay-breasted Warblers banded, beating the previous one of 25 banded birds of fall 2021.

We are also getting very good numbers of Red-eyed Vireos (82 birds banded so far), Common Yellowthroat (39 birds banded) and Black-throated Green Warblers (84 birds banded). For that last species, it is already the 4th highest banding total for a fall season. This species has shown tremendous variations in numbers banded: the first 3 years of monitoring, banding totals were 115 (in 2003 and 2004) and 116 (in 2002) birds, whereas it was always below 80 birds after 2005, dropping to a low of 14 birds banded in 2016.

On August 27, we were treated to a very rare visitor in our nets: a young Connecticut Warbler! Despite its name, it is a summer denizen of large bogs of the boreal forest but very rarely seen or heard during migration. In 21 years of monitoring, we banded a grand total of 5 Connecticut Warblers (including this one), with one in spring 2006, the other ones in fall (2003, 2005, and 2020, with one each).

Another morning, about one hour after sunrise, I was scanning the bay with my binoculars during census (the one-hour standardized bird count) when I saw a bat flying over the water towards the shoreline. Interesting, I thought, and kept swiping left (with my binoculars). But I quickly returned to where the bat was, thinking it was too interesting to just dismiss it so quickly. Instead, I saw a Merlin in full attack mode! It very soon disappeared behind the point of land but I would guess that it was after the bat. The outcome of their encounter would remain a mystery.

Another day, another raptor: on August 27, I was lucky enough to watch for several minutes an adult Northern Goshawk slowly soaring in the sky until it reached the clouds. I watched it slowly disappearing into the base of a cloud before it started gliding in a southerly direction.

On September 1, the sharp eyes of volunteer Jake, back for a third stay, spotted a Green Heron flying along the basin and perching in a dead tree. It is only the third fall season with sightings, even though this species is seen every second spring or so. On that first day of September, we also banded the first Blackpoll Warbler of the season. Another spruce budworm specialist like Bay-breasted, Cape May, and Blackburnian Warblers, this species tends to breed a little farther north, which could explain why we usually detect it later than the other ones.

Equality on Earth: Fall equinox is on September 22! September 20, 2022

[...] September is when we say good-bye to many species, mostly the long-distance migrants (warblers, vireos, hummingbirds). We also welcome the short-distance migrants, like kinglets and sparrows, mostly after mid-September.

On September 1, we detected a Yellow-billed Cuckoo. On September 8, a season high total of 18 warbler species were detected, with quite a few Tennessee, Yellow-rumped, and Blackpoll Warblers as well as American Redstarts. On that day, three species of vireos were also detected: Blue-headed, Philadelphia, and Red-eyed. There were lots of Cedar Waxwing and one Ruby-crowned Kinglet during that busy day.

In the darkness of pre-dawn of September 9, an Eastern Whip-poor-will called across the basin. On September 14, it was overcast with a strong North wind: hearing little calls as we opened nets, I was ready for a sudden arrival of boreal sparrows. And sure enough, on the first net round, we collected 19 White-throated Sparrows (out of 26 birds during that one round). We closed nets shortly afterward as the North wind increased and showers fell on and off during the morning.

A Red-throated Loon was seen flying and then bobbing in the waves of the bay on September 17. On September 20, a large movement of birds was evident after mid-morning, which was reflected in high numbers of captures, resulting with a season high of 78 birds banded of 18 species, with 42 birds in the 11 o'clock net round, and a total of 43 Yellow-rumped Warblers. There were a lot of Red-breasted Nuthatches and Black-capped Chickadees during that morning but luckily not so much in the nets. Three species of Catharus thrushes were captured that day: Gray-cheeked, Swainson's, and Hermit! September is the month when the first two move through on their way to northern South America, whereas Hermit Thrush tends to migrate later, mostly in October, as this species doesn't go as far south (wintering grounds are mostly in southern USA). September 20 was also the day of the first White-crowned Sparrow.

Autumn has arrived! September 27

There is definitely a shift in temperatures, birds, and mood: autumn has arrived. The days are shorter, the skies often obscured by clouds, cooler temperatures prevail. And the assemblage of

bird species has shifted from long-distance, early migrants to short-distance, late migrants. We are now seeing and catching mostly kinglets, juncos, sparrows, and yellow-rumped warblers, with a few Brown Creepers here and there, their migration having just started.

In fact, during the last week, September 20-26, we banded a total of 302 birds, the highest total for that given week across the years (despite missing two days of banding due to high wind and/or rain)! We banded 76 Yellow-rumped Warblers during that week, more in a week than in 12 previous whole seasons. Likewise, on September 21, 41 Bay-breasted Warblers were banded. An astonishing number: the previous record for a whole season was 25 birds in 2021! So far this fall, 92 Bay-breasted Warblers have been banded, a remarkable number and a clear indication of an upswing in their population likely due to spruce budworm outbreaks. I would be surprised if we will get many more, but it is obviously a unique year for them, so who knows? The 2022 season total for Yellow-rumped Warblers is 104 birds so far, which is the fourth highest season total, while their migration is far from over, as opposed to Bay-breasted Warbler as their migration will be almost over at the end of September.

Other abundant species at the nets during that week were the two kinglets species, with 44 Golden-crowned and 28 Ruby-crowned Kinglets banded. Late September is when the migration of kinglets begins but the exact timing and abundance are quite variable between years. It is still too early to tell if it will be an earlier movement this year at Cabot Head.

The first of the season Orange-crowned Warbler and White-crowned Sparrow were both seen on September 20. This warbler is among the last of the warblers to move through, if not the last. It has been a good fall for observation and banding of Red-eyed Vireos, with 119 birds banded. Their migration is almost over but we are still catching a few birds here and there, with the latest one on September 27.

On September 24, a surprise arrived in our net: an adult male Black-backed Woodpecker! It is the first ever to be banded at Cabot Head and the third record in 21 years. One bird was seen on September 26, 2010 and another one on May 12 and 13, 2012. This Black-backed Woodpecker is far from its boreal forest where it is a resident, however they do explore the land in search of recent burns, their favourite habitat. It is present on Manitoulin Island, so maybe one intrepid explorer decided to see what was across the channel, island-hopping all the way (although there is still an 8-km crossing fully over water). It was a fantastic bird to have in hand! After release, it stayed hidden in a cedar for a while but was not seen afterward.

Busy, busy, busy! October 4

After a seemingly long stretch of five days of overcast conditions, clear skies and bright sun returned on September 29 and have been with us ever since. The return of good weather brought a lot - and I mean, A LOT - of birds at Cabot Head and they were not shy about flying into our nets. With the exception of October 2, when nets were closed due to a windstorm, daily captures from September 29 to October 4 have been the highest of the season, from 84 to 164 banded birds per day of a wide diversity of species. The most abundant species captured was Golden-crowned Kinglets, notably with a cool 100 birds on October 4. 164 birds of 22 species banded on October 2 is the second-highest daily total for any fall seasons but still far from the 257 birds banded on October 8, in 2013 (the vast majority being Golden-crowned Kinglets). A lot of Dark-eyed Juncos have been captured during the past few days as well, alongside a few White-throated and White-crowned Sparrows.

Hermit Thrushes have started their migration in earnest, reflected in good captures since September 30, notably with 7 birds on October 4. There are still a few Gray-cheeked and Swainson's Thrushes captured but their passage through Cabot Head is almost over now. Red-eyed Vireo is also slowly being replaced by Blue-headed Vireo but there are still a few individuals detected these last few days. Quite a few birds of the latter species have been banded already this fall: 24 Blue-headed Vireos while the previous record season total is 13 birds (in 2015 and 2018).

A late season fun challenge is to detect warblers in October. Sometimes it is easy when they fly into the nets, sometimes it requires binoculars and patience. Over the years (2002 - 2021), between 5 and 15 species of warblers have been detected in October with an average of 8 species. This year, we have detected 10 species: Yellow-rumped, Orange-crowned, and Nashville Warblers (species detected every October); Palm Warbler, seen this year only one afternoon outside regular monitoring (a species missed only in one fall season); Common Yellowthroat, Tennessee and Black-throated Blue Warblers (species in October seen at least in 10 fall seasons); and a few rarer species: Northern Parula, Bay-breasted Warbler, and Black-and-white Warbler. The last one was an adult female banded in August 2021 and recaptured for the first time on October 1 this year.

The first Fox Sparrow of the season was banded on October 1. On that day, we also captured a loud and sharp-billed young female Pileated Woodpecker!

Oh! The colours! The colours! October 12

One of the great joys and privileges of living at Cabot Head for weeks on end is to experience the slow change of the seasons, the timeless cycles of summer turning into fall turning into winter turning into spring turning into summer turning into fall. The colours are truly magnificent this year, transforming the greenery into a kaleidoscope of yellow, orange, red, and brown. Sometimes a tree is so bright red that it hides the forest. Sometimes a whole forest is shimmering with colours above the white cliffs of the Niagara Escarpment. So, please, go walk in a forest or sit under a tree when the sun shines bright in a depthless blue sky. Take it slow, let the brilliance of the moment radiate through your senses, reflect or not on the cycles of life and nature. It will be winter soon enough!

For now, we are saying goodbye to many of our feathered friends, seeing the last individuals of many species which will not return to our shores until next May. The hummingbirds are long gone, the flycatchers too, but there are still the occasional Red-eyed Vireo or, even more rare in October, a Magnolia Warbler (on the 6th).

After the highs of October 3rd and 4th, banding in the last week was still very good, with daily totals between 40 and 60, respectable for that time of year. The stars are once again Golden-crowned Kinglets and Slate-coloured Juncos (a subspecies of Dark-eyed Juncos), alongside Yellow-rumped Warblers. We were treated with a fair share of surprises throughout the week, some bigger than others. On the 6th, a young female Northern Saw-whet Owl flew in the nets between opening time (7am) and first net round (7:30am)! [...] A total of 10 Saw-whet Owl were banded during the regular diurnal fall banding in 9 previous fall seasons (one in each, except in 2011 with 2). A Blackpoll Warbler was banded on October 8, the 12th species of warbler detected this fall in October. [...] On the 8th, we banded a young female Red-bellied Woodpecker; the following day, it was a fierce young male Pileated Woodpecker (the second one of the season). Quite a few Downy Woodpeckers have also been banded, with 20 birds in total for now, mostly young. It is possible that this sedentary species had a very successful breeding season this year.

But the biggest surprise of the week, no! of the season! nay, of the entire monitoring program! came on October 10th on the last net round. Ryan, a volunteer, extracted it from the net, so it was a complete shock when I pulled it out of the bag back at the banding lab and stared into a Townsend's Solitaire! It is the first ever banded at Cabot Head, although the 5th record over the years. This wandering species of the western mountains is actually not infrequent in the eastern part of the continent, a great traveller roaming the land in search of juniper berries, its almost exclusive winter food. A member of the thrush family, it has a subdued anthracite plumage with an orange stripe across the wings and a prominent white eye ring. It is not a very big bird, with a weight similar to Swainson's and Hermit Thrushes and a wing chord slightly smaller. We banded it, measured it, weighed it, took several pictures, and finally released it wishing it good luck surviving the winter and making its way back home to the Rockies (or the Cypress Hills or the Cascade Mountains or central Alaska! Who knows where it comes from).

A feathered wave of green little kings! October 19

I have used the word "tsunami" before in the search of an image to describe how it feels to be hit (metaphorically) by incredible numbers of kinglets. Well, it happened again! On October 18, kinglets were everywhere and flew in our nets in droves! It was a mad rush to extract and band them as there were only two of us to bear the heavy brunt of their impact, even though one kinglet weighs less than 7 grams. But together they stand! Oh yes, they do! It was a serious non-stop banding day with no time for breaks from opening time at 7:15 am to letting go of the last banded bird of the day at 4:15pm! Closing time should be 6 hours after opening but it took us a while to free the last few nets of birds.

The daily total on that historic day stands at 290 birds banded of 12 species, with 185 Golden-crowned Kinglets and 37 Ruby-crowned Kinglets. The previous one-day record was 257 birds on October 8, 2013 with 216 Golden-crowned Kinglets. So that date still has the fall record of the most GCKI banded in a day.

The following day, October 19, was thankfully not as crazy busy, simply good busy: we banded 98 birds of 16 species but with many more recaptures (25 birds of 9 species). It did not feel that busy or rushed even though it is the fourth highest daily total for the 2022 fall season. The 44 Black-capped Chickadees did give us some fun challenges with their fighting spirit: they may be all tangled in blue and in the net, they will peck at your fingers with gusto.

The 2022 fall season, with 12 more days to go, is already a season of records. It is the first time that the banding total in the fall passes the mark of 2500 banded birds. The current total, as of October 19, stands at 2564, shattering the 17-year old previous record of 2477 banded birds in the fall 2005! In 21 years of monitoring, only five fall seasons (including 2022) have banding totals over 2000 birds. It will be interesting to compare species totals between these years but that will be for the seasonal report or the 25-year report.

What is certain is that Golden-crowned Kinglet is (almost) always the most banded species in the fall, with totals ranging from 113 birds in 2005 (interestingly enough) to 758 birds in 2013. The 2022 total stands at 653 banded birds, the second highest for now. But what is 95 Golden-crowned Kinglets to add in this most unusual season? The little green king lost its crown only in 3 fall seasons to the humble but resilient Black-capped Chickadee, including the fall of a massive irruption when 717 of them were banded. That was in 2005, and how that season got such a high total. That and the abundant crop of chokecherries which attracted a plethora of berry-eating birds like Red-eyed Vireo and Yellow-rumped Warbler.

[...] The first American Tree Sparrow of the season was observed on October 17 during a short break in the incessant downpour of the day. On October 16, an always dazzling male adult Eastern Bluebird was captured and banded, the fourth overall and the first in the fall (see pics on Instagram and Facebook). A Greater Yellowlegs was heard on October 14, which is a shorebird species with a very extended migration period since it can be moving through as early as August if not July. A sure sign of the coming winter, besides the dropping temperatures and the cold North wind, was the large flock of Long-tailed Ducks (about 50 birds) seen over Georgian Bay on October 19, followed shortly by the first Bufflehead of the season as well. [...]

2700!!! More precisely and exactly, 2774 birds banded (and counting). October 26, 2022

In this most unusual of fall seasons, we have broken another record by banding over 2700 birds. A young female Downy Woodpecker was the lucky 2700th on October 25, a little ironic given its sedentary habits. With still five more days of banding to go, it seems very likely that we will reach and pass the 2800 barrier!

As forecasted, snow fell on early morning of October 20, lightly covering the ground with a white blanket. Said blanket didn't last long as the snow turned into rain. Needless to say, there was no banding that day but census and observation brought quite a few waterbirds: Surf and White-winged Scoters in little flocks, Red-breasted Mergansers, a few Horned Grebes leisurely floating on the bay. A young Eastern Bluebird was also observed near the alvar. Banding resumed on October 21 and has been going strong almost every day (with totals over 40 banded birds) with the notable exception of two days of strong South wind when most of the nets stayed closed (for bird safety).

And so, the banding total has kept on clicking up steadily and surely. It is not because of kinglets now however, even if that banding total is also creeping up towards the record (only 33 more needed!). Instead of kinglets, it is the Black-capped Chickadees now that are keeping us busy with days of 22 or 25 birds. It does not sound like a lot but chickadees always put up a fight: their beak is strong and they can pinch! During that past week, we also banded 4 Red-breasted Nuthatches, breaking the previous record by... 4 birds! A Gray Catbird was banded on October 24, a relatively late, although not unheard of, date for that species.

More and more leaves are falling down and less and less birds are around. It certainly feels like the end of the season, despite the still very good numbers of birds captured. I am hoping that the next cold snap will bring the very late migrants such as Snow Bunting, Common Redpoll (although I heard two of them on October 23), Northern Shrike, and - if we're really lucky - Bohemian Waxwing.

Another season has come to an end. And what a season! November 2, 2022

This more than remarkable season didn't end in a whisper but with more remarkable sightings and banding. On October 27, while watching a distant bird on the bay through the scope (Loon? Grebe? Duck? I don't recall), white ghosts appeared on the hazy horizon. Flapping strongly, the large pure white birds could only be swans, Tundra Swans in all likelihood. They were so far, though, that even with the scope they were floating, dancing, almost formless shapes: I could not even see their necks. It seems to be a family, with two very white (the adults) and two less white (the young). It is only the fourth observation of Tundra Swans at Cabot Head over 21 years: 4 birds on October 5, in 2014; 5 birds on April 15, 2016, and 6 on May 9, 2018.

It was worth looking at the bay as the first Common Goldeneyes (10 birds) were seen on October 27 and one Bufflehead on October 28. White-winged Scoters and Long-tailed Ducks were also seen regularly and in good numbers, the latter species totalling 110 birds on the 27th and 73 on the 31st. A few Horned and Red-necked Grebes were floating and diving on and in the water, as well as Common Loons.

Daily banding numbers stayed still quite good for this last week, bringing the highest weekly total ever for that particular week, with 236 banded birds, compared to the previous high in 2020 of 170. The bulk of banded birds were Black-capped Chickadees, although 11 American Tree Sparrows were captured on October 27 with a sprinkling of them afterward. After getting so many, we were only capturing a handful of Golden-crowned Kinglets every day, painfully inching their season total towards the highest point. Alas! The 2013 record of 758 Golden-crowned Kinglets was not defeated, the 2022 season being shy of five (5!) birds (or about 0.5% of the total) [...]

A Blue-headed Vireo banded on October 19 was recaptured on the 28th and 31st and was also observed on that last day of monitoring. There have been observations after October 15 in 7 years of the previous 20, up to October 29. The 2022 sighting on October 31 is thus the latest record of this species. The first (5) Snow Buntings were heard and seen on October 27. A few more were seen in the following days. No Northern Shrike was seen or banded this fall: this late migrant species was missed in 7 of the 21 fall seasons.

There were more surprises in a season of surprises: on October 28, we banded a beautiful adult male Northern Parula. It is a species detected and banded only in small numbers in the fall with birds in October in 4 years (not counting 2022) with the latest on October 30 in 2016. Still on October 28, I was stunned and shocked when I pulled out of the bag a White-eyed Vireo!! It is a southern species with a small foothold in the extreme south of Ontario, which makes it very rare at Cabot Head. One bird was seen on May 11, 2003, one bird was banded on May 17, 2004, seen the following day and recaptured on the 18th, one bird was banded on September 22, 2012, and one bird was detected on September 28, 2014. The 2022 bird is thus the third ever being banded at Cabot Head. Sadly, it was not seen again.

Still on the October 28 day, on the very last net round, a flashy yellow big bird was waiting for us in a net: An adult male Evening Grosbeak! Its namesake bill was something to behold and... avoid, with not much success. This species had never been banded before at Cabot Head, even though it is observed almost every year (missed in only four years): it tends to fly high and stay high in the canopy. It was such a remarkable bird to band.

The last day of monitoring, October 31, was overcast and relatively cold. It was also quiet with not many birds in the woods, most juncos and sparrows having left, wood warblers absent (Yellow-rumped Warblers are seen to the very end in some fall seasons but not all), kinglets and chickadees barely here. Nonetheless, two Northern Cardinals were banded, a common species not common at Cabot Head and the first time since 2015 that it is banded in the fall. A small flock of 17 Evening Grosbeaks was flying around but no amount of incantations brought them down into our nets. It is also at the end of the season that small flocks of American Goldfinch and Pine Siskin are seen and that was the case on that very last day with 44 and 17 birds, respectively, counted. An eerie whinnying was appropriate on that Halloween evening: there is no ghosts in my world and the call came from an aptly-named Eastern Screech Owl.

The banding total of the last day was a solid 17 birds, bringing the fall season total to a stratospheric 2925 birds banded, almost 450 birds more than the previous record of 2476 birds in fall 2005. It was quite an extraordinary season this year [...]

Stéphane