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# YEARLY BANDING REPORT

Prince Edward Point Bird Observatory





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Authors: **Phillip Mercier & Ashley Jensen**  
Cover photo: **Paul Jones 2023**

# INTRODUCTION

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*Prince Edward Point Bird Observatory (PEPtBO) began monitoring bird populations in 1995 and has continued doing so for 28 consecutive years. Our mission is to monitor, report, and promote research on birds throughout their migration and breeding seasons. Our goal is to be an important and significant resource on the birds breeding and migrating through southeastern Ontario. PEPtBO is in a unique position at the intersection of the Atlantic and Mississippi flyways, which makes PEPtBO a key location in monitoring birds and helping identify the issues threatening their populations which could have far reaching implications within eastern North America and beyond.*

*At PEPtBO, the scientific data we collect contributes to local, national, and international action, aiding in the protection and management of key habitat and the reduction of threats along migratory pathways. Through our education and outreach programs, we aim to inspire generations of people to advocate for the preservation of our wildlife and their habitats.*

*Visiting PEPtBO helps the public to understand the importance and value of bird diversity and survivorship. Last year (2022) marked our final year with the Naturehood program which brought elementary school children to PEPtBO to learn about birds. However, the end of Naturehood will mark the beginning of something new, as PEPtBO will soon be introducing a new educational program targeting teens and young adults. This program is currently under active development and our hope is by focusing on an older age group, we may encourage interested students to pursue the study and advocacy of environmental conservation.*

*Our guiding principles include: forming inclusive partnerships with government organizations, other non-profit organizations, educational institutions, the public, and other experienced biologists to work together for bird conservation. In our bird banding operation, we put the bird safety first by following the North American Banding Council (NABC) bander code of ethics and we act as stewards of the Important Bird Area (IBA) while promoting stewardship to all visitors and volunteers. Through hands-on training and education, we hope to create lifelong passions for nature and spread appreciation for the environment for generations to come. Our organization also aims its efforts at inclusivity for all, through representation and opportunities for marginalized groups such as racialized groups, Indigenous Peoples, LGBTQ+ communities, and persons of all genders and differing abilities.*

# YEAR IN REVIEW

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This year marked another fantastic year of monitoring birds at PEPtBO. Over the year we banded 12,714 birds of 104 species (Appendix A) and although this total is lower than the last two years, it is still approximately one thousand more than average. We recaptured 2,087 birds of 69 species (Appendix B). Of those recaptures, 8 were foreign recoveries (i.e., birds not banded at PEPtBO). The foreign recoveries were mostly Northern Saw-whet Owls, whereas the recaptures of PEPtBO birds represented a large variety of species. The day-to-day or week-to-week recaptures that make up a large proportion of the recapture total is valuable information as these data give us insight into the migratory condition and health of birds, as well as information on which species or individuals are using National Wildlife Area (NWA) as migration stopover habitat. We ran our Spring and Fall Migration Monitoring Programs, our Monitoring Avian Productivity, and Survivorship (MAPS) Program, and two special monitoring programs: Bobolink Monitoring and Northern Saw-whet Owl monitoring. Our spring Migration Monitoring Program was successful and memorable due in no small part to our second consecutive Spring Birding Festival since the end of the COVID-19 pandemic. The festival ran from May 12th to the 15th, and we hosted 262 people on guided walks and over 600 people attended the festival. We entertained the public with a combination of banding demonstrations, bird walks, and 'tent talks' featuring a variety of speakers (both internal and external). The goal to expand the 2023 SBF included the successful addition of 'tent talks' as well as expanded activities and additional bird walks. We discovered, through a post-festival survey, the activities and, in particular, the walks were highly enjoyed by everyone. We hosted additional bird walks on the next two consecutive weekends to accommodate those that could not make it on Mother's Day weekend (attendees included in total mentioned above). Overall, it was a great spring season that certainly kept us guessing with some unexpected weather patterns and a couple unlikely captures.

Our summer breeding bird program, MAPS, was also a success. This was the third year monitoring the four established sites we have around Prince Edward County, and we also added a fifth site this year on private property in Soup Harbor on the South shore. This new MAPS site had a very successful first season, and its operation was possible due to a partnership with Friends of South Shore (FOSS). We will have a minimum of 4 more years at the Soup Harbor site, and a minimum of 2 more at the other 4 sites. We are accumulating some interesting data from our breeding bird program, including breeding confirmation for multiple Species-at-Risk. Our Bobolink research continued in late summer, and is contributing to the population monitoring of another at-risk species. This year also marked the second year PEPtBO has taken on a Summer Intern. This year, Sarah Sharp, a

Wildlife Biology student from Guelph University graced our presence. She joined our banding team for MAPS and also conducted breeding bird surveys around the county as part of the ongoing Ontario Breeding Bird Atlas. This work allowed her to further develop her birding and banding skills and learn how MAPS projects are run.

We were fortunate to have a summer intern, but unfortunately, Birds Caribbean was not able to send us an international intern this year. However, we are hoping to find a way to both continue the summer intern program as well as create an opportunity for an international banding intern next year. We were also able to host six visiting banders at the station this year, which allowed us to contribute to the training of banders, both in Canada and beyond. Some of the visiting banders were from nearby parts of Ontario, but we also had visitors from other provinces, the U.S, and even Denmark.

Our Fall Migration Monitoring Program was a successful season with total captures being close to average, but with both unexpectedly high and surprisingly low numbers for certain species. The Northern Saw-whet Owl monitoring program also continued this year and PEPtBO was able to increase the number of opportunities for the public to have an engaging and immersive experience with owls through our owl banding events. Although our total number of owls captured was below average, we had our most successful year ever of owl events and symbolic owl adoptions thanks to the hard work of our banders and board members; particularly our Owl Bander, Ketha Gillespie, who has been a long-time volunteer, and was a new and welcome addition to staff this fall.

Fortunately, PEPtBO encountered no major issues in the operation of the station in 2023. We lost a few net hours for some of our non-standard nets to minor flooding in early spring, but otherwise the only other significant loss of net hours was due to weather. Of course, working outdoors, we always expect to lose some of our standard net hours to weather, and in fact, the loss was minimal this year compared with past years. Net closures due to weather and other extenuating circumstances that are out of our control can create variance in the number of daily net hours. Although the loss of standard net hours is typically quite low, it can still affect our number of captures, which is the reason why we record netting effort.

A large number of birds are seen at Prince Edward Point each year. For 2023, we observed 205 bird species at the point, which is near the average encountered here in the past. The total species seen in the county for the year was 252, and 81% of these species were observed at the point between April 10 and October 31st, either during our standardized census or from other observations we made throughout the day. The high number of bird species recorded at the point highlights that Prince Edward Point continues to be an extremely important migration stopover location.

We have completed yet another successful year while adhering to all of our protocols as well as achieving the goals we set. This was in no small part due to the hard work and support of our skilled banding team and our amazing team of volunteers. The countless hours contributed by our board and other volunteers are essential in the successful execution of our programs. Beyond PEptBO's staff and volunteers, our larger community, and especially our donors, contributed greatly to our continued achievement.

## CANADIAN MIGRATION MONITORING NETWORK

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The Canadian Migration Monitoring Network (CMMN) is an organization in partnership with Environment Climate Change Canada (ECCC), Birds Canada, and many station representatives, to study bird populations and their status in Canada. All member stations must go through a protocol approval process to become full members and contribute their data on a regular (yearly) basis to remain active. Barring any complications, this solely voluntarily run organization does trend analysis with a minimum of 10 years of data to have a good indication of decline or increase in bird populations. PEptBO has been a member since 1995 and our involvement has been consistent with them while following our standard protocol. We continue to submit our data annually and CMMN runs a trend analysis for all migratory species which is available through their website. Having a station representative within the organization helps us accomplish one of our goals to help contribute to global research on migratory birds and hopefully help influence policy in the protection of migratory birds.

# MIGRATION MONITORING PROGRAMS

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## SPRING MIGRATION (APRIL 10–MAY 31)

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This spring we banded 3,906 birds of 87 species and recaptured 809 birds of 54 species (**Appendix A-B**). This occurred over 52 days and a total of 6,979 net hours. The average of 56 birds per 100 net hours is comparable to spring of 2021 (53 birds/100 net hrs.) and noticeably lower than that of 2022 (65 birds/100 net hrs.). The total number of birds banded is similar to the average number of birds caught during past springs (Approx. 4,000), and the species total is also similar, although this does not necessarily mean the species represented in that total are the same. It is also important to note that we added five non-standard nets in 2021 and removed our long standing raptor nets that same year. The raptor nets were removed due to very low capture rates of the target raptor species. Furthermore, the five non-standard nets were added with an aim to increase the diversity of the habitat types represented in our capture area. We had noticed a decrease in the number of sparrows and other species that prefer open and early successional habitat types being captured in our standard nets, and we hypothesized that this may have been due to maturation of the vegetation around our standard nets. For this reason, the five non-standard “sparrow” nets were added. After five years of data collection (2025), we will have sufficient data to compare capture rates and species composition between the two net arrays, with the plan that they will potentially be added to our standard net array after this assessment.

While this spring was a bit slower than spring 2022 in terms of captures, this may be due at least in part, to lots of weather in May that was unfavorable for migration in our area. May is the month when the majority of songbirds are expected to peak in migratory behaviour, and in Prince Edward County, over 20 of the 31 nights in May had winds predominantly from the north (N, NE, NW). We suspect that many birds took routes that circumvented Prince Edward Point due to the high winds, rainy conditions, and unfavorable wind direction during peak migration. The season still averaged 75 birds per day, with the median of daily banding totals being 55, and the average number of species banded per day was 19 (**Figure 1**). As a high-volume station with many visitors and volunteers, we were kept busy most days. Our busiest banding day was on May 7th when we banded 329 birds. The night before presented optimal conditions for migration: light winds from a southerly direction coming up along expected migration flyways. Light south winds are ideal for good migration on spring nights because many birds coming north will choose to fly over Lake Ontario and Prince Edward Point will



often be the first major land mass available for migrating songbirds to touch down. Stronger south winds are not often as predictably favorable for captures as birds have no reason to stop and will take advantage of the wind to keep migrating further north. These ideal weather conditions occurred on the night preceding the 7th, and it led to not only a high number of captures but also to a high diversity of species with 44 total species banded. This was not only the highest species diversity in captures that we saw during the spring season, but also the most diverse day for captures in 2023. We observed a sudden influx of many species that morning that had not yet been observed at the station in 2023; this included many warbler species (15 warbler species banded; 17 warbler species observed). Aside from warblers, the remainder of the species total that day consisted of a variety of songbirds including 9 species of sparrows. The most banded species that day were Yellow-rumped (Myrtle) Warbler (148), White-throated Sparrow (43), and Ruby-crowned Kinglet (32; see **Photos 1**). While Myrtle Warbler are among the more common species we expect to capture, we also had a couple birds that are infrequently captured, including Golden-winged Warbler (2) and a Blue-winged Warbler (1). Interestingly, the only individuals of these species caught for the spring were on this day (May 7). Two days later we caught our only Brewster's Warbler of the year, which is a hybrid Golden-winged Warbler x Blue-winged Warbler. Golden-winged Warbler are a species of special concern for Ontario; this is due mostly to habitat loss but is also due in part to loss of genetically pure individuals to their hybridization with Blue-winged Warbler. However, there has been some debate recently about how much we should be actively trying to prevent hybridization since Golden-winged and Blue-winged Warbler were found to be almost genetically identical and are likely not completely separate species. The capture of these very uncommon species is valuable data because they are not often detected on our daily census/observations due to low numbers, secretive and sulky behaviour, or a combination of the two. The banding data provides us with evidence that they are migrating through our area and at least some individuals are using Prince Edward Point as stopover habitat.



**Photos 1:** Yellow-rumped (Myrtle) Warbler (left), White-throated Sparrow (center), and Ruby-crowned Kinglet (left). Photos by Phillip Mercier and Ashley Jensen.



We had two interesting foreign recoveries in the spring. The first was a Northern Cardinal captured on the 17th of April that was originally banded at Long Point Bird Observatory (Port Rowan, ON) on the 4th of November 2022 as a hatch-year bird. While cardinals are not uncommon by any means, foreign recoveries of songbirds are a rarity. Furthermore, it is unusual for a cardinal as a mostly non-migratory species to move this far away from its post-natal territory. It is difficult to say whether long-distance dispersal events such as this one are truly rare, or perhaps they may be more frequent than we know and simply not often detected due to low foreign recovery rates in songbirds. The second foreign recovery of the spring was a bit of a mystery for a while. We captured a Field Sparrow on the 20th of April which was banded on the left leg. This immediately alerted us to the likelihood of a foreign recovery because we (like most other stations) always band birds on their right leg. After quickly checking the band, we knew for sure it was not banded at PEPTBO, but the USGS report-a-band tool did not find the band either. In addition, we checked in with Foreman's Branch Bird Observatory in Maryland since they are one of the few stations known to regularly band birds on the left leg, and still the bird's origin remained unknown. We suspect all this information, in addition to the band being shiny and new looking, meant the bird had been recently banded on its journey north to us; this also meant the data would not likely be submitted for the bird until year-end. Finally in December, a time when many stations are submitting their data for the year, we heard back about the bird's origins. It was originally banded in Huntsville, Texas on December 6th, 2022 as a hatch-year bird! This means that the Field Sparrow (**Photo 2**) had likely chosen to spend its first winter in Texas and in spring began migrating north to its breeding grounds, which is when we encountered it! This provides valuable and fascinating information about this individual Field Sparrow's migration journey as well as the likely location of its wintering grounds. After it left Prince Edward Point, we have no way of knowing where the bird ended up, but it likely set up a breeding territory somewhere north of us in Ontario, perhaps even somewhere in Prince Edward County!



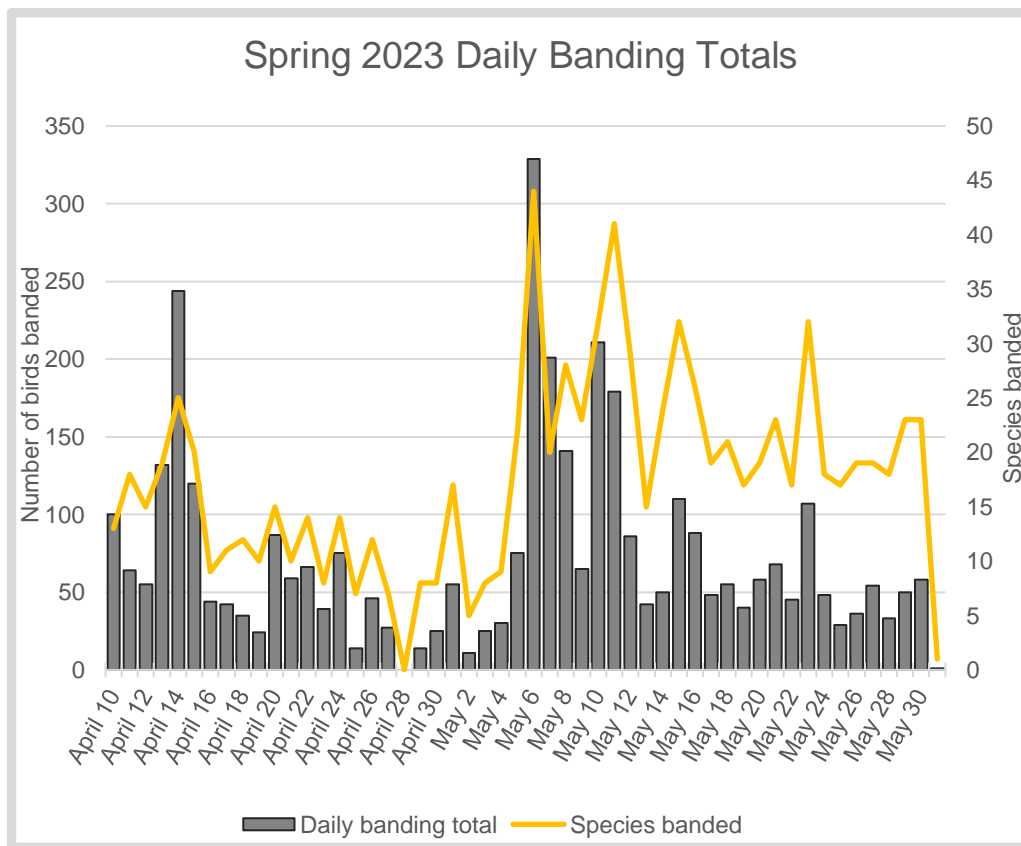
**Photo 2:** Field Sparrow recapture originally banded in Huntsville, Texas. Photo by Ashley Jensen.

The top ten species banded this spring (**Table 1**) are mostly like previous years. One change we did notice is an increase in the number of Brown Creeper caught the last two spring seasons. While it is not a drastic increase, the average number of Brown Creeper banded in spring was previously only 88, and both this spring and last spring are among

the top five highest spring totals for this species. Our Golden-crowned Kinglet numbers were significantly lower than last spring, but higher than those of 2021. It is difficult to say if this is due to variation in kinglet populations or if large number of Golden-crowned Kinglet moved early this year (and possibly in 2021), before we started banding. We considered the latter possibility because the majority of the Golden-crowned Kinglets we caught for spring were in the first few days of banding. In mid-April, we observed a large movement of Slate-colored Junco, and the number we banded was higher than that of the past two spring seasons. The number of Ruby-crowned Kinglet banded was also substantially greater than both the 2022 and 2021 seasons, but not unusually high when compared to all previous spring totals for this species. One species that showed a striking drop in the number banded compared to previous seasons is the Yellow Warbler. This species was the 6th most banded in both 2021 and 2022 (with 171 and 191 individuals banded respectively), but was not even among the top 10 species banded this spring at 45 individuals. This number is also well below the season average of 131, and the second lowest spring total since banding began in 1995. Yellow Warbler are mid-late spring migrants, and it is possible that with plenty of unfavorable weather conditions, many Yellow Warbler could have taken different migratory routes, either flying over or otherwise circumventing Prince Edward Point. It is, however, important to note that this is speculation on our part, and that there are a host of other factors that may also be attributing to the low number of Yellow Warbler in the nets this season. Most other species on the top 10 list showed comparable numbers to previous seasons. It was a good spring for Slate-colored Junco with 249 individuals banded, and while this total was not unusually high it is still greater than the spring average of 188.

**Table 1:** Top 10 number of species captured in spring

COMMON NAME	ALPHA CODE	2023	2022	2020
<b><i>Yellow-rumped (Myrtle) Warbler</i></b>	MYWA	<b>485</b>	500	130
<b><i>Ruby-crowned Kinglet</i></b>	RCKI	<b>427</b>	267	323
<b><i>Blue Jay</i></b>	BLJA	<b>313</b>	173	365
<b><i>White-throated Sparrow</i></b>	WTSP	<b>281</b>	209	223
<b><i>Slate-colored Junco</i></b>	SCJU	<b>249</b>	166	184
<b><i>Golden-crowned Kinglet</i></b>	GCKI	<b>169</b>	376	95
<b><i>Brown-headed Cowbird</i></b>	BHCO	<b>160</b>	156	108
<b><i>Brown Creeper</i></b>	BRCR	<b>132</b>	154	70
<b><i>Magnolia Warbler</i></b>	MAWA	<b>125</b>	266	228
<b><i>Common Grackle</i></b>	COGR	<b>81</b>	98	81



**Figure 1:** Daily banding totals for spring showing the number of individuals banded each day as well as the number of different species captured

## HIGHLIGHTS

We did not have quite as many highlights as spring of 2022, but rarities would not be as exciting if we could predict the timing of their presence. Spring of 2023 did have some surprises for us including one rare species banded, and a couple other notable captures. We have already mentioned some of these notable captures (Blue-winged Warbler and Golden-winged Warbler) earlier in the description of our biggest banding day in the spring. Another uncommon capture for us happened on May 9th, when we were surprised by a Vesper Sparrow in net 1B. The capture net is significant in this case because this net is in a forested location, which is an unusual place to find this species. Vesper Sparrow are a species of concern due to considerable population decline in eastern North American because of habitat loss. They are a species of open prairie, grassland, and scrubland that are not often seen at the station; this makes the capture of one, particularly in our nets that have a higher level of tree canopy, an occurrence worth noting.



**Photo 3:** *A second-year Vesper Sparrow showing characteristic rufous-colored shoulder patch. Photo by Phillip Mercier.*

On the 21st of May, the presence of a Red-bellied Woodpecker in one of our ground traps was cause for some excitement at the station. Aside from being a very beautiful woodpecker, we do not catch them often at PEptBO. This woodpecker species is a very common resident of Carolinian forests in southern Ontario but is somewhat less common in Prince Edward County as we are near the northern boundary of their range, although that seems to be expanding. The combination of habitat change in many areas paired with climate change increasing average winter temperatures has meant species like the Red-bellied Woodpecker seem to be more regularly venturing further north. In addition, part of the reason this species is an uncommon capture at PEptBO is the habitat around Prince Edward Point; the scrubby grasslands and stunted mixed red cedar forest that dominates this area is not preferred habitat for Red-bellied Woodpecker. As growth and forest succession occurs in some parts of the point, there is likely more habitat available that is amenable to this species. It will be interesting to see if captures of Red-bellied Woodpecker increase in future years.

The most unlikely capture of both the spring and 2023 as a whole, was a Summer Tanager (**Photos 4**) on the 24th of May. The conditions were favorable for migration the night before, with light south winds and rain clouds developing in early morning which we speculate may have encouraged migrants to stop at the point. That morning we caught a large diversity of warblers and other songbirds (107 birds of 32 species banded in just under four hours). In one of the last net checks before rain forced us to close our nets, we were busy with a variety of songbird captures, and this included the surprise of a young Summer Tanager. Every year during migration, a few individuals representing species that only breed further south end up north of their range, typically during very favorable migration conditions. We call these southern overshoots and expect a couple of these to occur most years. However, for PEptBO the southern overshoots we would be most likely to see are usually species that breed near the Canadian border or in southern Ontario. The northernmost edge of the Summer Tanager breeding range is significantly south of us in central Ohio. Even in the southernmost parts of Ontario, a Summer Tanager would be a rare capture. In fact, this bird is the first Summer Tanager to be captured at PEptBO in 17 years and only the third individual ever captured at PEptBO in 28 years of operation.



**Photos 4:** A Summer Tanager, a rare visitor to Prince Edward Point, was captured and banded on May 24, 2023. This individual is a young male showing hints of orangey red plumage. By next spring he will be a bright vibrant red. Photos by Phillip Mercier and Ashley Jensen.

## CENSUS AND VISUAL OBSERVATIONS

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Prince Edward Point National Wildlife Area was originally chosen as a migration monitoring location because of a high concentration of migratory birds that both move through the area and use it as stopover habitat. For this reason, it is not surprising that every year we observe a large number of species at the banding station and on our census routes. We carry out two censuses each day during migration. The first is a 30-minute standardized census that we have been doing since we began as a CMMN station, and it mostly includes the area around the net lanes. The second is a more extensive 1-hour census that includes several different habitat types with points that look out over the lake and nearby harbor to include waterfowl. Census data not only provides important data on the species that are using the area, but it also compliments the banding data to provide a more complete picture of the species and number of individuals using the area. For example, certain species are less likely to come low enough to get captured in mist nets but we tend to observe these species either in the canopy or moving over. Conversely, quiet and secretive species that like to hide in thick undergrowth or do not vocalize much during migration are often missed by visual and auditory observations, but will be detected through banding data. Combining these two methods of monitoring birds also helps us increase the chances of detecting rare or uncommon species migrating through.

In addition to some noteworthy captures this spring, we also had many interesting visual observations. For a few days in April, a Tufted Titmouse was heard calling near the station and subsequently sighted, albeit very briefly. In Canada this species is usually found in Carolinian forest, typically only south of Lake Ontario. The north shore of Lake Ontario is outside the species range, making its presence here rare. Additionally, a Fish Crow was heard calling as it flew over the station, and a Neotropic Cormorant (**Photo 5**) was spotted during our Spring Birding Festival. These visitors, like the titmouse, have native ranges that are much further south and are very rarely seen this far north. Most of the birds listed in this section were found by PEPtBO staff or volunteers with the exception of the Neotropic

Cormorant, which was originally found by a visitor during our Spring Birding Festival and subsequently re-located by PEptBO staff. There is a chance this bird, spotted off the Beach Loop road (which is not part of the census route), may have gone undetected if not for the numerous visiting birders during our Spring Birding Festival.



**Photo 5:** A rare visitor seen just offshore in May: a Neotropic Cormorant. Photo by Paul Jones.

Possibly the most noteworthy rarity of the spring, and a source of great excitement at the station, was a Blue Grosbeak (**Photos 6**) spotted near the harbor just down the road from the station (approx. 200m) on May 28th. Like most of our other rare or uncommon sightings, its native range is significantly further south, barely reaching into southern Pennsylvania. It was the first ever report on ebird of this species in Prince Edward County and the only sighting on record for the county other than a single historical report in 1965. The bird, likely a young female, stayed for only a few hours near the harbor and was not sighted again. Like the Summer Tanager we captured, this bird was likely migrating north to its breeding grounds and significantly overshot its target, but we will of course never know for sure exactly what brought this bird to the area.



**Photos 6:** The rare female Blue Grosbeak was spotted on May 28 at the harbor near the station. Photos by Paul Jones.



Our raptor and waterfowl observations were relatively comparable to previous years with small numbers of raptors moving through steadily, and large numbers of sea ducks arriving in early spring and remaining until mid-May. As is typical, the waters just offshore were host to large rafts of sea ducks during this time, including Long-tailed Duck, White-winged Scoter, and Bufflehead. In addition to the expected waterbirds, we were lucky enough to see a flock of Brant moving offshore during the Spring Birding Festival on their way up to the high arctic. This species migrates directly from the Atlantic coast to the northernmost part of Canada and due to its very direct migration, is not frequently seen in Ontario.

## DAILY ESTIMATED TOTALS

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The Daily Estimated Total (DET) is a combination of census data, banding data, and any additional visual or auditory observations from the crew during the day. The combined data provides an estimation of both the species and number of individuals present on site for a given day. The highest DET for a single day was on May 21st where 87 species were observed, and the total number of species observed for the spring season was 180.



**Photo 7:** A Long-tailed Duck, commonly seen in large groups (called rafts) on the Great Lakes in early spring and late fall. Photo by Paul Jones.

## FALL MIGRATION (AUGUST 15–OCTOBER 31)

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The fall season this year was marginally higher than average as far as numbers go, with 7,930 birds of 89 species banded, and 997 recaptures representing 54 species. These captures occurred over 75 days of banding, which puts the average birds banded per day at 101, with a median of 74 (**Figure 2**). Net hours totaled 10,907, which means we banded an average of 73 birds per 100 net hours. This number is noticeably lower when compared to the same metric for fall of 2021 (86 birds/100 net hrs.) and significantly lower than that of 2022 (96 bird/100 net hrs.). The total birds banded is about 2,900 less than last fall



(2022), but last year was an unusually busy year and our total birds banded this fall is actually about 1,000 individuals higher than the historical fall average (Approx. 6,900).

The season kicked off in mid-August with moderate numbers (averaging about 55 birds a day) and then started to pick up towards the end of the month. We had several busy days in late August with light north winds the preceding nights. Three of these days resulted in over 200 total birds captured; the highest of these was 243 birds banded on August 28th. The day began on the slower side, but around 9:30am it began to pick up. We started noticing flocks of warblers moving into the netting area and even observed some birds dropping down from high overhead. We speculate that there was a large movement of birds the night before and many of the flocks moving over the point seemed to continue migrating into the morning hours instead of dropping down near dawn as nocturnal migrants typically do. We see this phenomenon fairly frequently during migration season when favorable migratory conditions persist into the morning and there are no geographic or meteorological barriers present to discourage birds from continued flight. By late morning, it seemed there was a continuous flow of birds through the netting area and chip notes emanated from every tree and shrub around us as we walked up and down the net lanes. From this point forward, we were quite busy at the station and had our volunteers constantly extracting to keep up with this sudden arrival of birds. Although we had several days in August where we banded over 200 birds in a single day, this particular day felt unique because of the sheer number of birds in the netting area. We also observed that even in the afternoon after our nets were closed, the bird activity continued with very large flocks of warblers foraging through the net lanes and even momentarily landing on the furled up mist-nets to rest between bouts of foraging. It is unusual to see this much foraging activity late in the day, and it was certainly one of the more memorable days of the season for us. We suspect that the capture numbers would have been much higher if the birds had arrived earlier in the morning seeing as the majority of birds caught were in the second half of the banding day. Our station's protocol dictates that nets are opened for 6 hours starting at sunrise, and the reason for this is because bird activity is typically at its peak in early morning and then decreases by mid-day; however, there are of course anomalies to that pattern and August 28th was one of those days. Although we may have caught a lower proportion than normal of the birds moving through due to how late the birds arrived, the birds we did catch still gave us a representative sample of the species moving through that day. The most numerous species caught was the Magnolia Warbler at 37 individuals banded, and the remainder was a diversity of species, mostly warblers. Out of 38 species banded in total, 21 were species of warbler. American Redstart, Bay-breasted Warbler, Cape May Warbler, and Red-eyed Vireo were the other most-captured species aside from Magnolia Warbler. We were particularly surprised with how many Cape May Warbler (**Photo 8**) were caught (18), as the average number for an entire fall season is only 10. This is the second year in a row that has proved to be very good for

Cape May Warbler, and this is not the only species showing this pattern. Both 2022 and 2023 fall seasons exhibit banding totals for Cape May, Tennessee, and Bay-breasted Warbler that are 8-10 times greater than the historical fall average. This extreme increase is likely due to the ongoing spruce budworm outbreak in the eastern boreal forest where these birds breed. These three species have evolved to take advantage of spruce budworm as a food source when available and are for this reason aptly known as 'budworm warblers'. The populations of all three of the budworm warblers are known to display boom and bust cycles that are intrinsically linked to the increased availability of budworm larvae during outbreaks. The ongoing budworm outbreak could be at least partially responsible for the sudden increase in captures of Bay-breasted, Tennessee and Cape May Warbler. We will be paying close attention to these three species and how their numbers change as the spruce budworm outbreak progresses.



***Photo 8:** Male Cape May Warbler in fall. Photo by Ashley Jensen.*

As is typical for any banding operations, one of the main challenges we face in day to day operation is inclement weather. We had fairly typical warm but not overly hot weather at the beginning of the season in August, but in September we experienced an extreme heat wave for about a week, with temperatures in the 30s and humidity over 90% for many of those days. The intense heat did force us to close nets early on a couple days, but otherwise we had very few days lost to inclement weather this fall. There were only two days during the fall where we could not open nets at all, and these were due mostly to high winds in October. Although we did not lose many days to weather, we did wonder if warmer than usual temperatures along with the extreme drought we experienced throughout September had a negative effect on captures. Despite the unseasonably warm weather, daily banding totals were moderate throughout most of September. The total number of birds banded for September made up 33% of the fall total and was slightly lower than normal compared to September totals for previous years.



**Photo 9:** *Tennessee Warbler in basic (winter) plumage. This species looks quite different depending on the time of year. Their breeding season plumage shows a contrast between olive-colored body feathers and a gray head and underparts, while non-breeding (winter) plumage is a varying olive-yellow color. Photo by Sarah Sharp.*

October started out with a bang, providing our two busiest days of the year on the 1st and 2nd. Both of these days were very busy due to an overwhelming number of kinglets. The 1st, our busiest day of the year, started out with moderate captures and then at around 9am, huge numbers of kinglets began to fill the nets. Luckily we already had an extra volunteer that morning and were able to recruit two more of our experienced volunteers to help with extractions. Even with the extra extractors, we were only just able to keep up with getting the nets checked. However, we did not lose any net hours and we were able to extract and process all the birds we caught which totaled 611 banded! Of these, over 400 were kinglets, with Golden-crowned Kinglet being the most banded species at 234. Ruby-crowned Kinglet were slightly less numerous at 193, and the remainder was a mixture of species. The following day did not bring any relief from the chaos as the kinglets continued to show up in large numbers. This day we did not have an extra volunteer at the beginning of the day and got slightly backed up before reinforcements arrived. This required us to have both of our banders processing kinglets so that we could catch up and ensure we were keeping the processing time for each bird at a minimum. On most days we find it more streamlined to have one experienced person banding when it is busy, but in this case with so many birds, plus some extra volunteers, we were able to have two banders working simultaneously. Like the previous day, we managed to avoid having to close any nets, and any backlog of birds was cleared fairly quickly. We totaled only slightly less than the previous day at 586 banded! Of this total, 51% were a single species, the Golden-crowned Kinglet (297). Ruby-crowned Kinglet numbers (163) were somewhat lower than the previous day, and the mix of species that made up the remainder of the total were similar to those captured on the 1st. It is unclear what triggered this flood of kinglets, and in particular why they seemed to all arrive at once. It is important to note that the numbers we capture are a small but representative sample of the birds moving through the area, meaning there were likely at minimum a few thousand kinglets moving through Prince Edward Point on October 1st and 2nd. For Golden-crowned Kinglet in particular a large proportion of the individuals that migrated through Prince Edward Point during the fall season seemed to do so at this time. Almost half (47%) of the total number of individuals banded in fall were captured on those two days (Oct. 1-2).



**Photo 10:** *The star of the fall season: the Golden-crowned Kinglet. Over 500 were banded in just two days (Oct. 1-2). Photo by Paul Jones.*

Given the big kinglet numbers we had in early October, it is unsurprising that the top two species banded for the fall were Golden-crowned and Ruby-crowned Kinglet (Table 2) respectively. While numbers of the two kinglet species are drastically lower than 2022, they are actually still significantly higher than average when compared to all of the past banding data. For both species, the banding totals are the 4th highest out of the last 20 years. This is the third year in a row with high numbers of kinglets moving through in fall. It will be very interesting to see if this trend continues. As for the other species in the top 10, there was a bit of an upset in some of the species included (or excluded) in the list. Two of the most notable absences are of Blue Jay and Yellow-rumped (Myrtle) Warbler; both of these species were in the top 5 species banded in 2022 and 2021. Considering that Myrtle Warbler were the most banded bird this spring, and Blue Jay were third most banded (Table 1), it would be unlikely that lower numbers in the fall (when population levels of most birds are near their annual peak) could be attributed to low reproductive success during the 2023 breeding season alone. Migratory or behavioural differences between spring and fall seasons are more likely to be some of the major factors contributing to this discrepancy. For example, Myrtle Warbler are a very versatile species that can survive in a variety of habitats and utilize many different food types from insects to berries, or even seeds. This means that this species is not likely as constrained as some other bird species to a particular habitat type during migration. We noticed a conspicuous absence of Myrtle Warbler at Prince Edward Point this fall, at least compared to the numbers we would typically expect. We speculate that that many of the Myrtle Warbler we would typically expect to migrate through our area took a different migratory path this fall; perhaps many flocks took a more easterly migration route using the Atlantic flyway. Blue Jay were another species for which capture numbers were much lower than the last two fall seasons. Unlike the Myrtle Warbler though, we did have large flocks of Blue Jay migrating over the point (jays are diurnal migrants), but we were not catching many. This is part of a trend we noticed this fall where our ground traps simply were not attracting very many birds. We typically catch a large proportion of our Blue Jay in ground traps and while we did of course catch some, the numbers were much lower compared to the past two falls (**Table 2**). This is likely due to the abundant wild food resources available this fall, particularly cone crops. More abundant wild food resources

means species like Blue Jay that are not obligate migrants are less likely to move as far, or at all, and it also means that the bait in the ground traps is likely not as much of a temptation. It is possible that variation in Blue Jay numbers over the years can be attributed at least in part to the abundance of wild food resources. This pattern can also be seen in irruptive species such as many northern finch species as well as chickadees that will move to follow food resources but are not considered truly migratory, and we did indeed see similarly low numbers of Black-capped Chickadee this fall (**Appendix 1**).

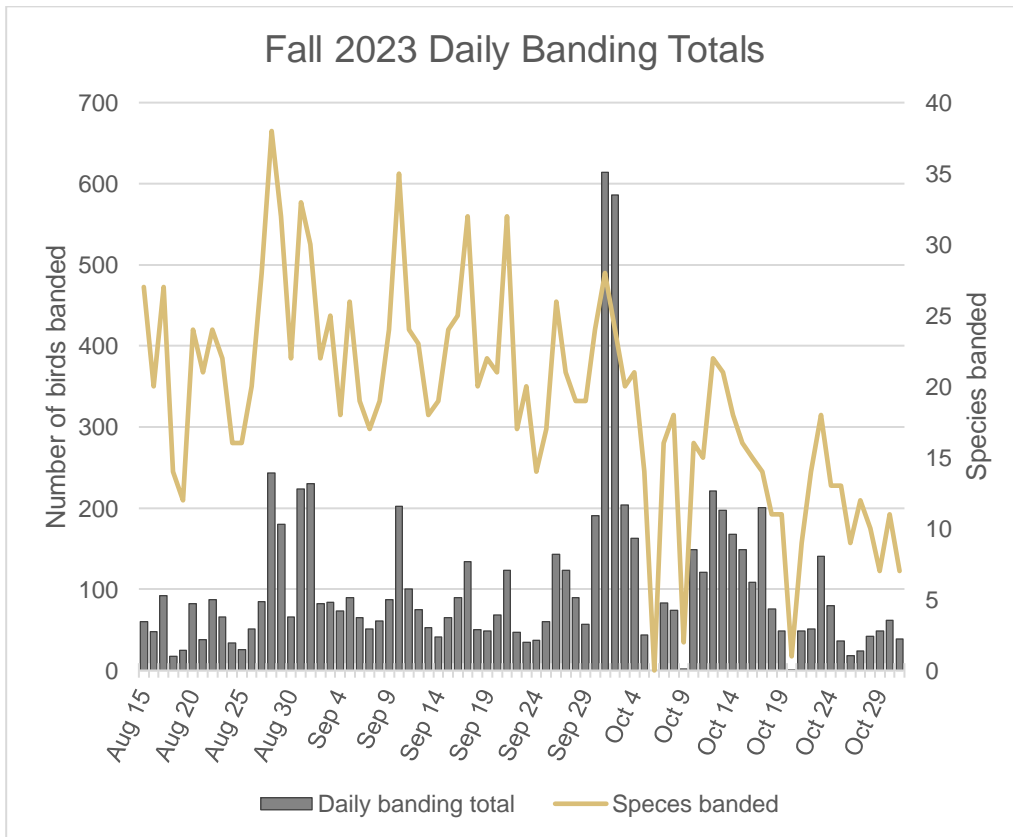


**Photo 11:** *Female American Redstart. Females and young males look very similar and age sometimes needs to be established before sex can be determined. Photo by Ashley Jensen.*

There were a couple of species for which the number of individuals banded this fall were significantly higher than usual. The first, the Hermit Thrush, was banded in significantly higher numbers than is typical. This season's total (322) is almost double the fall average of 174, and only one bird under the all-time high for fall (323). The other species that had a total that was noticeably higher than expected was the American Redstart (Photo 11). This striking warbler is relatively common during the breeding season in northern Canada and prefers large tracts of secondary forest or clearings in other forest types. This fall is the highest number of redstarts ever captured at PEPTBO, both for the fall and for the year. In fact, the total (359) is over four times the fall average of 88; the only other season that came close to this fall's total was the fall of 2022 (Table 2). However, as mentioned previously, the addition of five non-standard nets occurred in 2021 which could be partially contributing to increased capture totals. Interestingly, this large increase starting last fall and continuing this year is similar to the pattern we are seeing in the budworm warblers; however, American Redstart are not spruce budworm specialists. Although it is possible that other species breeding in proximity to budworm outbreaks, such as the redstart, may take advantage of the sudden abundance of food, it is more likely that secondary effects of the outbreak are responsible. The defoliation caused by budworm creates new openings and edges in the forest, which happens to be one of the habitat types preferred by American Redstart during the breeding season. This is however speculation and would require further research to disentangle other potential contributing factors such as clear cutting, climate change, and forest fires.

**Table 2:** Top 10 number of birds banded in fall

COMMON NAME	ALPHA CODE	2023	2022	2021
<b>Golden-crowned Kinglet</b>	GCKI	<b>1,122</b>	2,087	954
<b>Ruby-crowned Kinglet</b>	RCKI	<b>981</b>	1,808	1,190
<b>Magnolia Warbler</b>	MAWA	<b>414</b>	326	378
<b>Slate-colored Junco</b>	SCJU	<b>390</b>	443	170
<b>American Redstart</b>	AMRE	<b>359</b>	299	162
<b>Hermit Thrush</b>	HETH	<b>322</b>	164	133
<b>Brown Creeper</b>	BRCR	<b>297</b>	296	283
<b>Swainson's Thrush</b>	SWTH	<b>293</b>	193	334
<b>Red-eyed Vireo</b>	REVI	<b>286</b>	183	315
<b>Northern Saw-whet Owl</b>	NSWO	<b>286</b>	329	336



**Figure 2:** Daily banding totals for fall 2023 showing the number of individuals banded each day as well as the number of different species captured per day.

## HIGHLIGHTS

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While fall typically does not produce as many rare species as spring, it was still a very memorable season with many exciting moments. The 17th of August was one such day, as somehow, we managed to capture all the possible flycatcher species for Prince Edward Point (excluding rarities) on a single day. This included Yellow-bellied Flycatcher, Least Flycatcher, Traill's Flycatcher, Eastern Wood-Pewee, Eastern Phoebe, Great-crested Flycatcher, Eastern Kingbird, and Olive-sided Flycatcher. This list represents all the flycatchers we expect to catch in the fall season plus some that are not always captured every season. For example, Olive-sided Flycatcher are only caught once every few years. To catch all of these species in one day was very lucky and the staff and volunteers were delighted to say the least. The two Olive-sided Flycatcher were a particular cause for excitement. These flycatchers are a bird of northern coniferous forests and bogs, and they are well known for their song that many say sounds like "Quick, three beers!"



**Photo 12:** Olive-sided Flycatcher. The name for this bird is also one of the main identification features for this species. Notice the "vested" look it has created by a pale throat and belly and olive-gray sides. Photo by Ashley Jensen.

Our most interesting recapture of the year was a male Yellow Warbler originally banded here at PEPtBO in 2015 as a second-year bird, meaning it had hatched in 2014. This would make this individual Yellow Warbler 9 years old, which is very close to surpassing the longevity record for Yellow Warbler. Many warbler species are known for having high breeding site fidelity (i.e., breeding in the same location from year to year), which is likely why we have been able to capture this bird multiple times over the years. He is likely a local breeder in the Prince Edward Point area, and this is further supported by the presence of some remanent breeding characteristics when we captured him. How incredible to know that this individual Yellow Warbler has been successfully migrating to his wintering grounds and then back to Ontario to breed every year for now 9 years! We hope he will have many more successful years of breeding and migration, and if we happen to catch this bird again in future years, he will likely be setting a longevity record for his species.



## CENSUS AND VISUAL OBSERVATIONS

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The number of species detected on census is typically lower in fall than in the spring simply because birds are harder to detect in the fall. We do not have the advantage of birds singing to announce both their presence and the species they belong to. Although we can use chip notes for some species in the fall, many are foraging silently. Furthermore, these birds are often moving silently through vegetation that is much denser than it was in the spring and these factors can definitely hinder our detection. For this reason, banding data is particularly valuable in fall. Although songbirds can be more difficult to detect, fall does bring us the pleasure of an increased number of migrating raptors compared to spring. In September we observed many migrating accipiters, mostly Sharp-shinned Hawk. October brought some large movements of Turkey Vulture and Red-tailed Hawk, and there was one day in particular where we counted at least 250 migrating Red-tailed Hawk within the 6 hour banding interval. October is also the time of year when we see some of the more uncommon raptors, which this year included multiple sightings of Northern Goshawk which are always exciting. The largest and most powerful accipiter, the goshawk specializes on eating grouse. However, the one goshawk we saw with prey this fall was of the mammal variety: a red squirrel. The month of October also brought multiple Golden Eagle sightings (a minimum of 10). These observations created a buzz among some of our volunteers who got an opportunity to see this amazing raptor for the first time. Young Golden Eagle have distinct white patches in their wings and tail making them relatively easy to identify, while older birds must be identified by color, shape, and flight pattern. Luckily, most of the Golden Eagle we see here are young birds and we only see them in Prince Edward County during migration.



**Photo 13:** A young Golden Eagle using north winds to migrate south on a late October day. Young birds such as this have retained some of their immature plumage which included distinct white patches in the wings and tail. Photo by Paul Jones.

One family of birds that was present much more often in the fall was shorebirds. We did observe some shorebirds in the harbor in spring, but the water levels were much higher. In early fall, the dry weather that occurred did have the one benefit of revealing mud and gravel bars in the harbor as water receded which created locations for shorebirds to feed. A total of

14 shorebird species were recorded between census and other observations this fall, with the highlights being a Short-billed Dowitcher and a group of White-rumped Sandpiper (Photo 14). Both of these species are uncommon eastern migrants in our area, but the White-rumped Sandpiper is particularly fascinating because it is an extreme-long-distance migrant, having one of the longest migrations among North American birds. This species breeds in the high arctic and then migrates all the way to the southernmost part of South America to their wintering grounds near the tip of Argentina.



**Photo 14:** *A group of White-rumped Sandpipers foraging in the harbor.*  
*Photo by Ashley Jensen.*

Although we had many interesting and memorable observations this fall, the most rare was certainly the observation of a Western Kingbird. On the 10th of September one of our banders spotted a large flycatcher atop one of the tall snags near the station and made sure to check it as this seems to be a favorite spot for Olive-sided Flycatchers to perch when they move through. After a bit of careful examination, it was clear the bird was a young Western Kingbird (Photo 15). A bird of open habitats in western North America, this species' range does not even reach the Great Lakes with the westernmost edge being in Minnesota. Although there is reportedly a small population in northwestern Ontario. Regardless, this was certainly a rarity for the station, with only a handful ever reported in Prince Edward County. The bird stayed for one day and then left, hopefully heading to its wintering grounds in Mexico.



**Photo 15:** *Western Kingbird.*  
*Photo by Paul Jones.*

Our waterfowl observations were fairly typical for fall with the first groups of ducks starting to arrive as the season came to a close. Most of the diving ducks that come to the Great Lakes in fall and winter do not do so until it starts to get near freezing temperatures in northern Canada where they breed. We saw some large rafts of Greater Scaup but otherwise only small groups of the other expected diving ducks such as Long-tailed Duck, Bufflehead, and White-winged Scoter.

## DAILY ESTIMATED TOTALS

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The highest daily estimated species total was on August 28th with 74 species encountered. This is much lower than the highest DET for the spring, which is mainly due to birds being more difficult to detect during census and observations in the fall. Most of the species represented in this total are songbirds including 20 species of warbler. The total number of species encountered for the fall season was 189. Although the highest fall DET is lower than that of spring, the total species encountered for fall is actually higher (spring total: 180). This may be at least in part be due to fall migration being a longer season. This leads to less overlap in the migration periods among some bird species.

# SPECIAL PROGRAMS

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## BOBOLINK PROGRAM

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PEPtBO engages in standardized monitoring of Bobolink, a species at risk that breeds in open hay fields and grasslands. PEPtBO uses audio lures to attract the Bobolink to our site during their migration to be able to count their numbers and evaluate their demographics to monitor reproductive success of the species and provide data to ECCC to assist with status assessments to assist preservation of this species.



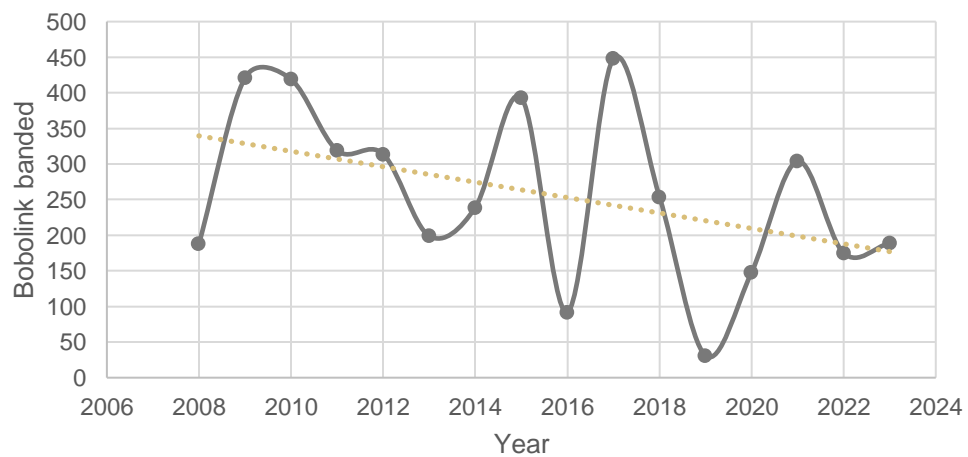
**Photo 16:** A Bobolink in basic (winter) plumage. By spring, males will molt into a striking black plumage with white and yellow markings. By late summer when we start catching Bobolink, the males have molted into winter plumage which is typically indistinguishable from that of females. Photo by Ashley Jensen.

This year we banded 189 Bobolink (**Photo 16**) over 651 net hours. The total is slightly above 2022 total. However, when comparing the two years based on effort, the average of 29 birds per 100 net hours is a bit lower than that of last fall (33 birds/100 net hrs.), and much lower than that of 2021 (55 birds/100 net hrs.). When looking at the 16 years of migration monitoring where we have banded Bobolink at PEPtBO, the total number of birds captured (189) is well below the yearly average (258; Table 3). After looking at data for Bobolink over 16 years we created a graph (Figure 3) to visualize the trends based on our capture rates. With a consistent protocol for our Bobolink program we are noticing some concerning declines. Although capture rates are not always indicative of a species population, we are also noticing other possible explanations for the change in capture numbers. Something to note about our monitoring is that we observe many Bobolink moving overhead throughout the entire month of August, yet our monitoring program only begins on August 15th. There is a possibility that our decreasing number of birds encountered could be linked to climate change making the conditions in Canada becoming hospitable much sooner than in the last few decades and now birds are breeding sooner which results in them leaving sooner as well. The age ratio has not noticeably changed, as about 75% of our birds were hatch year birds, meaning that

reproductive success is proportionally high. Over the next few years of monitoring PEptBO may explore the angle of climate change more deeply to ascertain if a change in our protocol will be warranted to examine migration movements in relation to climate.

**Table 3:** Number of Bobolink banded at PEptBO per year

YEAR	BOBOLINK BANDED
<b>2008</b>	188
<b>2009</b>	421
<b>2010</b>	419
<b>2011</b>	319
<b>2012</b>	314
<b>2013</b>	199
<b>2014</b>	239
<b>2015</b>	393
<b>2016</b>	92
<b>2017</b>	448
<b>2018</b>	254
<b>2019</b>	31
<b>2020</b>	148
<b>2021</b>	304
<b>2022</b>	175
<b>2023</b>	189
<b>Average</b>	258



**Figure 3:** Number of Bobolink banded each year since 2008, with trend line shown in gold.

# NORTHERN SAW-WHET OWL MONITORING PROGRAM

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Our Owl Migration Program has been running consecutively now for 24 years. This program has monitored Northern Saw-whet Owl movements to assist with determining population health of this migratory owl species. This year we continued our operation with our standard 4 hours per night from the 20th of September until the 31st of October. With the observation data from multiple observatories with slightly different protocols we have noticed that strong owl movements occur past our standard 4 hours at night as well as past October 31st in the southern Ontario region. Luckily for us having a designated owl bander, Ketha Gillespie, we were able to monitor owls beyond the standard protocol hours many nights to examine a warranted change in our protocol. In addition to monitoring owls past the standard 4 hours, whenever staff availability allowed, we also banded 4 days during the first week of November. These extra days yielded 45 owls which represents approximately 15% of the total owls captured. Over the winter the board and research committee will be evaluating the benefits of changing the protocol to potentially start measuring this information on a regular basis. Through our observations and the use of data from previous years where similar extended hours occurred we notice significant movements at least 2 hours more into the night as well as past the 31st of October.

This year we banded 286 Northern Saw-whet Owl, 6 Barred Owl and 1 Eastern Screech Owl over the course of 2,298 net hours. Our capture rate was 13 owls per 100 net hours. In addition to the number of Northern Saw-whet Owl we banded, we also had 7 foreign recoveries (Appendix C), which are recaptures that have been banded by another station or researcher. Foreign recoveries provide fascinating insight on the movements of these tiny owls, and we find that many of them are either traveling long distances or taking surprisingly varied routes during migration. One particularly interesting owl was an individual we captured on November 5th. This owl was already banded, but we immediately noticed the band was quite shiny which is typically not the case if the band has been on the bird for a year or more. When we received the foreign recovery data, we discovered this owl had indeed been banded recently. It was originally banded on October 1st of 2023 in Washington County, Maine (U.S.). This means the owl had, over the course of the month of October, made its way over 750km west to us in Prince Edward County. Often, foreign recoveries are not from the same year the bird was originally banded, so it is difficult to be sure if the individual is moving between those locations in a single season, or simply taking a different migratory path in subsequent migrations. In this case we were able to ascertain some specifics about this bird's movements during migration, which highlights the value of this type of data.

The owls not targeted by the audio lures, like barred and screech, are captured passively. Since Barred Owl are a predator of the Northern Saw-whet Owl, we have special nets that are a larger mesh size that can help guarantee the capture of these owls to prevent them from targeting the Northern Saw-whet Owl in the nets. The capture of the Barred Owl is usually enough to protect the Northern Saw-whet Owls because many birds, including owls, are smart enough to leave the territory after being captured and processed by banders.



**Photos 17:** Northern Saw-whet Owl. Right photo shows the flight feathers in the wing which are used to aid in aging these birds. At least 3 distinct ages or generations of feathers can be seen making it a min. of 3 years old (after-2nd-year). Photos by Ashley Jensen.

In total, we banded for 40 days this year out of the 48 potential days due to poor weather conditions on the other 8 nights. The amount of interesting weather phenomena with heat spells and cold spells brought a lot of rain in October and wind making our banding efforts extremely difficult and staggered. In fact, due to poor weather, we were not able to band any owls between the 4th and 10th of October. Despite running into many issues with weather we hosted multiple owl events with the public and private groups alike. These tours brought in many people to see how we run the operation and to even meet and (symbolically) adopt some of our banded owls. The reason we go through the adoption process with owls and not songbirds is because their foreign recapture rate is so high. Due to the use of audio lures to attract the Northern Saw-whet Owl, many stations end up bringing in owls that are moving through the area during migration. This lure works by attracting the spread migration of owls into a singular point where we are able to capture and process the birds safely and quickly. Despite them being responsive to the calls, our owls banded at the point rarely get recaptured within the same migration season. Instead, a lot of these birds end up recaptured by other stations. In fact, 8 Northern Saw-whet Owl were recaptured in 2023 at other stations after having been banded by PEPtBO in previous years (**Appendix C**).

Our data shows that while the number of Northern Saw-whet Owls banded was lower than the past two fall seasons, it does not differ significantly from the average number of expected captures for our standard protocol, particularly when considering population cycling can occur in this species. In years with substantial non-standard banding occurred in addition to standard banding hours, numbers were much higher, which supports our hypothesis that there is value in extending the length of our banding nights as well as the length of the banding season.



## MONITORING AVIAN PRODUCTIVITY AND SURVIVORSHIP PROGRAM

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Our MAPS program carried on this year for our third year. We have been able to increase the number of stations that we operate in the hopes of expanding the program into more habitats of Prince Edward County. We had the opportunity, with the help of FOSS, to add our Soup Harbor MAPS station. Now, having just passed the halfway point of our necessary 5 years of monitoring for trend analyses at our four original locations, we are extremely excited to increase our reach and create more longevity with these projects. This year we banded fewer birds at each of our sites by a small to moderate margin except for our Miller Family Nature Reserve (MFNR) station. The results are likely due to the weather patterns leading up to the breeding season that also affected our Spring capture rates. Another explanation could be that the number of birds using the habitat is changing based on the growth of the protected areas in which we operate. Doing consistent habitat assessments will be an important part of our data analysis and should begin in two years.

These are the 5 sites we now operate during our summer breeding bird program:

- Rocky Point (ROMP)
- Miller Family Nature Reserve (MFNR)
- Maple Cross Coastline Reserve (MACR)
- Sandbanks Provincial Park (SNDB)
- Soup Harbor (SOHA) – new

The ROMP station is in the Prince Edward Point National Wildlife Area, where we expanded our partnership with Canadian Wildlife Service (CWS) to run this breeding bird program. Our MFNR station, in association with the Prince Edward Hastings Land Trust, is located on Hilltop Road and is along the Prince Edward County south shore. The MACR station in association with Nature Conservancy Canada (NCC) is along Helmer Road also along the PEC south shore. The SNDB, in association with Ontario Provincial Parks, is in the Sandbanks Provincial Park. Finally, the SOHA site is located on private property on Soup Harbor Road. Each station offers a diversity of habitat that harbors potential for a wide variety of species. Despite these differences there are generalist species that can be found at each station (**Table 4**) like Song Sparrows, Black-capped Chickadees, Common Yellowthroat, Gray Catbird, and American robin.

Located about 1.5km down from our migration station at Prince Edward Point, our ROMP site averaged 40 birds per 100 net hours, which is slightly lower in terms of captures when compared to last year. We cannot attribute this change to anything we have observed, and it may simply be normal year-to-year variation. The combination of our first session of banding occurring in the first few days of June and this site being at the very tip of the National Wildlife Area near the shore of Lake Ontario means that we

encounter a number of birds that are most certainly migrants in the first period of MAPS banding. This year that list included Gray-cheeked Thrush, Black-throated Blue Warbler, Northern Waterthrush, Mourning Warbler, and Acadian Flycatcher, none of which were detected again during the remainder of the season at ROMP. Acadian Flycatcher was a first for our MAPS program; it is a common species in the southern U.S. and has a very small presence in the southernmost parts of Ontario. This species is a late-season migrant, and has rarely been detected in our area. Only one other individual has ever been banded during PEPTBO's migration monitoring, which was in spring of 2022.

This year we implemented a new station on Soup Harbor Road with the help of the FOSS. This site is located within unharvested but maintained fields directly adjacent to both a mature forest woodlot and a wetland associated with Lake Ontario. This habitat showed a lot of promise when scoping out the territory in which we noticed the presence of many species-at-risk (SAR). For most of these SAR, including Eastern Wood-Pewee, Wood Thrush, Grasshopper Sparrow, and American Bittern, we were able to subsequently record breeding confirmation through our MAPS data. Notably, this included two species we do not encounter at our other sites, American Bittern and Grasshopper Sparrow. It is of note that we also captured breeding Indigo Bunting and Swamp Sparrow which we do not typically catch at our other sites. SOHA had the highest capture rate of any of our sites at 56 birds per 100 net hours, as well as the greatest diversity of species captured (36; Table 4). After our first year of monitoring at SOHA we are excited about the prospect of what information we can glean from our program which will in turn help us advise the landowners on proper habitat management of their site to keep the species at risk breeding in this location. An interesting observation made throughout the set-up of the station is the possibility of two more species at risk thanks to the grassland-like habitat that they maintain. There is strong evidence through observations of migrating birds moving through the site that Bobolink and Eastern Meadowlark will be able to use the habitat and breed here. Grassland species are one of the most vulnerable species of birds in Canada due to development and changing farming practices. We hope our continued monitoring will help build on the research that is used to protect these species at risk.



**Photo 18:** A species-at-risk, the Grasshopper Sparrow, caught at our Soup Harbor MAPS site. Photo by Ashley Jensen.

Something of note for a comparison to last year is our now back-to-average number of captures for our MFNR station with 144 total birds banded, and 31 birds per 100 net hours. This is because we identified the reason for our flooding issues at this site. During our clearing of the site we discovered that the station was victim to beavers turning a small creek into a large wetland. Luckily the rain this summer was not enough to continue the flooding issues and after our first session we were able to run more nets throughout the rest of the season. The beavers' activity diminished a bit and the water levels decreased enough to allow us to band and for the beavers to maintain their habitat. This means that we were able to run two nets that had not been operable since 2021. This station now runs a total of 12 nets, which does not interfere with our results as this site is a low volume station and we are able to run it efficiently. This area is an old homestead, and it seems that certain species we find at our other sites do not find it to be suitable breeding habitat. The most notable example is Yellow Warbler, which is a common breeder across the county and present at all of our other MAPS sites, but we have never captured one at MFNR. This area does however, seem to be used by many birds in the post-fledging period as we noted multiple species in the area for the first time approximately halfway through the season with fledglings. This could be because of the edge habitat present at MFNR; much of it is an old, overgrown homestead with transition zones where this open habitat meets both wetland and forest to create edges.

Numbers at the MACR site were slightly reduced compared to previous years at 193 birds, whereas 2021 and 2022 had 271 and 224 birds respectively. The capture rate at MACR was 42 birds per 100 net hours, which is the second highest among the sites in 2023. A unique characteristic of this site is the number of native plant species that seem to be thriving here. To name just a few, we noticed patches of Wild Bergamot, Early Buttercup, and Narrow-leafed Vervain this year, which are species often associated with alvar that have not been observed at our other sites. Interestingly, we also encountered a few bird species at this site that we have not detected during the breeding season at our other MAPS sites. These include White-throated Sparrow and Magnolia Warbler, which typically only breed further north, but both are regularly detected at MACR. Clay-colored Sparrow is another species that we only encounter at this site. They are a species of northern prairie and shrubland, and they are found in low numbers in a few locations across Prince Edward County.

At our SNDB site, we banded 93 birds which is the lowest of any of our sites and slightly lower compared to previous years. The capture rate of 24 birds per 100 net hours is significantly lower than that of our other MAPS sites. This may be in part due to less nesting habitat being available out in the dunes where our station is located when compared to the other four sites. As at MFNR, ROMP, and SOHA, Song Sparrow was the most abundant species at SNDB with 15 banded. While we did not encounter any birds at SNDB that were not also encountered at least one of our other sites, there were two

species for which the only individuals banded during MAPS occurred at SNDB: Eastern Kingbird (3) and American Woodcock (1).

This year we banded for 35 days over the summer, which is the exact number expected. During a 10 day cycle each site must be monitored once and we were able to maintain nearly 10 days between each banding day during the season. We banded 875 birds this year of 60 different species, which is the highest number of species in the last 3 years. This is in big part because of our new station, SOHA. We recaptured 281 birds throughout the summer bringing our total number of processed birds to 1,156. This year we had fewer recaptures to banded birds proportionally, but our new site is likely the cause of this change since the first year usually does not include any recaptures from previous years. The overall capture rate was 39 birds per 100 net hours.

This year we had a good number of recaptures from both 2021 and 2022, which means that the survivorship of the birds we have processed at our 4 older stations is generally good for certain species. The four most recaptured species were Song Sparrow, Yellow Warbler, Common Yellowthroat, and Black-capped Chickadee. Every recaptured bird was in breeding condition giving us a strong indication that these birds were producing the young we captured. The average return rate is equal in both Second Year (SY) and After Second Year (ASY) birds. This shows survivorship has been strong in young and older birds in the last 2 years. We recaptured 32 year-to-year recaptures in our first period of banding at our 4 original stations. Over the rest of the season more older birds turned up giving us over 20 more breeding birds in our older banding sites. The most notable of our recaptures were a Great-crested Flycatcher banded in 2019 during migration found at our ROMP station and a Common Grackle that was banded in 2021 during migration in October but was now found breeding at our brand-new site SOHA. These migrant birds encountered during the breeding season show us how birds potentially disperse or choose breeding territory. The Great-crested Flycatcher being so close to our migration station indicates site fidelity during migration for this individual. The Common Grackle on the other hand is an interesting encounter. The SOHA station is located completely on the other side of the county meaning that this bird (banded as a hatch year in 2021) dispersed more than 22 km before breeding in this location. Common Grackles are early migrants to the area in the spring and late migrants to leave in the fall meaning that their likelihood to disperse increases when flocks search for food availability before and after breeding season.

Overall, we had a successful MAPS season with our new banding station and continued monitoring of our older sites. Our summer intern Sarah was able to contribute many survey plots of the breeding bird atlas conducted over 5 years and covered the entire county. This is part of our contribution to the efforts made to monitor birds in the whole province.

**Table 4:** capture numbers for each MAPS station

COMMON NAME	ROMP	MFNR	MACR	SNDB	SOHA	TOTAL
<i>American Bittern</i>	0	0	0	0	1	<b>1</b>
<i>American Woodcock</i>	0	0	0	1	0	<b>1</b>
<i>Downy Woodpecker</i>	4	0	1	2	6	<b>13</b>
<i>Hairy Woodpecker</i>	0	0	0	0	2	<b>2</b>
<i>Yellow-shafted Flicker</i>	0	0	0	2	0	<b>2</b>
<i>Pileated Woodpecker</i>	0	0	0	0	1	<b>1</b>
<i>Eastern Wood-pewee</i>	0	0	2	0	3	<b>5</b>
<i>Acadian Flycatcher</i>	1	0	0	0	0	<b>1</b>
<i>Yellow-bellied Flycatcher</i>	2	1	0	1	0	<b>4</b>
<i>Trails Flycatcher</i>	6	0	6	2	4	<b>18</b>
<i>Least Flycatcher</i>	0	0	3	0	2	<b>5</b>
<i>Eastern Phoebe</i>	0	1	0	0	1	<b>2</b>
<i>Great-crested Flycatcher</i>	1	1	1	1	1	<b>5</b>
<i>Eastern Kingbird</i>	0	0	0	3	0	<b>3</b>
<i>Warbling Vireo</i>	0	0	0	1	5	<b>6</b>
<i>Red-eyed Vireo</i>	3	0	2	0	7	<b>12</b>
<i>Blue Jay</i>	0	1	0	2	1	<b>4</b>
<i>Black-capped Chickadee</i>	15	16	6	6	7	<b>50</b>
<i>White-breasted Nuthatch</i>	0	0	1	0	2	<b>3</b>
<i>Brown Creeper</i>	1	0	0	0	0	<b>1</b>
<i>House Wren</i>	3	7	8	2	1	<b>21</b>
<i>Veery</i>	0	0	1	0	0	<b>1</b>
<i>Gray-cheeked Thrush</i>	1	0	0	0	0	<b>1</b>
<i>Swainson's Thrush</i>	2	1	0	1	0	<b>4</b>
<i>Wood Thrush</i>	0	0	0	0	5	<b>5</b>
<i>American Robin</i>	7	12	10	5	9	<b>43</b>
<i>Gray Catbird</i>	9	16	19	5	14	<b>63</b>
<i>Brown Thrasher</i>	0	2	4	2	0	<b>8</b>
<i>European Starling</i>	1	0	0	0	0	<b>1</b>
<i>Cedar Waxwing</i>	8	0	0	0	2	<b>10</b>
<i>Tennessee Warbler</i>	1	1	0	0	0	<b>2</b>
<i>Nashville Warbler</i>	0	4	6	0	1	<b>11</b>
<i>Yellow Warbler</i>	29	1	24	10	41	<b>105</b>
<i>Chestnut-sided Warbler</i>	0	0	1	0	1	<b>2</b>
<i>Magnolia Warbler</i>	3	0	10	0	0	<b>13</b>
<i>Black-throated Blue Warbler</i>	1	0	0	0	0	<b>1</b>
<i>Bay-breasted Warbler</i>	1	1	0	0	0	<b>2</b>
<i>Black-and-white Warbler</i>	1	5	7	0	0	<b>13</b>
<i>American Redstart</i>	2	1	5	0	3	<b>11</b>
<i>Ovenbird</i>	0	3	2	0	3	<b>8</b>
<i>Northern Waterthrush</i>	1	2	1	1	2	<b>7</b>

COMMON NAME	ROMP	MFNR	MACR	SNDB	SOHA	TOTAL
<i>Mourning Warbler</i>	1	0	0	0	0	1
<i>Common Yellowthroat</i>	18	15	24	6	13	76
<i>Wilson's Warbler</i>	0	1	1	0	0	2
<i>Canada Warbler</i>	4	1	0	0	0	5
<i>Eastern Towhee</i>	1	0	1	3	0	5
<i>Chipping Sparrow</i>	0	5	5	2	0	12
<i>Grasshopper Sparrow</i>	0	0	0	0	4	4
<i>Clay-colored Sparrow</i>	0	0	1	0	0	1
<i>Field Sparrow</i>	0	4	8	8	1	21
<i>Song Sparrow</i>	43	29	18	15	79	184
<i>Swamp Sparrow</i>	1	0	0	0	17	18
<i>White-throated Sparrow</i>	0	3	9	0	0	12
<i>Northern Cardinal</i>	2	3	2	1	1	9
<i>Rose-breasted Grosbeak</i>	6	1	3	0	3	13
<i>Indigo Bunting</i>	0	0	0	0	8	8
<i>Red-winged Blackbird</i>	2	0	0	4	8	14
<i>Common Grackle</i>	1	0	0	2	0	3
<i>Baltimore Oriole</i>	1	0	0	4	2	7
<i>American Goldfinch</i>	0	6	1	1	1	9
<i>Total # of birds</i>	183	144	193	93	262	875
<i>Total # of species</i>	34	28	32	27	36	60

# OTHER WILDLIFE HIGHLIGHTS

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The Prince Edward Point National Wildlife Area is not only a migratory hotspot for numerous bird species and a global IBA, but it also provides crucial habitat for a variety of mammals, amphibians, reptiles, insects, and other arthropods. The transition from IBA to KBA (Key Biodiversity Area) that is currently underway means that not only birds, but all wildlife species will be considered when designating these areas.

## MAMMALS

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We encountered many mammal species this year from those you might expect like white-tailed deer, raccoons, squirrels, eastern cottontail, and coyote, to some you might not expect like a species of jumping mouse and a variety of mustelids. Otters were spotted going into the seasonal marsh pools between the net lanes and the road, and mink were spotted along the main trail. The most notable mammal for us this fall was a fisher that was only spotted one day near our furthest net. Three of our crew members were lucky enough to see it briefly and it dropped a portion of its most recent meal on the net lane trail (part of a skunk).

We saw one red fox this year, and while it is always fascinating to see these animals, we do have to keep a close eye on any predators seen near the nets. Being vigilant is an important part of ensuring we are doing all we can to keep the birds we are capturing safe. Deer were also a source of issues at the nets as they do not see the nets and run through them from time to time causing significant damage. Other than an occasional issue with squirrels going into our ground traps, the mammals in the area seem to mostly keep away from the nets and traps.

We also made several observations of bats near the station this year, mostly in late summer. Even though we were not able to get a good enough look to identify most of these bats to species, the timing and the fact that the bats did not have a regular nightly presence at this location was a clue that aided in narrowing down the possibilities. We suspect they were mostly migratory species such as Hoary Bat, Eastern Red Bat, or Silver-haired Bat.



## REPTILES AND AMPHIBIANS

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Similar to previous years, we were not disappointed by the variety of reptiles and amphibians we found throughout the year. We observed five species of snake including DeKay's Brown Snake, Garter Snake, Eastern Milksnake, Smooth Green Snake, and Northern Watersnake. Garter Snake was definitely the most numerous snake we saw with some days producing as many as 10 just along our net lane trail. In early spring the watersnakes came out of what we assume must be a hibernacula underneath the concrete pad near the house since many individuals could be seen grouped up under the warm spring sun in this area. We found at least two Eastern Milksnakes this spring which are a species of special concern in Ontario, and we also encountered quite a few Smooth Green Snake, although none were seen until late summer/early fall. At least one hatchling Smooth Green Snake was discovered between the banding lab and the cottage; therefore, the nest must have been at least somewhat close to this general area. Unfortunately, snakes were also the most common animals that we found dead on the road. This included countless snakes, mostly Garter Snake, but also at least two Eastern Milksnake, and these are just the individuals our crew happened to notice while driving back and forth from the station. It may be appropriate to have better signage as well as some education materials for visitors to the NWA so they know how vulnerable reptiles and amphibians are to being hit by vehicles and to watch out for them. On a brighter note, in early spring we were serenaded by the incessant calls of Chorus Frog, Spring Peeper, and American Toad. As the nights started to warm a little more, Gray Tree Frog could be heard calling throughout the day, often from right outside the station although they were seldom seen. We also observed many Leopard Frog, mostly hopping through the net lanes or across the trail. Lastly, turtles were also present in the area around the station including Snapping and Painted Turtle in the marsh. In addition, many Blanding's Turtle were encountered, which is Threatened species and only occurs in small pockets around the Great Lakes, and Prince Edward Point is home to one such population. This turtle species is very terrestrial at certain life stages and moves large distances after hibernation or in interest of reproduction. Due to these extensive movements across land, they are the turtle we encounter most frequently near the station, and it is certainly a treat to get to see them fairly often.



**Photos 19:** A Blanding's Turtle crossing the trail (left. Photo by Paul Jones). An American Toad that (right) made its home in the stump outside the cottage.



A Smooth Green Snake (left) that was found crossing the net lane trail (photos by Ashley Jensen). Smooth Green Snake are an arboreal snake species, which means they spend most of their time climbing through trees and shrubs. This is also the reason they are typically difficult to find.

## ARTHROPODS

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The numbers and movements of insects and other arthropods were mostly similar to recent years as far as we could tell. There were regular hatch outs of midges from May continuing through September, and while some visitors to the NWA find them to be a nuisance, they are an incredibly important food source for many birds and other animals such as predatory insects. Dragonflies are one group of insects that readily uses this food source, and while we notice many different dragonflies around the point, the large migratory species such as darners are by far the most common. Massive groups of Green Darner congregated at the point periodically from late August through early September, presumably getting ready to migrate or to complete the next leg of their migration. Monarch Butterfly were also present at the station; however, we noticed only low numbers in summer and it was not until they started to migrate that we saw larger numbers of monarchs near the station. One other group of insects we noticed this year were many moth species at the point. Although many were unidentifiable because we could not always obtain a photo, we saw several species of tussock moth, numerous Bad Wing Moth, and at least two species of tiger moth. Another interesting species found by our crew was the Olive Angle Shade moth (Photo 20), a species of dart moth. From what we could tell the numbers of insects seen were not noticeably different from previous years, but our observations are very incidental and not standardized

measurements. It would be beneficial to have some measure of insect numbers in the NWA since they can be indicators of environmental health. Additionally, this information could also aid us in determining local issues that may also be affecting bird populations.



**Photo 20:** *An Olive Angle Shade moth observed on the forest edge near the station. Photo by Ashley Jensen.*

# ACKNOWLEDGEMENTS

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## STAFF

**Phillip Mercier**

Station Manager/Bander-in-Charge

**Ashley Jensen**

Assistant Bander-in-Charge

**Sarah Sharp**

Intern 2023

**Ketha Gillespie**

Owl Bander

**Mark Paddison**

Facilities Manager

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Jay Hardy

Martha Bromby

Vickie Clowater

Jenny Newton

Mikaela Naumann

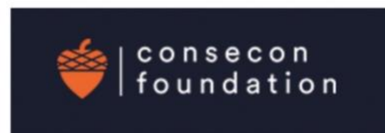
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## HOW YOU CAN HELP

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*PEPtBO relies heavily every year on the help of hundreds of people. Through our daily volunteers, generous donors, and in-kind supporters we have been able to accomplish all of our duties. We host many events and activities to draw in our supporters which we advertise on all our online platforms. Spreading the word and accumulating more support is how PEPtBO will be able to grow and accomplish bigger and better things.*

*Spreading awareness about the observatory is a great way for us to spread our message aimed at the conservation of birds.*

# APPENDICES

## APPENDIX A: ALL BIRDS BANDED

COMMON NAME	ALPHA CODE	SPRING	SUMMER	FALL	TOTAL
<i>American Bittern</i>	AMBI	0	1	0	1
<i>Sharp-shinned Hawk</i>	SSHA	2	0	28	30
<i>Black-billed Cuckoo</i>	BBCU	1	0	2	3
<i>Mourning Dove</i>	MODO	0	0	1	1
<i>Spotted Sandpiper</i>	SPSA	23	0	1	24
<i>American Woodcock</i>	AMWO	0	1	0	1
<i>Eastern Screech-Owl</i>	EASO	0	0	1	1
<i>Barred Owl</i>	BDOW	0	0	6	5
<i>Northern Saw-whet Owl</i>	NSWO	0	0	286	241
<i>Red-bellied Woodpecker</i>	RBWO	1	0	0	1
<i>Yellow-bellied Sapsucker</i>	YBSA	11	0	17	28
<i>Downy Woodpecker</i>	DOWO	1	13	8	22
<i>Hairy Woodpecker</i>	HAWO	5	2	0	7
<i>Northern (Yellow-shafted) Flicker</i>	YSFL	9	2	4	15
<i>Pileated Woodpecker</i>	PIWO	0	1	0	1
<i>Olive-sided Flycatcher</i>	OSFL	0	0	2	2
<i>Eastern Wood-Pewee</i>	EAWP	7	5	21	33
<i>Acadian Flycatcher</i>	ACFL	0	1	0	1
<i>Yellow-bellied Flycatcher</i>	YBFL	13	4	69	86
<i>Trail's Flycatcher</i>	TRFL	6	18	26	50
<i>Least Flycatcher</i>	LEFL	33	5	61	99
<i>Eastern Phoebe</i>	EAPH	8	2	49	59
<i>Great-crested Flycatcher</i>	GCFL	6	5	14	25
<i>Eastern Kingbird</i>	EAKI	0	3	5	8
<i>Blue-headed Vireo</i>	BHVI	13	0	100	113
<i>Warbling Vireo</i>	WAVI	0	6	10	16
<i>Philadelphia Vireo</i>	PHVI	15	0	23	38
<i>Red-eyed Vireo</i>	REVI	46	12	286	343
<i>Blue Jay</i>	BLJA	313	4	230	547
<i>Black-capped Chickadee</i>	BCCH	70	50	72	192
<i>Red-breasted Nuthatch</i>	RBNU	17	0	2	19
<i>White-breasted Nuthatch</i>	WBNU	9	3	4	16

COMMON NAME	ALPHA CODE	SPRING	SUMMER	FALL	TOTAL
<b>Brown Creeper</b>	BRCR	132	1	297	<b>430</b>
<b>House Wren</b>	HOWR	31	21	29	<b>81</b>
<b>Winter Wren</b>	WWR	7	0	36	<b>43</b>
<b>Golden-crowned Kinglet</b>	GCKI	169	0	1122	<b>1291</b>
<b>Ruby-crowned Kinglet</b>	RCKI	427	0	981	<b>1408</b>
<b>Blue-gray Gnatcatcher</b>	BGGN	0	0	2	<b>2</b>
<b>Veery</b>	VEER	11	1	28	<b>40</b>
<b>Gray-cheeked Thrush</b>	GCTH	9	1	67	<b>77</b>
<b>Swainson's Thrush</b>	SWTH	74	4	293	<b>371</b>
<b>Hermit Thrush</b>	HETH	41	0	322	<b>363</b>
<b>Wood Thrush</b>	WOTH	4	5	3	<b>12</b>
<b>American Robin</b>	AMRO	51	43	8	<b>102</b>
<b>Gray Catbird</b>	GRCA	63	63	22	<b>148</b>
<b>Brown Thrasher</b>	BRTH	11	8	1	<b>20</b>
<b>European Starling</b>	EUST	0	1	0	<b>1</b>
<b>Cedar Waxwing</b>	CEDW	6	10	11	<b>27</b>
<b>Blue-winged Warbler</b>	BWWA	1	0	1	<b>2</b>
<b>Brewster's Warbler</b>	BRWA	1	0	0	<b>1</b>
<b>Golden-winged Warbler</b>	GWWA	2	0	0	<b>2</b>
<b>Tennessee Warbler</b>	TEWA	21	2	86	<b>109</b>
<b>Orange-crowned Warbler</b>	OCWA	0	0	6	<b>6</b>
<b>Nashville Warbler</b>	NAWA	52	11	150	<b>213</b>
<b>Northern Parula</b>	NOPA	9	0	64	<b>73</b>
<b>Yellow Warbler</b>	YEWA	45	105	23	<b>173</b>
<b>Chestnut-sided Warbler</b>	CSWA	22	2	35	<b>59</b>
<b>Magnolia Warbler</b>	MAWA	125	13	414	<b>552</b>
<b>Cape May Warbler</b>	CMWA	11	0	84	<b>95</b>
<b>Black-throated Blue Warbler</b>	BTBW	45	1	140	<b>186</b>
<b>Myrtle Warbler</b>	MYWA	485	0	219	<b>704</b>
<b>Black-throated Green Warbler</b>	BTNW	16	0	105	<b>121</b>
<b>Blackburnian Warbler</b>	BLBW	17	0	50	<b>67</b>
<b>Pine Warbler</b>	PIWA	0	0	1	<b>1</b>
<b>Western Palm Warbler</b>	WPWA	32	0	102	<b>134</b>
<b>Bay-breasted Warbler</b>	BBWA	21	2	163	<b>186</b>
<b>Blackpoll Warbler</b>	BLPW	4	0	156	<b>160</b>
<b>Black-and-white Warbler</b>	BAWW	34	13	56	<b>103</b>
<b>American Redstart</b>	AMRE	37	11	359	<b>407</b>
<b>Ovenbird</b>	OVEN	31	8	33	<b>72</b>
<b>Northern Waterthrush</b>	NOWA	24	7	22	<b>53</b>
<b>Mourning Warbler</b>	MOWA	6	1	9	<b>16</b>

COMMON NAME	ALPHA CODE	SPRING	SUMMER	FALL	TOTAL
<i>Common Yellowthroat</i>	COYE	29	76	66	171
<i>Wilson's Warbler</i>	WIWA	7	2	65	74
<i>Canada Warbler</i>	CAWA	14	5	22	41
<i>Summer Tanager</i>	SUTA	1	0	0	1
<i>Scarlet Tanager</i>	SCTA	5	0	5	10
<i>Eastern Towhee</i>	EATO	5	5	4	14
<i>American Tree Sparrow</i>	ATSP	5	0	1	6
<i>Chipping Sparrow</i>	CHSP	47	12	16	75
<i>Grasshopper Sparrow</i>	GRSP	0	13	0	13
<i>Clay-colored Sparrow</i>	CCSP	0	1	0	1
<i>Field Sparrow</i>	FISP	20	21	15	56
<i>Vesper Sparrow</i>	VESP	1	0	0	1
<i>Savannah Sparrow</i>	SAVS	1	0	1	2
<i>Fox Sparrow</i>	FOSP	23	0	6	29
<i>Song Sparrow</i>	SOSP	60	184	45	289
<i>Lincoln's Sparrow</i>	LISP	13	0	5	18
<i>Swamp Sparrow</i>	SWSP	9	18	1	28
<i>White-throated Sparrow</i>	WTSP	281	12	166	459
<i>Eastern White-crowned Sparrow</i>	EWCS	68	0	26	94
<i>Slate-colored Junco</i>	SCJU	249	0	390	639
<i>Northern Cardinal</i>	NOCA	12	9	10	31
<i>Rose-breasted Grosbeak</i>	RBGR	43	13	16	72
<i>Indigo Bunting</i>	INBU	2	8	1	11
<i>Bobolink</i>	BOBO	0	0	189	189
<i>Red-winged Blackbird</i>	RWBL	53	14	0	67
<i>Rusty Blackbird</i>	RUBL	3	0	1	4
<i>Common Grackle</i>	COGR	81	3	34	118
<i>Brown-headed Cowbird</i>	BHCO	160	0	1	161
<i>Baltimore Oriole</i>	BAOR	11	7	7	25
<i>Purple Finch</i>	PUFI	8	0	2	10
<i>House Finch</i>	HOFI	1	0	0	1
<i>American Goldfinch</i>	AMGO	7	9	7	23
<i>House Sparrow</i>	HOSP	1	0	0	1
	<b>Total</b>	<b>3909</b>	<b>875</b>	<b>7930</b>	<b>12714</b>
	<b>Species</b>	<b>87</b>	<b>60</b>	<b>89</b>	<b>104</b>



## APPENDIX B:

### ALL RECAPTURES

COMMON NAME	ALPHA CODE	SPRING	SUMMER	FALL	TOTAL
<i>Sharp-shinned Hawk</i>	SSHA	1	1	1	3
<i>Mourning Dove</i>	MODO	36	0	1	37
<i>Northern Saw-whet Owl</i>	NSWO	0	0	12	12
<i>Yellow-bellied Sapsucker</i>	YBSA	1	0	4	5
<i>Downy Woodpecker</i>	DOWO	3	2	8	13
<i>Hairy Woodpecker</i>	HAWO	3	0	0	3
<i>Eastern Wood-Pewee</i>	EAWP	0	1	0	1
<i>Yellow-bellied Flycatcher</i>	YBFL	0	0	3	3
<i>Traill's Flycatcher</i>	TRFL	0	4	0	4
<i>Eastern Phoebe</i>	EAPH	1	0	3	4
<i>Great-crested Flycatcher</i>	GCFL	3	1	2	6
<i>Philadelphia Vireo</i>	PHVI	0	0	1	1
<i>Red-eyed Vireo</i>	REVI	1	2	54	57
<i>Blue Jay</i>	BLJA	94	2	31	127
<i>Black-capped Chickadee</i>	BCCH	45	27	80	152
<i>Red-breasted Nuthatch</i>	RBNU	1	0	0	1
<i>White-breasted Nuthatch</i>	WBNU	2	0	4	6
<i>Brown Creeper</i>	BRCR	13	0	31	44
<i>House Wren</i>	HOWR	37	1	8	46
<i>Winter Wren</i>	WIWR	0	0	3	3
<i>Golden-crowned Kinglet</i>	GCKI	16	0	112	128
<i>Ruby-crowned Kinglet</i>	RCKI	29	0	90	119
<i>Blue-gray Gnatcatcher</i>	BGGN	0	0	1	1
<i>Veery</i>	VEER	1	0	0	1
<i>Gray-cheeked Thrush</i>	GCTH	0	0	2	2
<i>Swainson's Thrush</i>	SWTH	2	0	17	19
<i>Hermit Thrush</i>	HETH	6	0	54	60
<i>Wood Thrush</i>	WOTH	1	5	0	6
<i>American Robin</i>	AMRO	30	2	0	32
<i>Gray Catbird</i>	GRCA	19	19	8	46
<i>Brown Thrasher</i>	BRTH	3	1	1	5
<i>Tennessee Warbler</i>	TEWA	0	0	2	2
<i>Nashville Warbler</i>	NAWA	4	0	4	8
<i>Northern Parula</i>	NOPA	0	0	5	5
<i>Yellow Warbler</i>	YEWA	28	37	3	68
<i>Chestnut-sided Warbler</i>	CSWA	0	0	3	3

COMMON NAME	ALPHA CODE	SPRING	SUMMER	FALL	TOTAL
<i>Magnolia Warbler</i>	MAWA	16	6	51	73
<i>Cape May Warbler</i>	CMWA	1	0	3	4
<i>Black-throated Blue Warbler</i>	BTBW	3	0	18	21
<i>Myrtle Warbler</i>	MYWA	10	0	2	12
<i>Black-throated Green Warbler</i>	BTNW	2	0	2	4
<i>Blackburnian Warbler</i>	BLBW	0	0	2	2
<i>Western Palm Warbler</i>	WPWA	1	0	1	2
<i>Bay-breasted Warbler</i>	BBWA	0	0	28	28
<i>Blackpoll Warbler</i>	BLPW	0	0	4	4
<i>Black-and-white Warbler</i>	BAWW	6	2	20	28
<i>American Redstart</i>	AMRE	1	1	24	26
<i>Ovenbird</i>	OVEN	2	0	6	8
<i>Northern Waterthrush</i>	NOWA	1	0	3	4
<i>Common Yellowthroat</i>	COYE	12	49	22	83
<i>Wilson's Warbler</i>	WIWA	1	0	8	9
<i>Canada Warbler</i>	CAWA	1	1	7	9
<i>Eastern Towhee</i>	EATO	12	1	0	13
<i>Chipping Sparrow</i>	CHSP	18	1	2	21
<i>Field Sparrow</i>	FISP	6	15	1	22
<i>Fox Sparrow</i>	FOSP	2	0	0	2
<i>Song Sparrow</i>	SOSP	53	81	11	145
<i>Swamp Sparrow</i>	SWSP	2	2	0	4
<i>White-throated Sparrow</i>	WTSP	41	4	39	84
<i>Eastern White-crowned Sparrow</i>	EWCS	34	0	27	61
<i>Slate-colored Junco</i>	SCJU	71	0	158	229
<i>Northern Cardinal</i>	NOCA	16	4	2	22
<i>Rose-breasted Grosbeak</i>	RBGR	7	5	3	15
<i>Indigo Bunting</i>	INBU	0	1	0	1
<i>Red-winged Blackbird</i>	RWBL	12	2	0	14
<i>Common Grackle</i>	COGR	12	1	0	13
<i>Brown-headed Cowbird</i>	BHCO	81	0	0	81
<i>Baltimore Oriole</i>	BAOR	1	0	5	6
<i>Purple Finch</i>	PUFI	4	0	0	4
	<b>Total</b>	<b>809</b>	<b>281</b>	<b>997</b>	<b>2087</b>
	<b>Species</b>	<b>54</b>	<b>30</b>	<b>54</b>	<b>69</b>

## APPENDIX C: ALL FOREIGN RECOVERIES

BAND NUMBER	SPECIES	DATE OF BANDING	ORIGINAL BANDING LOCATION	DATE OF FOREIGN RECOVERY	FOREIGN RECOVERY LOCATION	AGE
*1104-27576	Northern Saw-whet Owl	2021-10-23	Prince Edward Point Bird Observatory Milford, ON	2022-10-28	Friedensburg Pennsylvania, USA	Over 3 years
*1124-15241	Northern Saw-whet Owl	2022-10-14	Prince Edward Point Bird Observatory Milford, ON	2022-11-07	Barbour County, West Virginia, USA	Hatch year
1462-05303	Blue Jay	2022-05-28	Prince Edward Point Bird Observatory Milford, ON	2023-06-07	Oswego County, New York, USA	3 years old
1783-02753	Mourning Dove	2021-04-11	Prince Edward Point Bird Observatory Milford, ON	2023-09-09	Edgecombe County, North Carolina, USA	Over 3 years
1104-27658	Northern Saw-whet Owl	2022-10-03	Prince Edward Point Bird Observatory Milford, ON	2023-09-20	Tadoussac Bird Observatory, Quebec	2 years
1104-27350	Northern Saw-whet Owl	2021-09-28	Prince Edward Point Bird Observatory Milford, ON	2023-10-12	Tadoussac Bird Observatory, Quebec	4 years
1124-15078	Northern Saw-whet Owl	2023-09-30	Prince Edward Point Bird Observatory Milford, ON	2023-10-22	Topsfield, Massachusetts, USA	2 years
2980-59820	Black-capped Chickadee	2023-10-31	Prince Edward Point Bird Observatory Milford, ON	2023-11-18	Picton, Ontario	Hatch year
1104-27686	Northern Saw-whet Owl	2022-10-04	Prince Edward Point Bird Observatory Milford, ON	2023-11-10	Bergton, Virginia, USA	2 years
1124-15216	Northern Saw-whet Owl	2022-10-10	Prince Edward Point Bird Observatory Milford, ON	2023-11-05	Long Point Bird Observatory Port Rowan, Ontario	3 years
1104-27817	Northern Saw-whet Owl	2023-10-23	Prince Edward Point Bird Observatory Milford, ON	2023-11-11	Chester County, Pennsylvania, USA	Over 2 years
1104-27906	Northern Saw-whet Owl	2023-10-31	Prince Edward Point Bird Observatory Milford, ON	2023-11-10	Chester County, Pennsylvania, USA	Hatch year
1104-27722	Northern Saw-whet Owl	2023-10-13	Cumberland County, Pennsylvania, USA	2023-11-24	Prince Edward Point Bird Observatory Milford, ON	2 years
1094-83086	Northern Saw-whet Owl	2022-10-25	Stevens Point, Wisconsin, USA	2023-10-13	Prince Edward Point Bird Observatory Milford, ON	Over 3 years
1094-60017	Northern Saw-whet Owl	2020-10-09	Whitefish Point Bird Observatory, Michigan, USA	2023-10-13	Prince Edward Point Bird Observatory Milford, ON	Over 2 years
1014-48486	Northern Saw-whet Owl	2022-10-07	Long Point Bird Observatory Port Rowan, Ontario	2023-10-14	Prince Edward Point Bird Observatory Milford, ON	2 years
1124-23682	Northern Saw-whet Owl	2021-10-23	Sullivan County, New York, USA	2023-10-17	Prince Edward Point Bird Observatory Milford, ON	3 years
1154-24504	Northern Saw-whet Owl	2021-07-07	Whitefish Point Bird Observatory, Michigan, USA	2023-10-29	Prince Edward Point Bird Observatory Milford, ON	3 years
1124-29675	Northern Saw-whet Owl	2023-10-01	Washington County, Maine, USA	2023-11-05	Prince Edward Point Bird Observatory Milford, ON	2 years
2940-14737	Field Sparrow	2022-12-06	Montgomery County, Texas, USA	2023-04-20	Prince Edward Point Bird Observatory Milford, ON	2 years
0811-29313	Northern Cardinal	2022-11-04	Long Point Bird Observatory Port Rowan, Ontario	2023-04-17	Prince Edward Point Bird Observatory Milford, ON	1 year

\* indicates a record from last year for which the certificate was received after the 2022 annual report was published