

Mackenzie Nature Observatory Mugaha Marsh Banding Station

2024 Annual Report



Main Sponsors

Mugaha Marsh Banding Station is a cooperative project. Some of our main sponsors identify the project by a name and/or number:

Fish and Wildlife Compensation Program – Peace Region

Project name: Mugaha Marsh Banding Station, 2024-2025

Project Number: PEA-F25-W-4133-DCA

The Project is partially funded by the Fish and Wildlife Compensation Program (FWCP). The FWCP is a partnership between BC Hydro, the Province of BC, Fisheries and Oceans Canada, First Nations and public stakeholders to conserve and enhance fish and wildlife impacted by the construction of BC Hydro dams.

Environment and Climate Change Canada

Project Name: Migration Monitoring at Mackenzie Nature Observatory

Project No. GCXE22C004

This project was undertaken with the financial support of:

Ce projet a été réalisé avec le soutien financier de:

*Environnement and
Climate Change Canada*

*Environnement et
Changement climatique Canada*

McLeod Lake Mackenzie Community Forest Society

Project 1: new accommodations for the banders

Project 2: owl banding equipment

Birds Canada (BSC), Canadian Migration Monitoring Network

Mackenzie Nature Observatory (MNO) is part of the Canadian Migration Network. As such, we receive 75% of funds raised by individuals doing the Great Canadian Birdathon in support of Mackenzie Nature Observatory. The Birdathon is coordinated by Birds Canada.

Cover: Net lane 17, Mugaha Marsh

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<https://www.instagram.com/MackenzieNatureObservatory/>

Mackenzie Nature Observatory is an incorporated society and a registered charity. Our members enjoy nature and we are involved in various projects. This report will give an overview of the activities of the station for the current year.

Purposes of the Society:

- *To research, conserve, restore and assist in the management of the natural resources found in the Mackenzie, BC area.*
- *To promote the understanding and enjoyment of nature by providing opportunities for public participation and education in habitat enhancement, restoration and monitoring projects that will provide additional public knowledge regarding nature.*
- *To encourage and engage in the protection and restoration of threatened and endangered species with special attention to the preservation of essential habitats.*

Our Executive Committee:

President: Ryan Bichon

Vice-President: Sandra Kinsey

Secretary: Kessie Konwicki

Acting Treasurer: Ryan Bichon

Directors: David Lambie

Angelina Joiner

Director for BC Nature: Jeanne Shaw

EXECUTIVE SUMMARY

The Mackenzie Nature Observatory (MNO) completed its 29th year of bird migration monitoring at Mugaha Marsh in Mackenzie, British Columbia, to assist in the understanding of bird demographics and population trends. The program was funded by the BC Hydro Fish and Wildlife Compensation Program (FWCP) for meeting the Community Engagement objectives under the FWCP Peace River Cross-Ecosystem Action Plan by maintaining and improving relationships with Indigenous Nations and local stakeholders who support conservation projects in the Peace Region. A total of 16 passerine mist nests were in operation during the standard banding period July 19 – September 23, weather permitting, including 12 standard nets and four non-standard nets installed in previously decommissioned net lanes as an experiment. Non-standardized banding was conducted September 24 – 30 as a pilot project to determine the feasibility of extending the season long-term. Standardized Northern Saw-whet Owl monitoring was also implemented for the first time in 2024 using 10 nets. A one hour, one kilometre census was conducted each day, regardless of weather conditions.

A total of 2,116 birds of 58 species were banded during the standard banding period, which was low compared to previous years of operation, even when birds per net hour (0.51) are considered. A lower-than-average capture number was also documented for 10 out of 18 warbler species banded. The Top 5 species banded in 2024 were Ruby-crowned Kinglet (288), American Redstart (284), Dark-eyed Junco (262), Yellow-rumped Warbler (158), and Swainson's Thrush (147). Notable species captured in 2024 included Black-and-white Warbler (3), Tree Swallow (2), Olive-sided Flycatcher (1), Blue-headed Vireo (1), Bohemian Waxwing (2), and Northern Rough-winged Swallow (1). A single Sharp-shinned Hawk was the only hawk captured. Net operations were affected by many days of rain, wind and threat of predators. The four experimental non-standard nets had a catch rate of 0.35 birds per net hour. The extra end-of-season week had a catch rate of 0.32 birds per net hour in the standard nets.

The owl program successfully resulted in the capture of 120 Northern Saw-whet Owls and 23 Boreal Owls. The Northern Saw-whet Owl program operated for 1304 net hours (0.11 birds per net hour) targeting both Northern Saw-whet and Boreal Owls with audio lures.

MNO also contributed to the Bird Genoscape Project in 2024, which involved collecting tail feathers from 466 birds of 29 species. MNO also engaged with many local visitors, out-of-town travellers and organizations, and held nine special visitor nights during owling season that were all well attended. A total of 1493 volunteer hours contributed to the program during the standard banding period, on top of the many additional hours required to oversee program logistics and participate in community outreach activities.

In addition to continuing the Standard Banding program for passerines and Northern Saw-whet Owls in 2025, a MOTUS Tag Workshop is planned for September 2025, subject to funding. Social media reporting and attendance at face-to-face events in Mackenzie will also continue, with the goal of encouraging people to visit the banding station and get more involved with MNO activities. Overall, the project achieved or exceeded all intended outcomes. The 2024 season was highly successful, resulting in valuable data on songbird populations, migrations, and health, and greater community awareness. Public benefits were realized through educational, recreational, and tourism opportunities.

PRESIDENT'S REPORT - 2024

2024 was another outstanding year for our bird banding station at Mugaha Marsh. Our banders were extremely energetic and enthusiastic, continuing with the Adopt-A-Bird program and banding outside the lab building when weather permitted, and starting the standardized Northern Saw-whet Owl Banding Program. The banders did an excellent job of reporting regularly on social media, with lots of great photos being shared.

Our owling program was extremely successful and attracted lots of visitors to the station. In the past, owl banding at Mugaha has always been voluntary and ad hoc over the years. This year, we were pleased to announce a full-time, standardized Saw-whet owl Program for the whole month of September, and with more owl visitor-nights. The new owl net locations tried out last year were a great success.

Many thanks to everyone who volunteered their time, doing everything from site improvements to administrative duties, to operational setup at the start of the season, to daily assistance with bird banding, to cleanup and takedown at the end of the season, to sitting at a table at the fall Recreation Fair. Thanks also to everyone who visited the site. Public awareness and education are a big part of why we exist. We hope everyone who visited the station enjoyed their time there as much as we enjoyed having them.

A huge thank you to everyone who helped make 2024 such a success! I look forward to another great season in 2025.

Ryan Bichon,
President

ACKNOWLEDGEMENTS

2024 was another busy year for members of MNO and we would like to say a big “Thank You” to everyone who volunteered their time to keep the project going. And, thanks to all our sponsors and donors for their continued support. You can see who the major sponsors are on Page i.

So much appreciation goes out to all the volunteers who assisted at the station this year. Some of you came out early to help the banders and stayed for the full day; others came when they could and still other volunteers from out of town drove many kilometers to assist the banders. Together, our volunteers put in hundreds of hours at the station over the eleven weeks and we couldn’t be more thankful.

Special thanks to our staff: Laura Tabbakh, Kirstin Lachance, Benjamin Breton, Lauren Quinsey, and to Rae Xamin for an amazing season at Mugaha and for donating their time on days off for owl banding in September. Special thanks to Laura and Kirstin for their reports on the season. Many thanks specifically go to Laura, Lauren and volunteer Lucile for their daily work on our social media accounts, and keeping them active and engaging; we have had many positive responses.

Thanks go to everyone who contributed photographs for the report, whether staff, visitor or volunteer.

Thanks to everyone who helped or wrote parts of this report: Laura Tabbakh, Ryan Bichon, Sara Sparks, Angelina Joiner, Kessie Konwicki, Kirstin Lachance, Sue Crosby, and Laird Law.

Special thanks to the others on the Board: Ryan, Kessie, Jeanne, Thomas and Angelina, without whom we wouldn’t have operated in 2024.

We had visitors and many volunteers-in-training who enjoyed learning about birds and how we process them at our station. Everyone appreciated the birds, and some will be coming back next year as volunteers!

If you would like to get involved, including when the station is not open, contact the club via email at MackenzieNatureObservatory@gmail.com.

Visitors can contribute even more by sharing their eBird lists with the station. Username is MNOebird. It helps the station and the broader community of citizen scientists too!

Happy Birding,
Sandra Kinsey,
David Lambie

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MIGRATION MONITORING, MUGAHA MARSH BANDING STATION, MACKENZIE, BC

Background

The migration monitoring program started in Mackenzie in 1994 as a cooperative project between the Canadian Wildlife Service (CWS) of Environment and Climate Change Canada (ECCC), local forest companies, and the Mackenzie Nature Observatory. We started the project when we were known as the Environment Section of the Mackenzie Fish & Game Association. When we wanted to become a charity we formed the Mackenzie Nature Observatory (MNO).

For the first few years, volunteers conducted bird surveys on set routes in spring and fall. They also operated a banding station in the fall under CWS's permit. The first banding station (1994 & 1995) was at Gagnon Creek south of Mackenzie. In 1995, a banding station was started at Mugaha Marsh and in 1996 it became the only banding station.

The program is a cooperative project supported by various government and non-government organizations and foundations, local businesses and individuals, the community of Mackenzie and many, many volunteers.

Mackenzie Nature Observatory is one of 25 member stations of the Canadian Migration Monitoring Network (CMMN), a collaboration of bird observatories from



across the country, along with Birds Canada (formerly Bird Studies Canada) and the CWS. CMMN provides vital

long-term information on bird demographics and population trends for more than 200 bird species, and contributes data that advances the understanding of birds and other aspects of natural history in Canada.

Mackenzie Nature Observatory's volunteer Board of Directors supervises the seasonal operation of the station, raises funds, obtains permits, hires banders, and recruits volunteers. It also submits all appropriate data to various agencies: the Canadian Bird Banding Office, CWS (Environment and Climate Change Canada), Birds Canada (BSC) and the BC Wildlife Species Inventory Database. CWS is responsible for the regional analysis of the data and BSC for the national analysis of the data. Information from our Daily Estimated Totals Program is posted on the NatureCounts website (<https://naturecounts.ca>)

Mugaha Marsh Banding Station is located on the west side of the Rocky Mountains in the Rocky Mountain Trench in central British Columbia. It is east of the Parsnip Reach of Williston Reservoir. Some net lanes are actually in the floodplain of the reservoir when it is at or near full pond. To the west of the reservoir lie the Omineca Mountains. These landscape features create a funneling effect making Mugaha a suitable location to monitor the migration of species breeding in the forests and mountains of northern British Columbia, Yukon and Alaska.

MNO follows a standardized protocol that meets the requirements of CWS and CMMN. MNO supplies the specialized banding equipment and laptops needed for the program, and has a banding lab on site. The banders are hired as employees of MNO and are covered by WorkSafe BC. MNO also carries third party liability insurance through BC Nature for the volunteer work done for the banding station.

Goals and Objectives

The migration monitoring program in Mackenzie has three broad goals:

- To monitor changes in the populations of small landbirds that use and migrate through the Mackenzie area by providing annual indices of population numbers and structure, species composition, migration timing and possibly survival rates and indices of productivity. Of particular concern are species not effectively monitored by other survey methods (e.g. Breeding Bird Survey) and species showing declines in other regions.

- To understand migration ecology and its relationship to breeding dynamics and management issues, particularly the significance of Mugaha Marsh as a stopover site.

- To build partnerships within the community and between industry, naturalists, academia, First Nations, governments and interested citizens.

The program has several objectives:

- To identify and count individuals (observed and captured) daily of each species or subspecies, new and recaptures, using standard, nationally-accepted protocols during fall migration.

- To determine the age and sex composition of captured and observed birds for a demographic picture of species migrating through the area.

- To augment public interest and local knowledge of environmental issues through involvement and training opportunities.

- To produce annual reports. MNO will produce an annual report summarizing the season, containing numbers and composition of captures and recaptures, comments on habitat changes, weather conditions and other factors that may have affected the capture of birds locally. CWS BC/Yukon Region will produce an annual report analyzing the data on a regional basis.

- To investigate the use of migration numbers as an index of productivity, particularly for forest birds.

- To support further integrated research.

- To reduce, where possible, biases in sampling by improving survey protocols and skills of observers, maintaining local vegetation structure and composition, and supporting consistency of the surrounding landscape of Mugaha Marsh. We will investigate the best measurements and influences of variation in the capture population (e.g. age, sex, migratory status, moult, mass gain) and other, uncontrollable potential sources of biases (e.g. weather, habitat change in the surrounding landscape, insect outbreaks, water levels) on the observed trends and adjust analyses accordingly.

- To follow a standardized protocol meeting the scientific requirements of CWS and CMMN.

Study Area

Mackenzie Nature Observatory's migration station is located at Mugaha Marsh, 14.5 km northwest of Mackenzie, B.C., latitude N55°23'55", longitude W123°12'30". UTM coordinates are 10U / 0486575 / 6139133.

The station lies within the Mugaha Marsh Sensitive Area, which was proclaimed under the Forest Practices Code of BC Act in 2001. The banding site is also within the McLeod Lake Mackenzie Community Forest.

Mugaha Banding Station consists of a permanent banding laboratory, living area, public wildlife viewing platform, parking lot, 32 net lanes (12 nets are used annually), and a census route. This site can be used for spring and fall banding.

The Recording Area boundary for counting birds extends from the trees at the southwest edge of the marsh, to the trees bordering the northeast bank of the pond, to include species not observed elsewhere in the marsh. For passerines and near passerines (woodpeckers, hummingbirds, swifts and kingfishers), the boundary extends west along the main road until hydro pole #115, south along the main road until hydro pole #107, and north in the forest along the trail to Tutu Bay, until the aspen with three pink ribbons. There is no set distance for all other non-passerines.

Methods (a summary)

Mugaha Marsh Banding Station operates only during the fall migration season, from July 19 to September 23 (67 days). Starting in 2023, a week was added to the end of the season, from September 24 to September 30, inclusive, as an experiment. Also added that year were four decommissioned net lanes (Nets 13, 14, 15, and 16) for the season, also as an experiment. This experimental banding is deemed Non-standard Banding. Any birds re-captured in the standard nets became Standard Banding captures.

The station operates 12 12-metre passerine mist nets for six hours starting at sunrise, weather permitting. This is our Standard Banding period. The nets are checked every 30 minutes, more frequently if conditions warrant. The banders and trained volunteers extract the birds from the mist nets and place each bird in individual bird bags. The birds are taken back to the lab for the banders, or trained volunteers, to identify to species (and sometimes to subspecies), to age and sex, and then to place a small metal band (with its own unique number stamped on it) on the bird's leg. The band number, species, age, sex, date, net and time are recorded along with physiological measurements such as wing length, weight, fat, muscle

development and moult. The bird is then released. The same data is collected on previously banded birds that are recaptured, unless it is a same day recapture in which case the bird is released at the net.

A one-hour, one kilometre long census is conducted over a standardized route each day, regardless of weather, recording all birds observed or heard in the Recording Area. In fall, this can be difficult as often birds do not sing; they merely make chip notes or, at other times, are silent as they flit through the vegetation.

In addition, observations of bird activity are recorded during the standard 6-hour banding period. Birds observed outside the 6-hour standard banding period may also be recorded, but these are kept separate from the observations during Standard Banding.

Totals from banding, recaptures, observations and census are used to compile an Estimated Total of the birds in or passing through the area each day.

Hummingbirds captured in the nets are banded when an authorized bander is present. The data for hummingbirds is kept separate from other songbirds and considered Non-Standard Banding as not every year does the station have someone permitted to band hummingbirds.

Up until this year, Northern Saw-whet Owl migration monitoring in September was volunteer. Starting this year, a standardized monitoring program was conducted for the month of September. The nets were open for six hours a night, seven nights a week using 10 new owl nets and poles. Two of the nets were installed twice as high as the other nets. Audio lures were used to attract Northern Saw-whet and Boreal Owls.

REPORTING BANDED BIRDS

Banded birds help scientists track the movements of birds. If you find a banded bird it is important to note as much as you can about the bird. If the bird is found alive, please do not try to remove the band. This could result in an injury to the leg (banders use special tools when a band needs to be removed). Please note the following information:

1. Numbers, in sequence, appearing on the band or bands
2. Colours, codes and materials of any bands or markers in addition to a metal band
3. Date on which the bird or band was found or observed
4. Exact location the bird or band was found or observed
5. Species, sex and age of the bird (if known)
6. Whether the bird was alive, dead, injured, free, or trapped
7. How the bird died (if known)
8. Online: <http://www.reportband.gov>
Or by phone 1-800-327-BAND (2263).
Or by mail: Bird Banding Laboratory
12100 Beech Forest Road
Laurel, MD 20708

For more information on reporting band recoveries see the Environment Canada webpage on [How to report a banded bird - Canada.ca](http://www.canada.ca/en/environment-climate-change/services/bird-banding/how-to-report.html).

<https://www.canada.ca/en/environment-climate-change/services/bird-banding/how-to-report.html>



bird band

FUNDING AND IN-KIND SUPPORT

The Mugaha Marsh Banding Station is a cooperative project with a variety of sources providing funding, in-kind donations and many hours of volunteer service. MNO extends a special “Thank You” to all our sponsors. Whether your contribution is financial, material or volunteer service, your help is greatly appreciated.

Funding Sources

Thank you to everyone who provided financial support to the Mugaha Marsh Banding Station in 2024.

Mackenzie Nature Observatory gratefully acknowledges the **Fish and Wildlife Compensation Program** (www.fwcp.ca) for committing \$25,790 for 2024.

Thank you to **Canadian Wildlife Service, of Environment and Climate Change Canada**, for its financial contribution of \$10,000 for the 2024 season.

Thank you to the **Macleod Lake and Mackenzie Community Forest** for contributing \$20,000 towards buying new trailers to lodge our banders. We were able to purchase two new-to-us trailers, which also allowed us to use a spare camper for our overnight volunteers. It was all very much appreciated!

Big thanks go again to the **Macleod Lake and Mackenzie Community Forest** for allocating \$3,372 towards the purchase of new owl mist nets and pliers for our owl migration monitoring program.

We are very grateful for the \$2500 grant from the BC Naturalists’ Foundation and BC Nature which came with much moral

support and allowed the two monitoring programs to run smoothly and seamlessly.

The Canada Summer Jobs program funded the intern position to the tune of \$5,543.

Thanks to Ray Sturney and Maureen Sargent, Randy Rawluk, and Angelina Joiner for participating in the 2024 Great Canadian Birdathon on behalf of MNO. They are long-time supporters. We received \$2767.50 from **Birds Canada** for our share of the proceeds. As a CMMN banding station, MNO received 75% of the funds they raised. Thank you for thinking of us!

We express our gratitude to the PayPal Giving Fund, the Provincial Employees Community Services Fund, Mackenzie Consumers Coop, anonymous donors, and to all those who participated in the Adopt-A-Bird program.

Thanks to the businesses and individuals who made donations to MNO in 2024: Nancy Krueger of Prince George; and to everyone who donated during events at the banding station.

Last, but not least, thank you to our members!

In-kind Support

Thank you to **Ministry of Forests**, in Mackenzie, for allowing us to store our trailers and campers, used for accommodations at the banding station, at their compound during the off season.

Thanks to the **District of Mackenzie** for grading the road to Mugaha Marsh and for allowing our banders and out-of-town volunteers to use the showers at the Municipal Campground and Recreation Centre.

Thanks to the **Mackenzie Public Library** for again hosting our display in their window. As she does each year, Jeanne Shaw set up the display. The exhibit explains bird migration and the work we conduct at the station.



Window display at the Mackenzie Library, summer 2024 (Photos: Jeanne Shaw)

Adopt-A-Bird Program

The popular Adopt-A-Bird program, launched in 2023, ran again this year. People can sponsor a passerine for \$15 and a raptor for \$30. As a thank you, they are presented with a certificate containing their adopted bird's band number, species, age, sex, wing length and weight. They will also be notified if their bird is ever caught again.

The program was again very successful with 62 owls and passerines adopted, raising \$1755. This money will be used to buy owl nets and other specialized equipment needed by the station to run the programs and to receive visitors.

We hope to catch some of these birds again next year!

STAFF

The returning Bander-in-Charge (BIC) for 2024 was Laura Tabbakh. Laura was introduced to banding and migration monitoring at the McGill Bird Observatory (MBO) in Quebec in 2016. She has since continued to train, work and volunteer at the Koffler Reserve (Ontario), Last Mountain Bird Observatory (Saskatchewan), Thunder Cape Bird Observatory (Ontario), and Lesser Slave Lake Bird Observatory (Alberta), before landing at MNO in 2021. When she is not away from home on a contract, she remains a regular volunteer at MBO for spring and fall migration, Monitoring Avian Productivity and Survivorship (MAPS), winter feeder banding, and Northern Saw-whet Owl and Snow Bunting banding.

Returning Assistant Bander # 1 (AB#1) was Kirstin Laviolette Lachance. Kirstin got her first taste of bird banding in 2018 through an ornithology course at Vanier College (Quebec). After graduating, she left the banding world for a few years, and worked at various wildlife technician jobs. Her work and volunteer experience in bird banding include Prince Edward Point Bird Observatory (Ontario), with Owl Moon Environmental (Alberta), Lesser Slave Lake

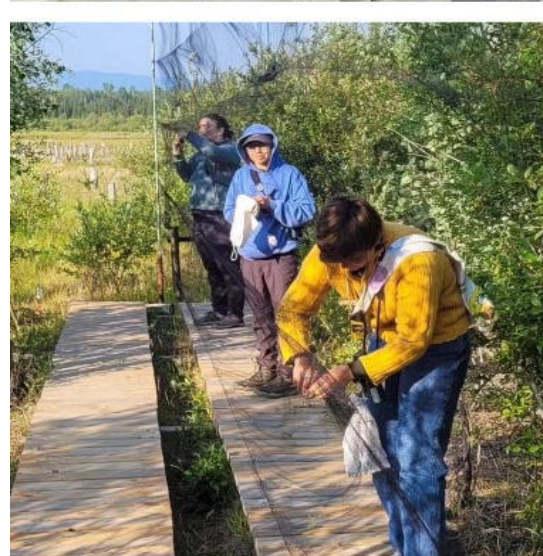
Bird Observatory, McGill Bird Observatory, and Beaverhill Bird Observatory (Alberta).

The returning Assistant Bander # 2 (AB#2) this year was Benjamin David Breton. Ben developed his passion for birds early, for raptors specifically, and was also introduced to bird banding via Vanier College in 2018. After college, he worked at the Ecomuseum Zoo (Montreal) for 5 years as a zookeeper for all species of Quebec, but of course took a special interest in training many different species of raptors and corvids. He also volunteered at Prince Edward Point Bird Observatory to visit Kirstin during the owl banding season in 2021, as well as at the McGill Bird Observatory. We were very happy to have him join the team again this year!

With Kirstin moving over to owls for September, MNO required a third permitted bander. Rae Xamin joined us on September 1 from Toronto. She started banding at Tommy Thompson Park (Toronto) and continued banding on various projects for a number of years. Before coming to MNO, Rae was Bander-in-Charge at Hilliardton Marsh, Ontario, for three seasons. She had heard much about MNO from one of our previous BICs, Chris Sukha.



Staff for 2024: left to right: Ben Breton, Lauren Quinsey, Kirstin, Laura Tabbakh, and Rae Xamin.



Volunteers at the station

VOLUNTEERS

by Laura Tabbakh

The station had a number of local, out-of-town and out-of-province volunteers and volunteers-in-training. Together, they put in 1493 hours during the Standard Banding period, 392 hours on the standardized owling, plus another 232 hours in June and early July during a breeding season monitoring program.

Our local volunteers and volunteers-in-training were Elaine Bambrick and Aven, Elliot, Ian and Oren Hogg, Ryan Bichon, Sue and Ron Crosby, Lucile Jacques, Karen Jungnitsch, David Lambie, Barb and Ron Paterson, Amy Smith and Dave Simpson, Doug Thompson, Trudy Tremblay and Jim Wellsman, and Thomas Zhu.

We also had volunteers and volunteers-in-training from across Canada: Christiane Tremblay, (Montreal), Laura Maskell (Ottawa), Sierra Jamieson (Alberta), Janos Kovacs (Edmonton), Paul Xamin (Toronto); Teresa Weismiller, Eileen LeFrancois and Abdelhak Saddiki (Prince Rupert:); and Cari McGillivray. From Prince George we had: Christina Cutbill, Jeff Dyck, Brett Gandy,

Shaye Hill, the Kaknevicus family, Sandra Kinsey, Kessie Konwicki, Laird Law, John Marquis, Jamie Quinn, Jeannine Randall, Kalum and Natalie Srochenski, Tina Watters, and Alexa Wiebe.

Returning and new volunteers participated in a training and review workshop held one evening just after the station opened for the season. Everyone found it very helpful. The station will put on more in the coming years.

This summary does not reflect the many hours put in before, during and after the season by the MNO Board of Directors.

Kudos to the banders: Laura, Kirstin, Ben, Lauren and Rae, who put in many hours of volunteer time for owling, conducting the daily census on their days off and helping on busy mornings when an extra set of hands was needed. Banders and volunteers also put in countless hours on public outreach, launching and managing the social media accounts and corresponding with volunteers and visitors. Our heartfelt thanks go out to them all. Their efforts greatly increased the banding station's profile in the community.





VISITORS AT MNO

by Laura Tabbakh

Mugaha Marsh Banding Station is open to visitors during songbird banding hours between July 19 and September 30. It's a popular destination for locals and draws in visitors from other towns and cities as well. Visitors are invited to register for owl visitor nights.

In **June**, MNO held three days of banding demonstrations for the Macleod Lake and Mackenzie Community Forest (MLMCF), during their Annual General Meeting being held in Mackenzie. The event drew

approximately 50 people to the station, all of whom had a great time. We heard we were the second-most preferred activity of their three days in town – it was hard to beat mountain biking down Morfee...

July was quiet for visitors. We received several locals with family members, some of whom were from out of town. We were also visited by tourists who heard of us while in town or who happened to drive by, which is always fun. Last but not least, it was great to welcome back people from the MLMCF event in June who came back with their family!

August saw a bigger influx of visitors, mostly locals, both new and returning. We also met newcomers to town who had heard about the station and came to check it out. Families came out with their children and locals brought their parents and grandparents, which we always love to see. We welcomed travellers from Prince George, Edmonton and as far as Ontario, some of whom would end up paying us another visit in September. It was a good month to recruit new members and volunteers.

August was the beginning of our educational visits. The Lhtako Fisheries Youth Program came up with three students to spend the morning learning about banding and handling birds.

September was even busier, as local school and university groups started rolling in.

On the second weekend of September, we welcomed the first group from Prince George's University of Northern British Columbia (UNBC). The Wildlife Society comes to the station twice in September every year, and it was great fun for everyone as usual. They had a second visit scheduled

for the third weekend of September, but unfortunately, it had to be cancelled because of rain.

The Morfee Elementary School came up during the third week of September with a class of 23 students. It is the second time their teacher brought her class to the station, and we hope she brings them back every fall. Another group from the same school was tentatively scheduled to come as well, but planning issues got in the way. Hopefully we will see them next year!

Aside from these groups, we also had over 150 visitors: local townspeople, from neighbouring communities, and quite a few travellers. The station was visited by road-trippers from Kamloops (BC), Cranbrook (BC), Revelstoke (BC), Beaverlodge (AB), Edmonton (AB), Lethbridge (AB), and even a lovely couple all the way from Colorado who paid us two visits on their trip chasing the northern lights.

On top of that, nine special visitor nights were organized during owling season and were immensely successful with an average 15 people each special visitor night.



MNO BANDING REPORT 2024

By Laura Tabbakh

The season started early this year, resulting in 3029 birds of 62 species getting banded.

Standard Banding

(Appendices 1 & 2)

In 2024, standard banding occurred as usual between July 19 and September 23 (67 days). Additional non-standard banding was also conducted between September 24 and September 30 as a pilot project to possibly extend the banding season until September 30 on a permanent basis.

Overview

During our standard period, using our standard nets, a total of 2116 birds were banded of 58 species, making 2024 one of MNO's less productive years. Notable events included:

- **3 Black-and-white Warblers**, a species fairly new to the site that keeps coming back every year since 2021.
- **2 hatch-year Tree Swallows** banded on July 28 and 30.
- **1 Olive-sided Flycatcher**, a species at risk regularly detected at the station, but banded on only six occasions before this year.
- **1 Blue-headed Vireo**, a species that stops by occasionally on migration.
- **2 hatch-year Bohemian Waxwings**, only the seventh and eighth ever banded here.
- **10 Pine Siskins**, which is nothing surprising in itself, but a welcome species in our nets considering we banded none in 2023.

- **1 Northern Rough-winged Swallow**, an older female banded on July 28.

The Top 12 species banded for 2024 were:

1. Ruby-crowned Kinglet (288)
2. American Redstart (284)
3. Dark-eyed Junco (262)
4. Yellow-rumped Warbler (158)
5. Swainson's Thrush (147)
6. Golden-crowned Kinglet (96)
7. Orange-crowned Warbler (93)
8. Magnolia Warbler (74)
9. Black-capped Chickadee (64)
10. Alder Flycatcher (58)
11. Wilson's Warbler (54)
12. Least Flycatcher (52)

Notable misses included **Gray-cheeked Thrush**, **Varied Thrush**, **Eastern Kingbird** and **Slate-colored Junco**.

- An overall poor year for warblers, with 10 out of 18 species with under-average captures.



A few busy rounds were enjoyed throughout the season.



#12 Least Flycatcher



#11 Wilson's Warbler



#10 Alder Flycatcher



#9 Black-capped Chickadee



#8 Magnolia Warbler



#1 Ruby-crowned Kinglet



#7 Orange-crowned Warbler



#2 American Redstart



#3 Dark-eyed Junco



#4 Yellow-rumped Warbler



#5 Swainson's Thrush



#6 Golden-crowned Kinglet

TOP 12

Species Banded
in
Standard Banding
at
Mugaha Marsh
2024

Weather

The weather this year was pretty consistently cool and humid at opening, getting sunny and warm throughout the morning. As usual, we lost many net hours to wind. 2024 was also a very rainy season and more banding effort was lost due to that.

July was cool and rainy, with an average temperature at opening of 12.2°C and a closing temperature of 18.4°C. We were rained out on July 23rd, resulting in the first day where absolutely no banding was done since at least 2021. July 31st was also very rainy, but we still managed 2 hours of banding.

August was surprisingly cool, with some mornings dropping as low as 5°C. We averaged 9.6°C on opening and 18.6°C on closing, and also had to deal with rain and high winds. We were completely rained out of banding on August 19th.

September was not the kindest. Average opening temperature was 7.4°C; average closing temperature 16.2°C. We had frozen nets as early as September 4th, and two other mornings after that. Rain prevented us from opening at all on the last two days, September 22 and 23.

Banding Effort

Twelve mist nets were used in Standard Banding again this season: nets #32, 25, 26, 3, 9, 11, 12, 17, 19, 20, 21 and 22. This is the 11th year we have used this set of nets (see Appendix 4).

Overall, we managed a total of 4126.75 standard net-hours this year, compared to the average of 4388.3 net-hours for this same set of 12 standard nets since 2013. This is our

second lowest standard effort year since 2012, the lowest being 4072 hours in 2021.

Bird Genoscape Project

MNO participated in the Bird Genoscape Project (birdgenoscape.org) for the first time this year. We were contacted during the winter by one of their researchers asking if we would contribute, and we gladly accepted.

From their source material: “The Bird Genoscape Project is an effort to map the population-specific migratory flyways of 100 species of migratory birds. The first step ... is building a genoscape, or map of genetic variation across geographic space.” The genetic material is obtained by sampling two tail feathers from a bird.

Throughout the summer, samples were taken from 466 birds of 29 species. The species sampled the most were Black-capped Chickadee, Alder Flycatcher, Least Flycatcher, Magnolia Warbler, Ruby-crowned Kinglet, Yellow-rumped Warbler, Orange-crowned Warbler, Warbling Vireo, Dark-eyed Junco, Golden-crowned Kinglet, and Northern Waterthrush.

A huge thank you goes to the banding team for this sizeable effort. We hope to keep contributing to this great project and maybe to others in the future.



Bander Kirstin taking a tail feather for the Bird Genoscape Project (Lauren Quinsey)

Standard Banding Results

Non-passerines

Hawks – Accipitriformes, Accipitridae

It was a very slow year for hawks. We caught only **one Sharp-shinned Hawk**, a third-year female banded on July 27th.



Sharp-shinned Hawk (Photo: Ben Breton)

Woodpeckers - Piciformes, Picidae

We banded **2 Downy Woodpeckers**, under their average (7).



*Hatch year Downy Woodpecker
(Photo Laura Tabbakh)*

One Flicker Intergrade was caught: a hybrid between a Red-shafted and a Yellow-shafted Flicker. Their shafts are orange or salmon-coloured and the malar stripes can be mixed black and red.



Flicker Intergrade (Photo: Jamie Quinn)

Sapsuckers were the woodpeckers most banded. We caught **one Red-breasted Sapsucker**, **five Yellow-breasted Sapsuckers**, and **one Unidentified Sapsucker**. In the latter case, it was unclear whether this bird was a hybrid of the Red-breasted and Yellow-bellied Sapsuckers, or a juvenile of either.



*Hatch year Red-breasted Sapsucker
(Photo Kirstin Lachance)*



*Adult Yellow-bellied Sapsucker
(Photo: Kalum Srochenski)*



*Unidentified Sapsucker, hatch year
(Photo: Ben Breton)*

Passerines

Flycatchers – Tyrannidae

Flycatchers were rather scarce this year with only **58 Alder Flycatchers** banded, compared to their average of 88. This is the flycatcher caught the most, and this year was no exception.



*Hatch year Alder Flycatcher
(Photo: Kirstin Lachance)*

50 Dusky Flycatchers were caught, well above their average of 31.

The **38 Hammond's Flycatchers** were under their yearly average (47).

52 Least Flycatchers were caught, well under their average (80).

By far the most exciting bird of this family was an **Olive-sided Flycatcher**, a hatch-year bird banded on August 28th. Although

sometimes heard singing at the station, only six have been caught previously. The last one banded was in 2016.



Hatch year Olive-sided Flycatcher
(Photo: Kirstin Lachance)

The 1989 split of the Western Flycatcher was reversed in 2023 so Pacific-slope Flycatcher has reverted back to Western Flycatcher.



Adult Western Flycatcher
(Photo: Lauren Quinsey)

Three Western Flycatchers were banded this year, which is above the average of one. We also had two last year, and that alone is noteworthy: it can be years without catching this flycatcher, so five in two years is an interesting shift.



Western-Wood-Pewee
(Photo: Kirstin Lachance)

We caught only **one Western Wood-Pewee**, slightly under average (3). Same as the Olive-sided Flycatchers, we hear them quite a bit but rarely catch them. We have banded less than 100 since the station first began monitoring, and we can go a few years in a row without catching one.

Two Yellow-bellied Flycatchers were banded, slightly under their average of four per season. They were not heard much this season.



Yellow-bellied Flycatcher
(Photo: Kalum Srochenski)

Vireos – Vireonidae

We banded **52 Warbling Vireos**, right on average (53). As usual, this species is the most represented in the family.



Warbling Vireo (Photo: Laura Tabbakh)

We also caught all three other possible vireo species: we banded **two Red-eyed Vireos** (average is 4), **one Cassin's Vireo** (average is four) and even **one Blue-headed Vireo** (average is one).

Swallows – Hirundinidae

Swallows were few in our nets. Overall, we only banded 3. We caught **one Northern Rough-winged Swallow** (NRWS), an after hatch-year female banded on July 28th, and **two Tree Swallows** (TRES), both hatch year birds banded on July 28th and July 30th. Despite the low numbers, it was a treat to see these three birds up close: we had banded only 13 NRWS and 22 TRES before that.



Tree Swallow (Photo: Lauren Quinsey)



*Northern Rough-winged Swallow
(Photo: Lauren Quinsey)*

Chickadees – Paridae

It was a rather good year for chickadees. We banded **64 Black-capped Chickadees**, almost twice their average of 36. We did not catch other species of chickadees in our standard nets, but the non-standard nets did capture a few surprises (see section: Non-standard Nets).



Black-capped Chickadee
(Photo: Kirstin Lachance)

Nuthatches – Sittidae

As usual, the only species of nuthatches banded was the **Red-breasted Nuthatch**, with **17** birds caught. This is the fourth best year ever for the species, after 2008 (32 banded), 1999 (20 banded) and 2001 (19 banded).



Red-breasted Nuthatch
(Photo: Laura Tabbakh)

Wrens – Troglodytidae

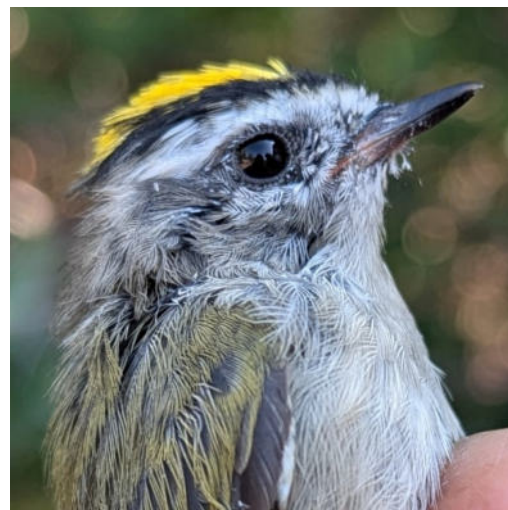
No wrens were banded this year. We did not hear or see them either. It was disappointing for the team, considering we banded two last year.

Kinglets – Regulidae

As was to be expected, kinglets topped our banded birds chart. We caught **288 Ruby-crowned Kinglets**, well under their average of 382. It was another good year for the **Golden-crowned Kinglets**, with **96** banded, compared to their average of 68.



Ruby-crowned Kinglet
(Photo: Lauren Quinsey)



Golden-crowned Kinglet
(Photo: Kirstin Lachance)

Thrushes – Turdidae

It was a rather poor year for thrushes. Only two species came through as expected: **Swainson's Thrush** with **147** banded (average is 141) and **Hermit Thrushes** with **21** banded (average is 18).



Swainson's Thrush
(Photo: Kirstin Lachance)



Hermit Thrush (Photo: Rae Xamin)

Only **7 American Robins** were banded, compared to their average of 17.

We were very disappointed to band no Varied Thrush and no Gray-cheeked Thrush at all this year. We usually catch a couple each season.

Waxwings – Bombycillidae

It was another sad year for **Cedar Waxwings**, with only **11** banded, compared to their average of 20. This is the second year in a row that it is slow for the species, with only four banded in 2023.



Cedar Waxwing (Photo: Lauren Quinsey)

On a brighter note, we banded **two Bohemian Waxwings** this year, both hatch-year birds caught on August 10th. They were the seventh and eighth ever banded at the station, which made them a very exciting catch for the team.



Bohemian Waxwing
(Photo: Kirstin Lachance)

Sparrows- Passerellidae

Sparrows were once again scarce in our nets this season, which, considering how dry the station was with the marsh gone and the eastern pond much lower than usual, was not surprising.

We banded only **one Clay-colored Sparrow**, compared to their average of four. A few more were caught in non-standard nets. **Chipping Sparrows** were over average, with **17** banded (average is 13), but well under the 51 we caught last year.



Clay-colored Sparrow
(Photo: Laura Tabbakh)



Chipping Sparrow
(Photo: Laura Tabbakh)

We banded only **six Lincoln's Sparrows** (average is 40), **four Savannah's Sparrows** (average is 20) and **three Swamp Sparrows** (average is 7).



Lincoln's Sparrow
(Photo: Kalum Srochenski)



Swamp Sparrow
(Photo: Lauren Quinsey)



Savannah Sparrow
(Photo: Laura Tabbakh)

The larger sparrows were also few. **16 White-throated Sparrows** were banded (average is 42) and **20 White-crowned Sparrows** were caught (average is 33).



White-throated Sparrow (Kirstin Lachance)

We banded only **three Song Sparrows** (average is 27) and **four Fox Sparrows** (average is five). We did not see nor hear a single Golden-crowned Sparrow this year.



*Song Sparrow
(Kalum Srochenski)*

*Fox Sparrow
(Laura Tabbakh)*

Luckily, we had the juncos. We banded a total of **262 Dark-eyed Juncos** (average is 121), **160** of which were identified as **Oregon Juncos** (average is 65). The others were mostly too young to be identified to subspecies, but a few were suspected to be Oregon x Slate-colored hybrids. The one pure Slate-colored Junco to be banded was caught in a non-standard net.



*Dark-eyed Junco (Oregon)
Kirstin Lachance)*

Cardinals, Grosbeaks, Buntings – Cardinalidae

We caught no cardinals, buntings, or grosbeaks this year. The grosbeaks were not even seen on site.

Tanagers – Thraupidae

It was an average year for tanagers, with **21 Western Tanagers** banded, most of them in August. This was right around average (18). Interestingly enough, we did not catch a single after hatch year male this season.



Western Tanager (Photo: Kirstin Lachance)

Blackbirds – Icteridae

With the marsh completely dry, there were very few blackbirds on site, and none were caught.

Finches – Fringillidae

We banded **10 Purple Finches**, well over their average of five. We also caught **10 Pine Siskins**, which was a nice change from last year, when none at all was banded.



Purple Finch (Photo: Laura Tabbakh)



Pine Siskin (Kirstin Lachance)

Wood-Warblers – Parulidae

It was an average year for warblers. As is the case every year, **American Redstarts** were the most banded, with **284** birds caught. This was more than their average of 254.



*Adult male American Redstart
(Lauren Quinsey)*

The second most banded warblers were the **Yellow-rumped Warblers**, with a total of **158** new bands. On average, we band 126 a year. This is a mix of **Audubon's Warblers (3)**, **Myrtle Warblers (32)**, and **Unknown Yellow-rumped Warblers (123)**. Unknown Yellow-rumped Warblers are either hybrids of Audubon's and Myrtle, or cannot be identified to subspecies due to being too young, which was the case for most of our "Unknowns".



*Adult Yellow-rumped Warblers (Audubon's subspecies left, Myrtle subspecies right)
(Laura Tabbakh)*



The third most banded warbler species was the **Orange-crowned Warbler**, with **93** standard bands. This is much lower than their average of 149.



*Orange-crowned Warbler
(Laura Tabbakh)*

We banded **74 Magnolia Warblers** (average is 78), **54 Wilson's Warblers** (average is 85), and **41 Yellow Warblers** (average is 94).



Magnolia Warbler (Laura Tabbakh)



*Wilson's Warbler
(Kalum Srochenski)*



*Yellow Warbler
(Kirstin Lachance)*

This is a typical Top Six warbler species banded at the station in recent years.

Then comes the **Northern Waterthrush**, with only **37** banded, well under their average of 159. We banded only **13 Common Yellowthroats**, which was to be expected considering the absence of the marsh. We band 130 a year on average.



Northern Waterthrush (Lauren Quinsey)



Common Yellowthroat (Lauren Quinsey)

Ovenbirds and **Townsend's Warblers** tied with **11** banded for each species. We band nine Ovenbirds a year on average, and 14 Townsend's Warblers.



Ovenbird (Kalum Srochenski)



*Townsend's Warbler
(Kirstin Lachance)*

Low counts of **nine MacGillivray's Warblers** (average is 22) and **nine Blackpoll Warblers** (average is 24) were banded this year.



MacGillivray's Warbler (Kirstin Lachance)



Blackpoll Warbler (Kirstin Lachance)

We continue banding less and less **Tennessee Warblers**. Only **six** were caught this year, compared to their average of 48.



Tennessee Warbler (Laura Tabbakh)

Last but not least, **three Black-and-white Warblers** were banded this year. We banded one after-second year female and one after hatch year female in July, and a hatch year male early August. This is less than the 6 we banded in 2022 and in 2023, but it is good news to continue banding this species newly arrived on site.



Black-and-white Warbler (Laura Tabbakh)

Sturnidae – Starlings

No European Starlings were caught this year.

Owl Banding

By Kirstin Lachance

2024 was the first year the monitoring of the migration of Northern Saw-whet Owls was done in a standardized fashion. The program ran for the month of September, seven nights a week for six hours a night (weather permitting), thanks to additional funding from BC Naturalists' Foundation / BC Nature and the McLeod Lake Mackenzie Community Forest. This money paid for owl nets and specialized owl banding equipment.

This year's owl banding program was again run by Assistant Bander #1 Kirstin Lachance, with the addition of our new intern, Lauren Quinsey, and many dedicated volunteers. Special thanks go to Rae Xamin who volunteered two nights a week so the program could be run seven days a week.

The total effort this season for **Northern Saw-whet Owl** was 1408 net hours, with a total of **120** owls banded, with no recaptures, for 0.085 birds per net-hour.

The total effort for **Boreal Owl** was 704 net hours, with a total of **23** owls banded, as well as one recapture for 0.033 birds per net-hour.

The nets also caught flying squirrels and bats. The flying squirrels often chewed the nets to escape, leading to many repairs of trammel lines and mesh.



As this was the pilot year of our standardized program, the net lanes saw a bit of a change as well! Knowledge of the species' preferred habitat influenced the placement of the ten owl nets as well as the two audio lures. The nets were placed in two

first for the Mackenzie Nature Observatory: Aerial nets! Some other stations use aerial nets set up higher in the canopy for owl banding (like Prince-Edward-Point Bird Observatory for one) and they are quite successful, so our lead owl bander Kirstin



arrays of three nets set up in triangles with thickets in the centre (where the audio lures are placed), and four single nets. The groupings were divided into two loops, one on either side of the road, with the same number of nets each (See above map of net locations and labelling). The nets on the north side of the road are labelled Owl North (ON) 1, 2, 3, 4X, and 5; the nets on the south side of the road are labelled Owl South (OS) 1, 2, 3, 4, 4X, and 5.

You may be wondering what 4X means... These nets are special. We implemented a

thought it would be a good idea to have both options, to try to increase the capture rate.

Setting up these nets was quite the feat. Thank you to Doug Thompson for helping Kirstin and Lauren brainstorm how to put them together, and to Rae Xamin and Benjamin Breton for helping with the DIY of fixing up the shower curtain hooks which were too small for the poles. And a huge thank you to Ryan Bichon, our President, for going out of his way to pick up these new poles to make our dreams come true!



#12 Wilson's Warbler



#1 Ruby-crowned Kinglet



#2 American Redstart



#11 Alder Flycatcher



#3 Northern Waterthrush



#10 Yellow Warbler

TOP 12
Species Banded
in
Standard Banding
at



#4 Orange-crowned Warbler



#9 Pine Siskin



#5 Swainson's Thrush



#8 Yellow-rumped Warbler



#7 Common Yellowthroat



#6 Dark-eyed Junco

Mugaha Marsh
1995 to 2024

Recaptures

(Appendices 5, 6 and 7)

Recaptures are birds that have already been banded and are caught again. Some are caught more than once in a season. 268 birds of 27 species were recaptured this year, for a total of 406 recaptures starting June 11, ending September 30. Of these, 348 (230 individuals) were recaptures from between July 19 and September 23. The species most often recaptured were **Black-capped Chickadee**, **Ruby-crowned Kinglet**, **Dark-eyed Junco** and **American Redstart**.

There are three types of recaptures encountered at a banding station: Foreign Recaptures, Returns, and Repeats.

A **Foreign Recapture** is a bird that was banded at one station and recovered at another station. It is a rather rare occurrence, as birds tend to use the same migration routes and the same breeding and stopover sites year after year, making it unlikely to be caught elsewhere. A foreign recapture is always cause for much excitement, and we (sadly, but as expected) did not get any during our banding this year; neither did we hear of any bird banded at Mugaha getting caught at another station.

The second type of recapture, and by far the most frequent, is called a **Repeat**: birds that are recaptured at the same station in the same season they were initially banded. This

happens often when birds choose a site to breed, or to stop over in order to build fat reserves to continue their migration. In that case, the birds spend a long period of time around the station, making it more likely to get caught several times during the same season. As is usually the case, there were many repeats this year.

The third type of recapture is **Returns**: birds banded in a previous season and then recaptured any season afterwards. Although less exciting than foreign recaptures, returns are the most interesting recaptures for us, as they teach us about site fidelity and bird longevity.

We recapture a few interesting birds every season. They are usually interesting because they are rather old birds (banded in previous years). A few were caught this year during the non-standard banding conducted during the breeding season.

This year, however, during the standard banding time period; the returns were all banded in the past three years.

Between July 19 and September 23, the standard banding time period, 21 individuals of 11 species, were processed. Some of which were caught several times, indicating they were not leaving the station area.

Non-standard Banding - Passerines (Appendix 3)

Non-standard Banding: Breeding Season

Macleod Lake and Mackenzie Community Forest (MLMCF) hosted the 2024 Conference and AGM of the BC Community Forests Association June 11 - 13. Mugaha Marsh was the destination of a very popular conference field trip all three mornings. Some people came twice!

Since nets were already set up and Laura was willing, the opportunity was taken to keep banding until July 18th, which gave insight into the birds breeding at the station.

On June 11-13, six nets were open: 32, 25, 26, 3, 9 and 11 (the “close” nets); June 20 and 30, and July 12, 17 and 18 all 12 nets were open for a total of 300 net-hours, during which 194 birds were banded and 47 birds (16 species) recaptured as returns or repeats.

Banding during breeding season produced many interesting birds, whether recaptures or newly banded birds.

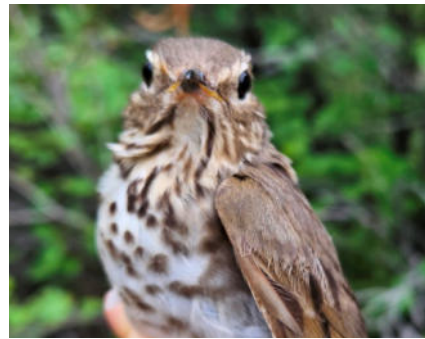
Swainson’s Thrush 2741-77690 was recaptured on June 11. He was first banded in 2018 as an after-hatch year bird, making him at least 7 years old.

White-throated Sparrow 2771-82373 was recaptured on June 11. He was first caught in 2019 and was aged as an after-hatch year, which means he was at least 6 years old.



*Adult
White-
throated
Sparrow*

The most impressive recapture was Swainson’s Thrush, 2571-07856, recaptured on June 12. He was first banded in 2014 as a hatch year, making him a whopping 10 years old!



Adult Swainson’s Thrush

A fun recaptured bird was this gorgeous adult male Red-breasted Sapsucker. It’s not every day we catch a neon-bright bird.



Adult Red-breasted Sapsucker

Last but not least, we recaptured Black-and-white Warbler 2960-51407, a male banded last year. Why is a bird banded just last year so interesting? Black-and-white Warblers are typically not found in this area, but we have been banding them since 2020. We also recapture them every year with breeding characteristics (this male was indeed breeding when we caught him) and in increasing numbers, meaning they are

coming back to the area to breed and so are every year's offspring.



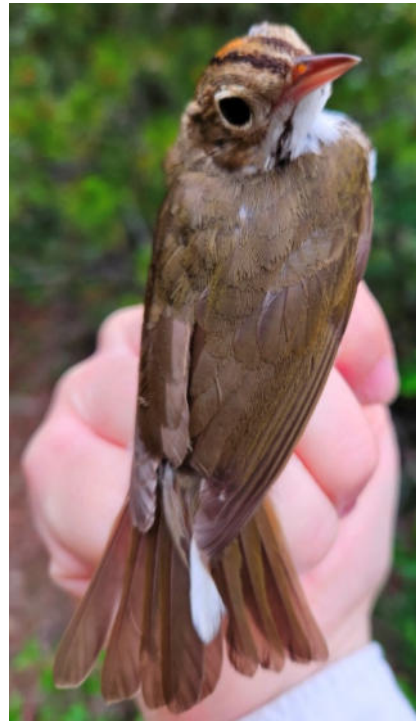
Black-and-white Warbler, male

Other interesting birds captured during this period included a Blue-headed Vireo, again a species not typically found in the area but that we do encounter a couple of times a season. As is often the case with vireos, we could not determine the sex of this bird or even whether it was breeding. We could only know it was an after-second year (meaning it was born at the latest in 2022).



Blue-headed Vireo

We also banded a female Ovenbird with breeding characteristics. Ovenbirds are on the rise at MNO and usually do not show up until late August, so it was a pleasant surprise to find one breeding at the station in June.



Ovenbird, female

Another bird that raised eyebrows was a Townsend's Warbler caught on June 11 that appeared to be a migrant bird, with no breeding characteristics, no moult happening yet, and packing fat – just what we would expect from them after they are finished breeding and moving through in August and September.



Townsend's Warbler (Lucile Jacques)

Non-standard Banding: Tree Swallow Boxes

Tree Swallows, like all other insectivorous birds, are on the decline due to dwindling insect populations and habitat loss. Installing nest boxes is one way to help the species. This year, with a bander present on site due to the MLMCF event, we took the opportunity to band the nestlings, a very common practice in the efforts to help the species. Due to accessibility issues, only two boxes were successfully banded: one of them had five nestlings and the other eight. We also observed adult Tree Swallows using several other boxes in the marsh and near the eastern ponds, which was a great sign.



*Banding Tree Swallows nestlings
(Photo: Kianna Leung)*

Non-standard Nets

Four non-standard nets were used again this year: Nets #13, 14, 15 and 16. These nets had been used from 1994 up to and including 2001, after which regular flooding prevented their use. They were reopened in 2023 with the hopes of eventually adding them to our standard net list. They were used again this year.

These nets are located on the south side of the road. This section of the station is in a now-dry section of the marsh where the vegetation is mainly young willows and poplars.

These non-standard nets caught 464 birds of 39 species, accounting for 21% of our total catch during standard banding for 2024. The main species caught were **Ruby-crowned Kinglet** (91), **Yellow-rumped Warbler** (45), **American Redstart** (43), **Black-capped Chickadee** (31), and **Orange-crowned Warbler** (28).

The non-standard nets caught interesting birds, and in some cases, the only bird of a certain species for the season.

We banded our only **two Boreal Chickadees** from the non-standard nets, both hatch-year birds caught in Net 16 on August 9 and September 5.



Boreal Chickadee (Kalum Srochenski)

On August 9, Net 16 caught a hybrid of **Black-capped** and **Mountain Chickadee**, a hatch-year bird.

Black-capped x Mountain Chickadee



*(Kalum
Srochenski)*

Net 13 caught the only **Barn Swallow** of the season, a hatch-year bird banded on July 30.



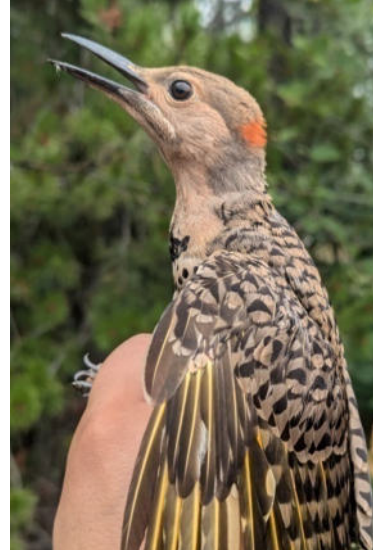
Barn Swallow (Laura Tabbakh)

We banded only **one Slate-colored Junco**, a hatch-year bird caught in Net 13 on September 10.



*Dark-eyed Junco (Slate-colored subspecies)
(Ben Breton)*

The only **Yellow-shafted Flicker** caught was a hatch-year female in Net 13 on July 19.



Yellow-shafted Flicker (Lauren Quinsey)

We banded only **two Sharp-shinned Hawks** this year, one of which was caught in Net 14 on September 17 (NSB). We also caught our first out of two **Brown Creepers** in Net 15 on August 23.



Sharp-shinned Hawk (Rae Xamin)

We banded a total of **five Clay-colored Sparrows**, **four** of which were actually netted in the non-standards between July 20 and August 2.

The four non-standard nets caught almost as many **Common Yellowthroats** as the standard twelve nets, 15 versus 13. A similar thing happened with the **Yellow-bellied Flycatchers**, with 2 birds caught in each set.

These nets were open for 264 hours in July, 590.5 hours in August, and 461 hours in September, for a total of 1315.5 hours during the standard period (0.35 birds per net hour).

Non-standard Banding Week

This year was the second year of a trial period for the station monitoring migration between September 24 and September 30. All 16 nets were operated.

A total of 112 birds of 11 species were banded, for 0.21 birds per net hour. No uncommon species were captured.

We banded the usual suspects during this non-standard week: **Ruby-crowned Kinglet**, **Golden-crowned Kinglet** and **Dark-eyed Junco**. We also caught the odd late warbler: **Yellow-rumped Warbler**, **Orange-crowned Warbler**, and even a **Wilson's Warbler** banded on September 26.

Notable observations during this last week included a flock of **30 Great White-fronted Geese**, **2 Rough-legged Hawks**, and the only **Long-billed Dowitcher**, **Bufflehead** and **Peregrine Falcon** seen all summer.

Interesting Birds and Bird Facts

Moult

We are often asked how we age birds. Birds moult their feathers on a schedule that varies from family to family, and sometimes from species to species. We call this 'moult strategy.' It then becomes a matter of knowing those moult strategies and being able to identify old, retained (not replaced) feathers and newly grown ones, and then deciding if the old feathers are the ones the bird had as a juvenile bird, or old adult feathers. We usually look at moult patterns in the wing. Of course, it's not always that simple, but here is a great example of an obvious case.



*Moult pattern in a Sharp-shinned Hawk
(Photo: Lauren Quinsey)*

The above is the wing of a Sharp-shinned Hawk banded on July 27th. You can see three colors of feathers in the wing: most of the feathers are slate-coloured, these are the newest ones. The outer primaries, innermost primaries, and some secondaries are a dark brown, these are older feathers, all from the same generation. Then you have the inner secondaries, faded brown: these are the

oldest feathers, and can even be identified as juvenile feathers from their wear and colour. Therefore, this hawk has three generations of feathers, making it a third year bird. It was also sexed as a female because of its wing length. Females are larger than males in most raptors.

Songbirds usually cannot be aged as precisely as raptors and woodpeckers. Unlike those two families, passerines moult all their feathers once a year. Most of the time, we can only determine whether they were born in the current summer or any summer before that. The only moment we can be more precise is during a short few weeks after breeding season when we catch an adult bird undergoing its moult: at this point, we can see two generations of feathers and can decide whether it was born the previous year (a second-year bird) or any time before that (an after-second year). We call this “micro-aging.” And that’s as far as we can go with songbirds!

The American Redstart below is a perfect example of micro-aging a songbird.



A second-year American Redstart displaying active full moult (Laura Tabbakh)

This bird shows both juvenile plumage (all the worn brown and yellow feathers, both on the wing and the body) and adult feathers (all the fresh black and orange feathers). We can then determine with certainty it is a second year bird (born in summer 2023). Had we caught it slightly later in the season, it would have been done with the moult and been entirely black and orange, at which point we would have been unable to say with certainty whether it was born last year or any year before that.

Abnormalities: Deformed Beaks

Birds’ beaks are made of keratin, the same as human nails and hair. Sometimes, due to nutrition or genetics, deformities happen, such as the ones pictured. Deformities usually do not interfere with the bird’s ability to feed and they just look strange a lot more than anything else.



Plumage Abnormalities: Fault Bars

We love talking about fault bars! A fault bar occurs when a bird lacks nutrients while the flight feathers are growing, whether it’s on the wing or in the tail. The part of the feather growing at that moment is weaker than the rest and it shows, resulting in said fault bar, also aptly named a stress bar.

We can age a bird based on the shape of a fault bar. If the fault bar is uniform, it means that all the feathers grew at the same time, pointing to a hatch-year bird. If the fault bar is scattered, it means the feathers grew at different times, pointing to an adult bird.



American Redstart (Hatch year) with a fault bar.



A flycatcher with a serious fault bar: the feathers are so weak they even broke in places.

Some birds might display what looks like a fault bar, but is actually not. Look at the tail of the sparrow below. Notice the dark bars alternating with lighter bars. Those are called growth bars or, more colloquially, night and day bars. We call them that because they form during the night (when the bird is not receiving nutrients, resulting in poorer quality feather growth) and the day (when the bird is feeding and receiving nutrients, resulting in the darker day bars).



Sparrow displaying growth bars on the tail.

CENSUS AND OBSERVATIONS AT THE BANDING STATION

by Laura Tabbakh

Migration monitoring is not all about banding. A large section of the data comes from daily observations, during banding hours; all birds seen or heard in the Recording Area were documented (standard observations). Non-standard observations took place occasionally, outside of banding hours. We also conducted a one-hour census daily. Census sightings are included in this section.

The marsh was completely dry this year, and the eastern pond was much lower than usual. This resulted in a very poor season for all waterfowl and shorebirds.

Swans, Geese and Ducks

The **Trumpeters Swans** showed up very early this year: we first spotted them on August 24, then kept seeing them sporadically throughout the season. On one memorable morning, three of them spent the day in the eastern pond.

Canada Geese were seen every now and then, but considering the lack of water, did not stay long.

With the marsh completely dry, it was a very poor season for ducks. We did detect **Mallards** and **Northern Shovelers** on a few occasions, as well as **Common Mergansers** and **Common Goldeneyes**. **Northern Pintails** and **American Wigeons** made a few appearances later in the season.

Upland Game Birds

We did not see as many **Ruffed Grouse** as we usually do, which was disappointing. However, we did see a **Spruce Grouse** in September, and that's always a treat!

Hawks and Eagles

Sharp-shinned Hawks were seen every now and then, as well as (but more rarely) **Red-tailed Hawks**. **Bald Eagles** were sometimes spotted, and a **Golden Eagle** made our day early September. **Northern Harriers** were late, and when they did come, it was only a few individuals. A few **Broad-winged Hawks** were also seen. An **American Goshawk** (previously known as Northern Goshawk) was spotted outside of standard observation time mid-September. However, overall, it was a slow year for birds of prey.

Loons, Grebes and Coots

We had no grebe or coots this year, only **Common Loons** from day one until the end of the season.

Hérons and Cranes

Both **Sandhill Cranes** and **Great Blue Herons** spent a good deal of time at the station. At some point, we had a group of five Great Blue Herons that spent several days in the eastern pond.

Shorebirds

Killdeer and **Pectoral Sandpipers** were the most common shorebirds detected. Other shorebirds included **Baird's** and **Stilt Sandpipers**, **Greater** and **Lesser Yellowlegs**, and both **Solitary** and **Spotted Sandpipers**. Notable misses this year were the **Long-billed Dowitchers**, of which only one was recorded during the non-standard week, but again, that was to be expected considering the dry marsh.

Gulls

Only two species of gulls were seen at the station: **Ring-billed** and **Bonaparte's Gull**. Both species were spotted on only a couple of occasions.

Phalaropes

No phalaropes were seen this year, which is not surprising considering they are usually sighted in the marsh.

Terns

A pair of **Caspian Terns** spent a few days at the station early during the season, but unlike last year, they moved out pretty quickly.

Owls

The usual suspects were detected during owl banding, as well as early mornings. We often heard **Barred Owls** and **Northern Saw-whet Owls**, and a **Boreal Owl** was spotted near the open owl nets without getting caught that night. A pair of **Great-horned Owls** was also heard duetting on several occasions.

Goatsuckers

Common Nighthawks were a common sight until the end of August, sometimes being sighted hunting in the middle of the day.

Hummingbirds

Rufous Hummingbirds were abundant this year. A few bred near our nets and we caught them often. They were always a treat to admire, but we could not band them as we lacked the specialized skill set at the station.

Kingfishers

Belted Kingfishers were spotted at the station until mid-August, but we strongly suspect it was just the same couple of individuals that spent the summer. We never saw more than two at once.

Woodpeckers

The usual woodpecker suspects were seen (and often heard!) throughout the season. **Downy, Hairy and Pileated Woodpeckers**

made an appearance on a regular basis. **Northern Flickers** were seen or heard almost every day until the end of the season. **Sapsuckers**, both **Yellow-bellied** and **Red-breasted**, were also seen along with what we strongly suspect were hybrids.

Falcons

It was a slow year for falcons, too. **Merlins** and **American Kestrels** were sometimes spotted, but nothing quite like last year. We did not see **Peregrine Falcons** at the station before the non-standard week began, but one was spotted early September on the road leading out.

Flycatchers

The usual flycatchers spent the summer. We heard **Least, Alder, Hammond's, and Dusky** on a regular basis until early September when flycatcher migration was over. Notable species were **Olive-sided Flycatcher**, which were heard singing a few times in July; and **Say's Phoebe**, as one spent the day at the eastern pond on August 20 and 21. **Eastern Kingbirds** were unusually scarce this summer, which was disappointing for everyone.

Vireos

Four species of vireos were present on site: **Cassin's, Warbling, Red-eyed and Blue-headed Vireos**. All four species were heard singing, and all four spent several days on site.

Jays and Crows

While **Common Ravens** were a daily occurrence, **American Crows** were rather scarce this year. The highlight of the family was definitely three **Canada Jays** that were seen and heard three days in a row around mid-August, as well as a random **Blue Jay** that spent one morning at the station early September and then disappeared.

Swallows

Swallows also came in low numbers this year, which might have been due to the lack of water – and therefore bugs to eat – on site. We saw **Tree, Bank, Barn, Northern Rough-winged** and **Violet-green Swallows**. The Tree Swallows still nested on site despite the dry marsh, and the Northern Rough-winged Swallows came in higher numbers than usual.

Chickadees

It was mostly **Black-capped Chickadees** that were seen and heard throughout the season. We did detect **Boreal Chickadees** several days in a row in September, but they then stopped.

Nuthatches and Creepers

As expected, the **Red-breasted Nuthatches** were present from day 1 and were recorded on a daily basis. As for **Brown Creepers**, we did band one and spotted a few on census several days in a row in mid-September.

Wrens

No wren was recorded this year. We are in the range of the **Pacific Wren** and have heard them and banded them in the past, but we had no such luck this year.

Kinglets

Both **Ruby-crowned** and **Golden-crowned Kinglets** were present and breeding on site. We caught very young birds all the way into September.

Thrushes

Swainson's Thrushes were heard singing well into July, after which they began evading detection outside of the nets. A few **Hermit Thrushes** were spotted, although it was a good year for banding them. **Varied Thrushes** were few, and even **American Robins** did not come in their usual numbers. **Townsend's Solitaires** made their usual

scarce appearance in September, and that was a treat as always.

Pipits

American Pipits were heard on a few occasions, usually during census. Not many came down the mountain, except when more than 30 of them flocked at the station on September 17 and 18.

Waxwings

Cedar Waxwings were present on site as usual and as expected. The surprise came from a very early passage of **Bohemian Waxwings** (early August). They spent a few days on site and we even banded two young ones.

Warblers

It was a rich summer for warblers, diversity-wise. The most often spotted were undoubtedly **American Redstarts** and **Yellow-rumped Warblers**. **Orange-crowned Warblers** were detected until mid-September outside of banding. **Northern Waterthrushes** were heard singing until late in the season, as were **Black-and-white** and **Magnolia Warblers**. We had several encounters with **Common Yellowthroats** and **Yellow Warblers**, but with a dry marsh, they were fewer than usual. **Tennessee Warblers** were heard singing during July. We had a few sightings of **Ovenbirds**, as well as **Blackpoll**, **MacGillivray's**, **Wilson's** and **Townsend's Warblers**.

Tanagers

Western Tanagers were a common occurrence throughout July and August, but although they were breeding on site, we never saw nor banded an older male.

Sparrows

Overall, it was a slow year for sparrows, except for the **Dark-eyed Juncos**, a crushing majority of which were **Oregon**

Juncos. Although **American Tree, Chipping, Clay-colored, Savannah, Song, Lincoln's** and **Swamp Sparrows** were all detected at some point or other during the season, it was in small numbers. **White-crowned** and **White-throated Sparrows** were a little more frequent, and some were even heard singing in September – probably young birds learning to sing. **Fox Sparrows** were banded but never seen nor heard, and **Golden-crowned Sparrows** were not detected on site at all.

Blackbirds

Blackbirds were unsurprisingly scarce this year, considering the marsh was gone. Only a few **Red-winged Blackbirds** and **Brown-headed Cowbirds** were recorded in July, and that's all we saw of the family.

Cardinalids

Evening Grosbeaks were detected on census the very first day of monitoring, and that's all we got for cardinalids. However, they were frequent at feeders in town all through the summer.

Finches

Finches were represented by **Pine Siskins** and **Purple Finches**. We saw less Pine Siskins than last year, when they came in by the hundreds, but we at least banded several. Purple Finches bred on site and were singing well into August.



OTHER WILDLIFE OBSERVATIONS AT THE MARSH

by Laura Tabbakh

Other wildlife was observed at the station despite the dry marsh. Overall, however, we had fewer sightings than usual.

Moose came to feed in the dry marsh every now and then. We had a mix of older bulls, young bulls and cows. Only one calf was seen, unlike last year when a few pairs of twins were spotted.

White-tailed Deer were sometimes seen on the road leading to the station, but never on site proper.

It was a much quieter year bear-wise. Neither **Black Bears** nor **Grizzly Bears** were seen on site until the very last week of September, when a Grizzly sow and two cubs walked through the parking lot and down the road.

We were unlucky (or lucky?) with **Canada Lynx** this year, as none were seen, which is unusual.

Coyotes were sometimes heard yapping and barking, usually early morning, on the south shore of the dry marsh.

The east pond was generous with aquatic mammals. **North American Otters** were spotted once, as well as **American Beavers** and **Common Muskrats**. The beaver and muskrat lodges were still active, despite the low level of water. The beaver lodge was a favourite spot for shorebirds and Great Blue Herons to hang out at and feed from.

Red Squirrels were numerous and noisy as they tend to be. They were seen hoarding food and material, and they were rather unhappy with our presence most of the time.

There were a lot of **Snowshoe Hares** at and around the station this year. Luckily none ended up jumping in our nets.

Bats were spotted on a few occasions. A **myotis sp.** chose the wall of the station to sleep the day away a few days in a row. It decided crawling under our laminated sheet hung on the wall was a good spot. It eventually did not come back and we secured the sheet to prevent it from sleeping there again.

A **Hoary Bat** was caught in the southern owl nets early September. Luckily enough, it was extracted without issues.



Northern Flying Squirrels were quite the nuisance for owl banding. They destroyed several trammel lines nights on end, having the owl banders spend hours fixing nets in the dark. They're cute the first time, but that's all we'd like to see of them, thank you very much.

Western Toads were far fewer than they were last year. We did not find many

toadlets, but quite a few fat adults were migrating through in September. A **Wood Frog** was photographed during owling. We also found **Long-toed Salamanders**, but no frogs were heard this summer.

Many **Common Garter Snakes** were seen mostly around nets 9 and 11 as usual, but they were not as numerous nor as big as what we typically observe..

Of course the station had its fair share of **arthropods**, like **butterflies**, **moths**, **dragonflies**, and **damselies**. However, here again, we detected fewer than usual.

THE MOTUS WILDLIFE TRACKING SYSTEM, 2024

Submitted by Sue Crosby

The Motus wildlife tracking system is an international collaborative network of researchers that use automated radio telemetry to simultaneously track hundreds of individuals of numerous species of birds, bats, and insects. The system allows a community of researchers, educators, organizations, and citizens to participate in research and education on the ecology and conservation of migratory animals. These stations are maintained by a community of researchers, organizations, non-profits, governments, and individuals. In order for this concept to work, the system requires a centralized database and management system that all participants use. (Information is from <https://Motus.org>).

Our station is fortunate to have a Motus tower. Another tower is located at the sewage lagoons in Mackenzie just below Bell Place.

During 2024, our Motus tower at Mugaha Marsh had two new detections. The first was

early in the spring. On April 23, a **Northern Saw-whet Owl** was detected. It had been deployed on Oct. 12, 2023, by the Vancouver Avian Research Centre. This traveller had been detected between Oct. 12 and 23, 2023, near where it was banded at Colony Farm Regional Park in Burnaby, and again on Oct. 25 and 26, 2023, in Abbotsford. This small owl was detected again in Chilliwack on March 31, 2024. From there it travelled north, picked up by our Mugaha Marsh tower on April 23, 2024, travelled to Ingenika May 28, 2024, then back down south to Victoria, on Oct. 27, 2024. We will be keeping our eyes open again this spring!

Our second detection took place on June 6, 2024, and what a traveller this little **Swainson's Thrush** has turned out to be! See the map below.

Deployed March 27, 2024, in Costa Rica

March 29 – April 21 – detected by a number of stations in Costa Rica

May 25 – detected in North Dakota, US

May 27 – southern Manitoba near the Saskatchewan border

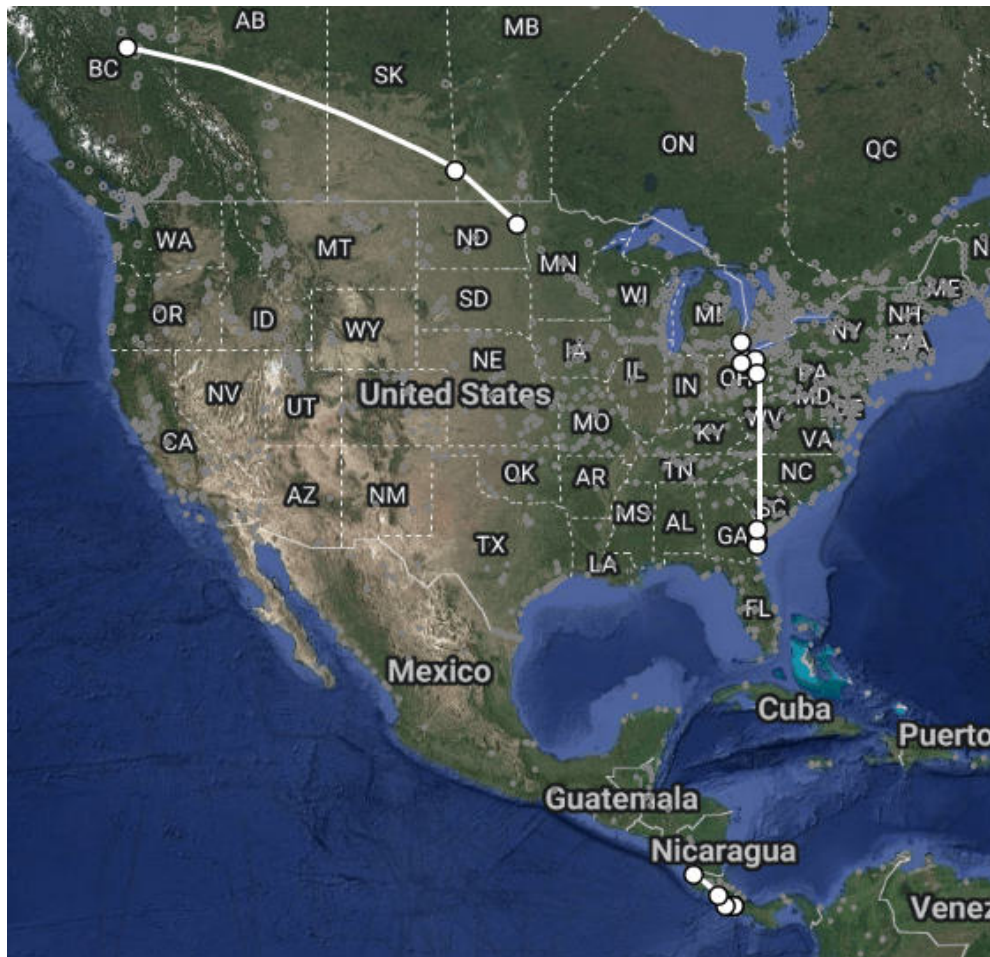
June 6 – **Mugaha Marsh**, Mackenzie, BC, Canada

Sept. 21 – 22 – near Chatham, Ontario, then back down to near Cleveland, Ohio

Oct. 2, 2024 – Georgia, USA

You can track detections from other Motus towers in northern BC. There are a number along the north part of Williston Lake as well as Highway 97.

For more information check out motus.org



APPENDICES

Appendix 1: Monthly Summaries of Daily Standard Banding, Fall 2024, Mugaha Marsh

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Birds Banded by Month					Birds Banded by day in July													
Species	JUL	AUG	SEPT	TOTALS	19	20	21	22	23	24	25	26	27	28	29	30	31	Code
Sharp-shinned Hawk	1			1									1					SSHA
Yellow-bellied Sapsucker		3	2	5														YBSA
Red-breasted Sapsucker		1		1														RBSA
Hybrid Sapsucker		1		1														HYSA
Unknown Sapsucker	1			1	1													UNSA
Downy Woodpecker	1	1		2						1								DOWO
Northern Flicker Intergrade		1		1														FLIN
Northern Flicker		1		1														NOFL
Olive-sided Flycatcher		1		1														OSFL
Western Wood-Pewee		1		1														WEWP
Yellow-bellied Flycatcher	1	1		2							1							YBFL
Alder Flycatcher	3	54	1	58			1				1		1					ALFL
Least Flycatcher	16	36		52	1	2	1	1				1	1	2	3	3	1	LEFL
Hammond's Flycatcher	14	22	2	38	2	2	1			1	2	2		2		2		HAFL
Dusky Flycatcher	10	39	1	50	2	1		1			2			1	1	2		DUFL
Western Flycatcher	1	2		3	1													WEFL
Cassin's Vireo		1		1														CAVI
Blue-headed Vireo	1			1							1							BHVI
Warbling Vireo	27	23	2	52	8	6	3	1			1		2	3		3		WAVI
Red-eyed Vireo		2		2														REVI
Northern Rough-winged Swallow	1			1										1				NRWS
Tree Swallow	2			2										1		1		TRES
Black-capped Chickadee	11	23	30	64	4	3					1	2		1				BCCH
Red-breasted Nuthatch	2	13	2	17										2				RBNU
Brown Creeper			1	1														BRCR
Ruby-crowned Kinglet	19	46	223	288	2	3				1	1		1	4	1	6		RCKI
Golden-crowned Kinglet	5	23	68	96		1	4											GCKI
Swainson's Thrush	21	108	18	147	5	3	4	1		1	4			1		1	1	SWTH
Hermit Thrush	3	13	5	21	2		1											HETH
American Robin	1	5	1	7		1												AMRO
Bohemian Waxwing		2		2														BOWA
Cedar Waxwing	6	5		11	1			3			2							CEDW
Ovenbird	2	8	1	11										1			1	OVEN
Northern Waterthrush	14	22	1	37				2		4	1	1	1	1	2	1	1	NOWA
Black-and-white Warbler	2	1		3	1						1							BAWW

Birds Banded by Month					Birds Banded by day in July													
Species	JUL	AUG	SEPT	TOTALS	19	20	21	22	23	24	25	26	27	28	29	30	31	Code
Tennessee Warbler	4	2		6	2										2			TEWA
Orange-crowned Warbler	22	57	14	93	3	2	6			1	1	2		2	1	1	3	OCWA
MacGillivray's Warbler		9		9														MGWA
Common Yellowthroat	2	7	6	15	2													COYE
American Redstart	91	185	8	284	19	7	7	7		6	9	4	2	14	3	13		AMRE
Magnolia Warbler	8	55	11	74	3						1	1				3		MAWA
Yellow Warbler	12	29		41	2		2			2		1			2	1	2	YEWA
Blackpoll Warbler		8	1	9														BLPW
Myrtle Warbler	1	12	19	32		1												MYWA
Unknown Yellow-rumped Warbler	10	47	66	123	3	2	1				1			2		1		UYRW
Audubon's Warbler	1	2		3	1													AUWA
Yellow-rumped Warbler	12	61	85	158	4	3	1					1		2		1		YRWA
Townsend's Warbler		11		11														TOWA
Wilson's Warbler	4	45	5	54			1						2		1			WIWA
American Tree Sparrow			2	2														ATSP
Chipping Sparrow	16	1		17	3	4	3			3	1				1		1	CHSP
Clay-colored Sparrow	1			1													1	CCSP
Fox Sparrow		3	1	4														FOSP
Oregon Junco		60	100	160														ORJU
Unidentified Dark-eyed Junco	39	53	10	102	14		6	3		2	2	3	2	5		2		UDEJ
Dark-eyed Junco	39	113	110	262	14	0	6	3	0	2	2	3	2	5	0	2	0	DEJU
Gambel's White-crowned Sparrow	1	9	10	20								1						GWCS
White-crowned Sparrow	1	9	10	20	0	0	0	0	0	0	0	1	0	0	0	0	0	WCSP
White-throated Sparrow	7	2	7	16	1	4	1				1							WTSP
Savannah Sparrow	1	3	1	5		1												SAVS
Song Sparrow	3			3			1				1	1						SOSP
Lincoln's Sparrow	3	1	3	7	1	2												LISP
Swamp Sparrow	2	1		3		1								1				SWSP
Western Tanager	3	18		21							1		2					WETA
Purple Finch	8	2		10	2	1	1	1		1				1		1		PUFI
Pine Siskin	3	7		10											1	2		PISI
Total Individuals	407	1087	622	2116	86	47	44	20	0	23	35	20	15	45	18	43	11	Total Ind.
# species	43	49	29	58	25	19	17	9	0	11	20	12	10	18	11	16	8	# species
Net Hours	794.25	1898	1434.5	4126.75	60	72	72	72	0	66	72	72	64.5	72	72	72	27.8	Net Hours
Birds per Net Hour	0.51	0.57	0.43	0.51	1.43	0.65	0.61	0.28	0.00	0.35	0.49	0.28	0.23	0.63	0.25	0.60	0.40	Birds/Net hr

Birds Banded by Day in August																																
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Code
SSHA																																SSHA
YBSA									1	1	1																					YBSA
RBSA											1																					RBSA
HYSA					1																											HYSA
UNSA																																UNSA
DOWO																									1							DOWO
FLIN								1																								FLIN
NOFL							1																									NOFL
OSFL																											1					OSFL
WEWP												1																				WEWP
YBFL																					1											YBFL
ALFL	1	3	1		3	3	2	1			2	1	1		2	3	8	6		8	2	1	1	1	3	1						ALFL
LEFL	1	4	2	1	3	2	1	1	4	3	1			1	3	1	1	1		1	2			2				1				LEFL
HAFL	2		2	2	1			1	2		1	1		1				2			1		1					1	2		2	HAFL
DUFL	3	2		3	4		2	2	1	2		2	2	3	1	1				3	1	3	1		1		1		1	1		DUFL
WEFL																1						1										WEFL
CAVI	1																															CAVI
BHVI																																BHVI
WAVI	2			1		1	3	1		1	2	2		2	3			2		1								1	1			WAVI
REVI										1	1																					REVI
NRWS																																NRWS
TRES																																TRES
BCCH	1	1		1							2	2		1	1					2		2	1		3		3		3		3	BCCH
RBNU				2		1				1						1	2						1		4	1						RBNU
BRCR																																BRCR
RCKI	2	1	2	2			3			3	1	1			4		2	1		1	4	1		4		3		3	1	7		RCKI
GCKI			1					1									2			1	3		3		3			7		1		GCKI
SWTH	3	3	7		2	3	3	5	6	2	2	1	3	5	3	2	3	4		6	5	7	3	2	4	4	2	6	5	2	5	SWTH
HETH	1			1	3	1	1			1				1											1		1			2		HETH
AMRO	2			1				2																								AMRO
BOWA									2																							BOWA
CEDW	1								4																							CEDW
OVEN			2						1							1	2	1		1												OVEN
NOWA	2	1		3	1	1	2	1	3							1	3			1	1							1			1	NOWA
BAWW			1																													BAWW

Birds Banded by Day in August																																	
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Species Code	
TEWA			1															1														TEWA	
OCWA		2	1	1	1	3	3	4	1	4	2	2		8	2		3	5			3	2	1		1	1	1	1	1	3	1	OCWA	
MGWA	1				1			1				2					1				1	2										MGWA	
COYE										1							1				1											COYE	
AMRE	8	16	13	9	10	5	9	7	4	8	12	5	2	12	5	6	14	4		7	7	2	3	3		2	5	3	2	2		AMRE	
MAWA	2	2	7		7	5	2	1	1	1		1		1	5	2	2	2		6		1	1		1	1		2		2		MAWA	
YEWA		3	2		6	2	2		1	1	1			1	2		1	4			1								1		1	YEWA	
BLPW			1		2		1													1	1					1				1		BLPW	
MYWA											1						1	4			1								4	1		MYWA	
UYRW			1	2		1		2	1	5	1	1					4	5		3									20	1		UYRW	
AUWA																		1			1											AUWA	
YRWA			1	2		1		2	1	5	2	1					5	10			5								24	2		YRWA	
TOWA				1			1			3								1			3	1									1	TOWA	
WIWA		4	1	1	2	2	2	1	1					1	5	4	3	5		4	1	2			1	1	2	1			1	WIWA	
ATSP																																ATSP	
CHSP						1																											CHSP
CCSP																																	CCSP
FOSP														1				1													1		FOSP
ORIU		3								1						2		3		11	6	8		5	4	5		11	1			ORIU	
UDEJ		7							7	3		1		1	1			4		15	3	1	1	2	3	1		2		1		UDEJ	
DEJU		10							7	4		1		1	1	2		7		26	9	9	1	7	7	6		13	1	1		DEJU	
GWCS											1														1	2		2	3			GWCS	
WCSP											1														1	2		2	3			WCSP	
WTSP																						1	1									WTSP	
SAVS																		1									2					SAVS	
SOSP																																SOSP	
LISP															1																		LISP
SWSP											1																						SWSP
WETA		1			1	1	1			7	6	1																					WETA
PUFI																								2									PUFI
PISI	1								2					1															3				PISI
Total Ind.	25	60	45	31	50	32	39	30	36	57	39	24	8	40	38	25	53	57	0	63	56	29	25	22	27	27	14	73	16	25	21	Total Ind.	
# species	11	19	17	15	17	15	17	15	15	22	18	15	4	15	14	12	17	20	0	13	23	13	15	9	12	14	7	19	9	11	13	# species	
Net Hours	61.5	72	72	44	68	72	72	71	72	71	72	65	16	56.5	72	28.5	72	72	0	42	72	66	67	72	57	57.5	63	72	64.5	65	70.5	Net Hours	
Birds/Net hr	0.41	0.83	0.63	0.70	0.74	0.44	0.54	0.42	0.50	0.80	0.54	0.37	0.50	0.71	0.53	0.88	0.74	0.79	0.00	1.50	0.78	0.44	0.37	0.31	0.47	0.47	0.22	1.01	0.25	0.38	0.30	Birds/Net hr	

Appendix 1: Monthly Summaries of Daily Standard Banding, Fall 2024, Mugaha Marsh

Species		Birds Banded by Day in September																							Grand Total		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		Species Code	
Sharp-shinned Hawk																										SSHA	1
Yellow-bellied Sapsucker								1		1																YBSA	5
Red-breasted Sapsucker																										RBSA	1
Hybrid Sapsucker																										HYSA	1
Unknown Sapsucker																										UNSA	1
Downy Woodpecker																										DOWO	2
Northern Flicker Intergrade																										FLIN	1
Northern Flicker																										NOFL	1
Olive-sided Flycatcher																										OSFL	1
Western Wood-Pewee																										WEWP	1
Yellow-bellied Flycatcher																										YBFL	2
Alder Flycatcher				1																						ALFL	58
Least Flycatcher																										LEFL	52
Hammond's Flycatcher	1						1																			HAFL	38
Dusky Flycatcher								1																		DUFL	50
Western Flycatcher																										WEFL	3
Cassin's Vireo																										CAVI	1
Blue-headed Vireo																										BHVI	1
Warbling Vireo							1		1																	WAVI	52
Red-eyed Vireo																										REVI	2
Northern Rough-winged Swallow																										NRWS	1
Tree Swallow																										TRES	2
Black-capped Chickadee	5	8	1			1	1	1			3		1			9										BCCH	64
Red-breasted Nuthatch	1									1																RBNU	17
Brown Creeper																		1								BRCR	1
Ruby-crowned Kinglet	3	9	1	2	14	7	7	10	14	7	27	13	24	17	16	8	10	11	7	2	14					RCKI	288
Golden-crowned Kinglet	1	5		3	8					16	14	3	4	1	5			1	1	6						GCKI	96
Swainson's Thrush	9	1	3			2		1	1		1															SWTH	147
Hermit Thrush										1		1	1			1	1									HETH	21
American Robin																				1						AMRO	7
Bohemian Waxwing																										BOWA	2
Cedar Waxwing																										CEDW	11
Ovenbird				1																						OVEN	11
Northern Waterthrush				1																						NOWA	37
Black-and-white Warbler																										BAWW	3

Birds Banded by Day in September																											Grand Total
Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Species Code			
Tennessee Warbler																								TEWA	6		
Orange-crowned Warbler	1				2		2	1		3				1	3						1			OCWA	93		
MacGillivray's Warbler																								MGWA	9		
Common Yellowthroat				1	1		1			1								1		1				COYE	15		
American Redstart	1	1	1	1	2	2	1	1	1							1								AMRE	284		
Magnolia Warbler	1		2	1		2		4				1												MAWA	74		
Yellow Warbler																								YEWB	41		
Blackpoll Warbler		1																						BLPW	9		
Myrtle Warbler	2		1		1			2		3	6	3		1										MYWA	32		
Unknown Yellow-rumped Warbler	2	1	4		1	1	4	1	1	10	17	11	9	1	1		3	1						UYRW	123		
Audubon's Warbler																								AUWA	3		
Yellow-rumped Warbler	4	1	5		2	1	4	3		13	23	14	9	2			3	1						YRWA	158		
Townsend's Warbler																								TOWA	11		
Wilson's Warbler			1	1					1			1					1							WIWA	54		
American Tree Sparrow																		1		1				ATSP	2		
Chipping Sparrow																								CHSP	17		
Clay-colored Sparrow																								CCSP	1		
Fox Sparrow										1														FOSP	4		
Oregon Junco	18		4	1	1	1	9	1	4	14	4	10	9	5	8		1	2	3	5				ORJU	160		
Unidentified Dark-eyed Junco										1	1	1	1	1	3					2				UDEJ	102		
Dark-eyed Junco	18	0	4	1	1	1	9	1	4	15	5	11	10	6	11	0	1	2	3	7	0	0	0	DEJU	262		
Gambel's White-crowned Sparrow	2	5	1	2																				GWCS	20		
White-crowned Sparrow	0	2	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	WCSP	20		
White-throated Sparrow				1			1		1		1	1						2						WTSP	16		
Savannah Sparrow																	1							SAVS	5		
Song Sparrow																								SOSP	3		
Lincoln's Sparrow					1					1										1				LISP	7		
Swamp Sparrow																								SWSP	3		
Western Tanager																								WETA	21		
Purple Finch																								PUFI	10		
Pine Siskin																								PISI	10		
Total Individuals	43	29	23	15	31	16	27	24	23	60	74	45	49	27	35	19	18	19	11	18	16	0	0	Total Ind.	2116		
# species	10	9	10	12	9	7	9	11	7	13	9	10	7	7	5	4	7	7	3	7	3	0	0	# species	58		
Net Hours	72	72	72	72	65	72	72	69.3	72	72	72	72	72	72	70	53	63.8	65.5	72	72	40	0	0	Net Hours	4126.75		
Birds per Net Hour	0.60	0.40	0.32	0.21	0.48	0.22	0.38	0.35	0.32	0.83	1.03	0.63	0.68	0.38	0.50	0.36	0.28	0.29	0.15	0.25	0.40	0.00	0.00	Birds/Net hr	0.51		

Species ↓	1995 11 Aug - 24 Sep	1996 5 Aug - 28 Sep	1997 26 Jul - 26 Sep	1998 21 Jul - 20 Sep	1999 19 Jul - 19 Sep	2000 23 Jul - 24 Sep	2001 22 Jul - 23 Sep	2002 21 Jul - 22 Sep	2003 20 Jul - 21 Sep	2004 20 Jul - 22 Sep	2005 19 Jul - 22 Sep	2006 18 Jul - 23 Sep	2007 19 Jul - 23 Sep	2008 19 Jul - 23 Sep	2009 19 Jul - 23 Sep	Code
Broad-winged Hawk																BWHA
Northern Harrier		1														NOHA
Sharp-shinned Hawk		7	1	1	2	2	1	4			2	3		2	2	SSHA
Cooper's Hawk				1												COHA
Sora			1											1		SORA
Western Sandpiper		1	1													WESA
Wilson's Snipe		5	3	1				4		1	1	1	4		1	WISN
Solitary Sandpiper		1														SOSA
Belted Kingfisher											1		1		1	BEKI
Yellow-bellied Sapsucker		2	1	5	2			5	1	15	4	9	4	2	5	YBSA
Red-naped Sapsucker								1								RNSA
Red-breasted Sapsucker		1	2	1	2	1	1		4	5			2	3		RBSA
Hybrid Sapsucker	1		3	6		1					7	5	3	6	3	HYSA
Unknown Sapsucker																USAP
Downy Woodpecker		1	1	2	6	18	19		17	8	5	9	16	18	7	DOWO
Hairy Woodpecker		1		2	1	2	1	2	9	1		3	2		1	HAWO
American Three-toed Woodpecker									1	1			2			TTWO
Yellow-shafted Flicker			3	1	1				1		3			1		YSFL
Northern Flicker Intergrade			1	1	3	1			2	1		1	1	3		FLIN
Red-shafted Flicker		1		1	2	1	1		1							RSFL
Northern Flickers		1	4	3	6	2	1		4	1	3	1	1	4		NOFL
American Kestrel		1				1										AMKE
Merlin					1			1	1				1			MERL
Olive-sided Flycatcher			2											1		OSFL
Western Wood-Pewee	1	2	13	9	2	2		2	1	11	10	5	10	16	1	WEWP
Yellow-bellied Flycatcher	1	4	7	4	3	5	4	3	6	3	7	3	1	2	2	YBFL
Alder Flycatcher	23	87	138	93	77	99	74	52	110	192	179	32	119	50	55	ALFL
Willow Flycatcher																WIFL
Trail's Flycatcher															1	TRFL
Least Flycatcher	13	28	102	97	118	77	73	68	67	46	67	90	88	91	104	LEFL
Hammond's Flycatcher	13	25	57	41	51	67	74	64	69	52	52	47	43	35	60	HAFL
Dusky Flycatcher	5	18	35	24	30	17	26	17	41	38	34	20	13	26	25	DUFL
Pacific-slope Flycatcher					2	1				1			6			PSFL
Western Flycatcher		1	8	2	1			1	4	1					1	WEFL
Say's Phoebe				1												SAPH
Ash-throated Flycatcher														1		ATFL
Eastern Kingbird		5		2					6					3	3	EAKI

Species ↓	1995 11Aug 24 Sep	1996 5 Aug - 28 Sep	1997 26 Jul - 26 Sep	1998 21 Jul - 20 Sep	1999 19 Jul - 19 Sep	2000 23 Jul - 24 Sep	2001 22 Jul - 23 Sep	2002 21 Jul - 22 Sep	2003 20 Jul - 21 Sep	2004 20 Jul - 22 Sep	2005 19 Jul - 22 Sep	2006 18 Jul - 23 Sep	2007 19 Jul - 23 Sep	2008 19 Jul - 23 Sep	2009 19 Jul - 23 Sep	Code
Northern Shrike												1				NSHR
Cassin's Vireo				9	5	1	4		5	15	4	3		4	2	CAVI
Blue-headed Vireo				1	4	1				2	4		1	2		BHVI
Solitary Vireo	2	6	10	9			1	3		7	6	4	3	1	4	SOVI
Philadelphia Vireo						1										PHVI
Warbling Vireo	13	51	61	76	77	49	25	35	33	44	63	40	59	26	80	WAVI
Red-eyed Vireo		3	7	5	3	5	8	11	8	6	3	1		1		REVI
Canada Jay	2	2	4	1			2									CAJA
Steller's Jay					1					1						STJA
Blue Jay																BLJA
Black-billed Magpie				1												BBMA
Northern Rough-winged Swallow			1											1		NRWS
Tree Swallow			3	2		3					3			1		TRES
Violet-green Swallow											1					VGSW
Bank Swallow			2	1												BANS
Barn Swallow			9	4		2					3	1		1		BARS
Black-capped Chickadee	17	18	16	92	20	101	33	22	64	76	14	23	24	71	18	BCCH
Mountain Chickadee														1		MOCH
Chestnut-backed Chickadee				1						1				4		CBCH
Boreal Chickadee		2	2			6				1		1			2	BOCH
Hybrid Chickadee													1	2		HYCH
Red-breasted Nuthatch		8	9	11	20	7	19	9	6	13		3	1	32	4	RBNU
Brown Creeper	4		1	2	1	1	1	2	5	4	1	5	3	4		BRCR
Pacific Wren								1	1			1	1	1		PAWR
Marsh Wren																MAWR
Golden-crowned Kinglet	3	15	19	122	55	62	50	49	102	60	55	74	38	113	35	GCKI
Ruby-crowned Kinglet	263	317	201	405	187	216	298	433	377	385	340	610	283	327	263	RCKI
Mountain Bluebird																MOBL
Townsend's Solitaire		1						1								TOSO
Gray-cheeked Thrush		1		2	1	4		3	2		1	1	1		2	GCTH
Swainson's Thrush	39	54	82	62	86	87	87	123	124	61	111	67	145	99	119	SWTH
Hermit Thrush	10	8	8	14	15	10	14	23	18	13	17	13	21	25	19	HETH
American Robin	3	6	17	31	18	10	1	30	19	9	12	7	17	10	19	AMRO
Gray Catbird																GRCA
Varied Thrush	1	4	1	2	3	1	2		12	3	2	2		4	1	VATH
European Starling																EUST
American Pipit																AMPI

Species ↓	1995 11Aug 24 Sep	1996 5 Aug - 28 Sep	1997 26 Jul - 26 Sep	1998 21 Jul - 20 Sep	1999 19 Jul - 19 Sep	2000 23 Jul - 24 Sep	2001 22 Jul - 23 Sep	2002 21 Jul - 22 Sep	2003 20 Jul - 21 Sep	2004 19 Jul - 22 Sep	2005 19 Jul - 22 Sep	2006 18 Jul - 23 Sep	2007 19 Jul - 23 Sep	2008 19 Jul - 23 Sep	2009 19 Jul - 23 Sep	Code
Bohemian Waxwing					1					1		2				BOWA
Cedar Waxwing		6	19	3	9	3		4	4	18	2	13	27	13	27	CEDW
Lapland Longspur			1			1										LALO
Ovenbird	7	2	3	4	4	6	6	3	13	8	8	4	7	7	2	OVEN
Northern Waterthrush	17	274	379	156	151	65	89	404	411	142	276	106	328	179	119	NOWA
Black-and-White Warbler			1													BAWW
Tennessee Warbler	3	2	13	20	13	2	26	40	42	14	16	33	7	6	16	TEWA
Orange-crowned Warbler	67	88	73	149	111	121	105	175	68	124	149	206	124	139	163	OCWA
Nashville Warbler																NAWA
MacGillivray's Warbler	1	20	27	31	31	17	27	33	31	20	34	31	23	19	32	MGWA
Mourning Warbler							1									MOWA
Common Yellowthroat	48	65	169	153	58	46	101	151	181	101	139	257	177	119	151	COYE
American Redstart	56	253	480	215	283	169	407	436	343	184	275	269	276	347	186	AMRE
Cape May Warbler																CMWA
Magnolia Warbler	19	55	66	48	48	30	66	106	70	64	84	89	82	92	93	MAWA
Bay-breasted Warbler														1		BBWA
Yellow Warbler	17	110	156	143	92	64	75	127	151	80	93	96	150	166	67	YEWA
Blackpoll Warbler	7	16	21	35	16	22	37	46	30	29	17	46	34	20	24	BLPW
Western Palm Warbler														1		WPWA
Myrtle Warbler	13	36	30	52	19	4	31	32	3	8	36	18	4	26	38	MYWA
Unknown Yellow-rumped Warbler	18	3	6	64	108	14	55	110	78	19	73	236	106	60	22	UYRW
Audubon's Warbler	42	29	32	49	54	20	28	33	30	18	33	52	17	27	44	AUWA
Yellow-rumped Warblers	73	68	68	165	181	38	114	175	111	45	142	306	127	113	104	YRWA
Townsend's Warbler	17	3	13	14	12	20	42	11	5	3	11	34	12	13	7	TOWA
Canada Warbler										1						CAWA
Wilson's Warbler	58	77	88	107	58	168	89	86	90	162	101	100	121	87	65	WIWA
Le Conte's Sparrow																LCSP
American Tree Sparrow	10	14	36	22	2	6	2	4	3	6	9	13	10	1	1	ATSP
Chipping Sparrow	2	11	7	16	18	49	19	10	15	12	4	11	11	13	4	CHSP
Clay-colored Sparrow		1	2	1						3			2	1	1	CCSP
Brewer's Sparrow			1	1	1					1			1			BRSP
Fox Sparrow	3	6	5	4	3	11	2	7	4	4	6	4	10	6	4	FOSP
Slate-colored Junco	6	1	9	5	4	7				7	2	1	3	2	2	SCJU
Oregon Junco	70	82	79	57	74	70	44	75	33	57	144	164	44	16	39	ORJU
Unidentified Dark-eyed Junco	11	10	26	31	100	63	35	24	78	22	47	75	59	18	20	UDEJ
Dark-eyed Juncos	87	93	114	93	178	140	79	99	111	86	193	240	106	36	61	DEJU

Species ↓	1995 11 Aug - 24 Sep	1996 5 Aug - 28 Sep	1997 26 Jul - 26 Sep	1998 21 Jul - 20 Sep	1999 19 Jul - 19 Sep	2000 23 Jul - 24 Sep	2001 22 Jul - 23 Sep	2002 21 Jul - 22 Sep	2003 20 Jul - 21 Sep	2004 20 Jul - 22 Sep	2005 19 Jul - 22 Sep	2006 18 Jul - 23 Sep	2007 19 Jul - 23 Sep	2008 19 Jul - 23 Sep	2009 19 Jul - 23 Sep	Code
<i>White-crowned Sparrow</i>	27	42	22			1			7					1	1	WCSP
<i>Gambel's White-crowned Sparrow</i>				31	31	56	59	52	10	34	26	41	32	17	37	GWCS
<i>White-crowned Sparrows</i>	27	42	22	31	31	57	59	52	17	34	26	41	32	18	38	WCSP
<i>Golden-crowned Sparrow</i>				2				1				1	1	1	2	GCSP
<i>Harris's Sparrow</i>		1														HASP
<i>White-throated Sparrow</i>	6	8	4	9	8	4	9	6	18	10	12	22	24	13	17	WTSP
<i>Vesper Sparrow</i>						1										VESP
<i>Savannah Sparrow</i>	3	21	30	46	25	35	23	11	4	16	11	23	14	14	15	SAVS
<i>Song Sparrow</i>	18	13	25	17	16	28	27	17	54	29	27	41	35	19	40	SOSP
<i>Lincoln's Sparrow</i>	17	19	33	20	57	53	50	11	38	48	24	66	39	18	38	LISP
<i>Swamp Sparrow</i>	3	2	3	11	2	5	3	2	5	3	1	13	2	3	2	SWSP
<i>Western Tanager</i>	4	6	11	26	10	6	1	12	29	16	10	12	15	9	31	WETA
<i>Rose-breasted Grosbeak</i>														1		RBGR
<i>Red-winged Blackbird</i>						2			1	2				2	1	RWBL
<i>Brown-headed Cowbird</i>			2	4	1	1	2	1	3	3		1	1	3	5	BHCO
<i>Rusty Blackbird</i>	3	1	5	7	4	1			2	4	2	8	8	6	4	RUBL
<i>Common Grackle</i>								1								COGR
<i>Evening Grosbeak</i>													1			EVGR
<i>Purple Finch</i>		3	5	7	4	4	2		2	1	2	5	6		3	PUFI
<i>Cassin's Finch</i>																CAFI
<i>White-winged Crossbill</i>					8								5			WWCR
<i>Pine Siskin</i>	14	95	85	1305	295	210	54	2	373	37	72	6	360	72	37	PISI
Total Number of Individuals	1001	2063	2799	4013	2531	2247	2336	3002	3346	2388	2758	3184	3092	2549	2200	totals
Total Number of Species	43	64	67	69	62	63	51	56	59	65	56	60	62	68	58	species
net hours	1851.5	3368	3979.5	4393.8	4314.8	3991.7	4326	4598	3709	4239.5	4396	4442.5	4256	4476.8	4727.9	net hrs
Birds per net hr	0.54064	0.6125	0.7034	0.9133	0.5866	0.5629	0.5400	0.6529	0.9021	0.5633	0.6274	0.7167	0.7265	0.5694	0.4653	Birds/net hr

Species ↓	2010 17 Jul - 23 Sep	2011 19 Jul - 23 Sep	2012 19 Jul - 23 Sep	2013 19 Jul - 23 Sep	2014 19 Jul - 23 Sep	2015 19 Jul - 23 Sep	2016 18 Jul - 23 Sep	2017 19 Jul - 23 Sep	2018 19 Jul - 23 Sep	2019 19 Jul - 23 Sep	2021 19 Jul - 23 Sep	2022 19 Jul - 23 Sep	2023 19 Jul - 23 Sep	2024 19 Jul - 23 Sep	Totals 1995- 2024	Code
Broad-winged Hawk													1		1	BWHA
Northern Harrier															1	NOHA
Sharp-shinned Hawk	4	1	2		1	1	3		3	1	6	2		1	52	SSHA
Cooper's Hawk															1	COHA
Sora															2	SORA
Western Sandpiper															2	WESA
Wilson's Snipe		1	3			1									26	WISN
Solitary Sandpiper															1	SOSA
Belted Kingfisher		1										1			5	BEKI
Yellow-bellied Sapsucker	7	13	6	12	13	8		1	6	3	3	5	7	5	144	YBSA
Red-naped Sapsucker															1	RNSA
Red-breasted Sapsucker		1			2	2					1	1	7	1	37	RBSA
Hybrid Sapsucker		1			1	3		1		6		1	1	1	50	HYSA
Unknown Sapsucker														1	1	USAP
Downy Woodpecker	7	13	11	7	11	5		8	1	8	2	3		2	205	DOWO
Hairy Woodpecker	1		1	1	2	3	1	3	1						38	HAWO
Am. Three-toed Woodpecker	1														5	TTWO
Yellow-shafted Flicker	1		1									1			13	YSFL
Northern Flicker Intergrade		1		2	1				4	1		3	1	1	28	FLIN
Red-shafted Flicker				1									1		9	RSFL
Northern Flicker	1	1	1	3	1				4	1		4	2	1	50	NOFL
American Kestrel	1														3	AMKE
Merlin															4	MERL
Olive-sided Flycatcher		1			1		1							1	7	OSFL
Western Wood-Pewee	1	1				3	1	1				1	2	1	96	WEWP
Yellow-bellied Flycatcher	3	3	3	4	3	5	7	10	7	4	9	6	5	2	126	YBFL
Alder Flycatcher	54	55	49	107	99	130	122	90	62	93	81	59	104	58	2543	ALFL
Willow Flycatcher						1									1	WIFL
Traill's Flycatcher						1							1		3	TRFL
Least Flycatcher	82	84	95	156	139	178	70	94	49	46	60	73	71	52	2378	LEFL
Hammond's Flycatcher	73	41	31	66	80	82	22	34	26	62	19	30	46	38	1400	HAFL
Dusky Flycatcher	39	31	19	42	41	99	34	36	30	45	27	30	46	50	938	DUFL
Pacific-slope Flycatcher	1					4				1	2				18	PSFL
Western Flycatcher				4									2	3	28	WEFL
Say's Phoebe										1					3	SAPH
Ash-throated Flycatcher															1	ATFL
Eastern Kingbird							2					2	4		27	EAKI

Appendix 2: Birds Banded in Standard Banding, 1995-2023 (rev. 2022), Mugaha Marsh

Species ↓	2010 17 Jul - 23 Sep	2011 19 Jul - 23 Sep	2012 19 Jul - 23 Sep	2013 19 Jul - 23 Sep	2014 19 Jul - 23 Sep	2015 19 Jul - 23 Sep	2016 18 Jul - 23 Sep	2017 19 Jul - 23 Sep	2018 19 Jul - 23 Sep	2019 19 Jul - 23 Sep	2021 19 Jul - 23 Sep	2022 19 Jul - 23 Sep	2023 19 Jul - 23 Sep	2024 19 Jul - 23 Sep	Totals 1995- 2024	Code
Northern Shrike												1			2	NSHR
Cassin's Vireo	4		3	8	5	10	7	3	5	1	6		2	1	107	CAVI
Blue-headed Vireo						2	1			2		1	1	1	23	BHVI
Solitary Vireo	4		1												61	SOVI
Philadelphia Vireo										1					2	PHVI
Warbling Vireo	48	68	43	79	70	46	62	63	25	74	80	82	57	52	1581	WAVI
Red-eyed Vireo	1		2	12	9	1	2	4	2	1	1	5	3	2	105	REVI
Canada Jay			1	2	1					1	1				17	CAJA
Steller's Jay		1			1					1					5	STJA
Blue Jay				2								1			3	BLJA
Black-billed Magpie															1	BBMA
Northern Rough-winged Swallow			4			2			2			3		1	14	NRWS
Tree Swallow				2					3			4	1	2	24	TRES
Violet-green Swallow															1	VGSW
Bank Swallow							1		1			3			8	BANS
Barn Swallow		2	2									1	1		26	BARS
Black-capped Chickadee	33	28	31	28	73	23	25	15	27	90	20	17	32	64	1115	BCCH
Mountain Chickadee								1							2	MOCH
Chestnut-backed Chickadee								5			4				15	CBCH
Boreal Chickadee	1	1	3				11	1		1					32	BOCH
Hybrid Chickadee					1			1							5	HYCH
Red-breasted Nuthatch	10	4	12	1	1	2	8	11	5	3	5	15	5	17	241	RBNJ
Brown Creeper	1	2		1	1	4	3	3	2	12	4			1	65	BRCR
Pacific Wren	1						2	1	1				2		12	PAWR
Marsh Wren							1								1	MAWR
Golden-crowned Kinglet	96	51	88	55	57	49	63	51	84	132	117	50	213	96	2054	GCKI
Ruby-crowned Kinglet	345	284	346	416	381	851	481	585	580	597	395	206	334	288	10994	RCKI
Mountain Bluebird		2													2	MOBL
Townsend's Solitaire		1							1		1				5	TOSO
Gray-cheeked Thrush	3	5	4	1	3	1	5		3	7	1	3	1		55	GCTH
Swainson's Thrush	124	190	187	257	302	196	201	152	154	277	238	206	273	147	4250	SWTH
Hermit Thrush	24	28	16	24	16	25	27	33	18	34	15	12	14	21	535	HETH
American Robin	18	44	14	29	45	17	10	7	21	27	9	11	24	7	492	AMRO
Gray Catbird										1					1	GRCA
Varied Thrush	2	4	2		1		3	2	2	8	4	3	7		76	VATH
European Starling					1					1			1		3	EUST
American Pipit	2					1	1			1					5	AMPI

Appendix 2: Birds Banded in Standard Banding, 1995-2024 (rev. 2022), Mugaha Marsh

Species ↓	2010 17 Jul - 23 Sep	2011 19 Jul - 23 Sep	2012 19 Jul - 23 Sep	2013 19 Jul - 23 Sep	2014 19 Jul - 23 Sep	2015 19 Jul - 23 Sep	2016 18 Jul - 23 Sep	2017 19 Jul - 23 Sep	2018 19 Jul - 23 Sep	2019 19 Jul - 23 Sep	2021 19 Jul - 23 Sep	2022 19 Jul - 23 Sep	2023 19 Jul - 23 Sep	2024 19 Jul - 23 Sep	Totals 1995- 2024	Code
Bohemian Waxwing			2											2	8	BOWA
Cedar Waxwing	33	21	29	31	148	46	20	7	8	37	24	22	4	11	589	CEDW
Lapland Longspur															2	LALO
Ovenbird	1	5	5	6	3	11	3	2	5	5	7	12	17	11	177	OVEN
Northern Waterthrush	29	89	431	106	81	96	141	90	77	62	154	80	78	37	4647	NOWA
Black-and-White Warbler				2							1	6	6	3	19	BAWW
Tennessee Warbler	14	131	118	256	160	180	103	75	23	12	28	26	10	6	1395	TEWA
Orange-crowned Warbler	179	177	301	224	189	218	193	221	177	145	189	111	138	93	4417	OCWA
Nashville Warbler							1								1	NAWA
MacGillivray's Warbler	16	14	21	31	30	22	32	15	13	22	17	11	14	9	644	MGWA
Mourning Warbler													1		2	MOWA
Common Yellowthroat	89	55	184	195	113	161	268	192	153	72	149	149	64	15	3775	COYE
American Redstart	138	160	296	225	160	183	391	341	258	189	270	321	256	284	7651	AMRE
Cape May Warbler			3				1						1		5	CMWA
Magnolia Warbler	81	75	112	108	73	78	102	95	105	53	130	119	109	74	2326	MAWA
Bay-breasted Warbler								1							2	BBWA
Yellow Warbler	70	131	168	73	59	64	115	84	80	56	82	73	78	41	2761	YEWA
Blackpoll Warbler	18	12	57	50	21	31	31	18	18	14	10	8	11	9	708	BLPW
Western Palm Warbler				1		1			3						6	WPWA
Myrtle Warbler	4	24	7	14	8	27	16	16	8	10	7	5	49	32	577	MYWA
Unknown Yellow-rumped Warbler	57	58	237	155	48	24	62	89	51	89	76	45	83	123	2169	UYRW
Audubon's Warbler	10	96	171	60	22	66	30	24	17	29	1		7	3	1044	AUWA
Yellow-rumped Warblers	71	178	415	229	78	117	108	129	76	128	84	50	139	158	3790	YRWA
Townsend's Warbler	12	16	41	13	10	13	13	11	8	18	12	4	10	11	409	TOWA
Canada Warbler															1	CAWA
Wilson's Warbler	80	43	53	32	46	69	118	77	129	105	68	43	147	54	2521	WIWA
Le Conte's Sparrow				1											1	LCSP
American Tree Sparrow	18			9	11	5	4	9	15	10		5	3	2	230	ATSP
Chipping Sparrow	26	15	18	10	5	9	10	3	2	17	4	6	51	17	395	CHSP
Clay-colored Sparrow	22	9	1	5	18	16	1	7	3	2		2	10	1	108	CCSP
Brewer's Sparrow	1					2									8	BRSP
Fox Sparrow	12	4	6	6	3	6	9	6	5	7	1	4	4	4	156	FOSP
Slate-colored Junco	1	5	1	1	10	4	12	5		4	3		6		101	SCIJ
Oregon Junco	61	134	55	145	93	67	75	55	62	104	5	132	125	160	2321	ORJ
Unidentified Dark-eyed Junco	65	33	64	45	41	30	61	35	41	49	99	39	40	102	1363	UDEJ
Dark-eyed Juncos	127	172	120	191	144	101	148	95	103	157	107	171	171	262	3785	DEJ

Species ↓	2010 17 Jul - 23 Sep	2011 19 Jul - 23 Sep	2012 19 Jul - 23 Sep	2013 19 Jul - 23 Sep	2014 19 Jul - 23 Sep	2015 19 Jul - 23 Sep	2016 18 Jul - 23 Sep	2017 19 Jul - 23 Sep	2018 19 Jul - 23 Sep	2019 19 Jul - 23 Sep	2021 19 Jul - 23 Sep	2022 19 Jul - 23 Sep	2023 19 Jul - 23 Sep	2024 19 Jul - 23 Sep	Totals 1995- 2024	Code
<i>White-crowned Sparrow</i>	7	2	19	37	4		13	9	2	11					205	WCSP
<i>Gambel's White-crowned Sparrow</i>	31	64	49	19	32	52	84	8	40	45	21	19	59	20	969	GWCS
White-crowned Sparrows	38	66	68	56	36	52	97	17	42	56	21	19	59	20	1174	WCSP
<i>Golden-crowned Sparrow</i>	1	1					1	1					4		16	GCSP
<i>Harris's Sparrow</i>															1	HASP
White-throated Sparrow	27	78	108	138	101	69	126	59	95	110	45	58	28	16	1228	WTSP
<i>Vesper Sparrow</i>															1	VESP
<i>Savannah Sparrow</i>	73	36	20	2	12	29	8	9	39	41	6	4	23	5	598	SAVS
<i>Song Sparrow</i>	17	15	32	71	50	39	30	32	21	19	26	15	14	3	790	SOSP
<i>Lincoln's Sparrow</i>	23	66	30	101	70	85	48	42	45	31	21	37	24	7	1161	LISP
<i>Swamp Sparrow</i>	2	3	1	31	15	20	25	10	12	1	14	9	7	3	213	SWSP
<i>Western Tanager</i>	7	15	9	33	82	14	15	5	18	29	23	41	40	21	550	WETA
<i>Rose-breasted Grosbeak</i>								1	1	1			1		5	RBGR
<i>Red-winged Blackbird</i>				2					1		1				12	RWBL
<i>Brown-headed Cowbird</i>	1		3	1	3	2	4	2	1				1		45	BHCO
<i>Rusty Blackbird</i>	1	1	2	6	5			1	7	2					80	RUBL
<i>Common Grackle</i>															1	COGR
<i>Evening Grosbeak</i>												1			2	EVGR
<i>Purple Finch</i>	1	2	9	6	5	17	4	6	12	8	1	18	6	10	149	PUFI
<i>Cassin's Finch</i>						1									1	CAFI
<i>White-winged Crossbill</i>						2			7						22	WWCR
<i>Pine Siskin</i>	16	171	45	31	6	173	43	17	47	93		83		10	3752	PISI
Total Number of Individuals	2236	2724	3688	3602	3099	3686	3391	2894	2734	3045	2605	2350	2799	2116	80478	totals
Total Number of Species	63	59	58	60	58	60	62	58	62	62	52	61	62	58	115	species
net hours	4794.8	4325	4494.25	4381.75	4596	4554.33	4447	4150.5	4454.5	4167.5	4072	4405.8	4547.75	4126.75	122588.93	net hrs
Birds per net hr	0.4663	0.6298	0.8206	0.8218	0.6743	0.8093	0.7623	0.6973	0.6140	0.7311	0.6397	0.5334	0.6155	0.5128	0.6565	Birds/net hr

In 1995, 1996 and 1997 the seasons were shorter and the number of nets were less than the standard 12 we use now.

In 2003 we did not band from Aug 18-21 and Aug 25-28 due to hiring new personnel; we had 13 nets all season that year.

Any non-standard banding birds recaptured in Standard Banding are counted in the totals as per station protocol.

Any non-standard banding birds recaptured in Standard Banding are counted in the totals as per station protocol.

Species	1994 25-26 Aug. 11-12 Sep.	1998 (5 nets) 16-23 Sep.	1995 11 Aug - 24 Sep	1996 5 Aug. - 28 Sep	1998 21 Jul - 20 Sep	1999 19 Jul - 19 Sep.	2000 23 Jul - 24 Sep	2001 22 Jul - 23 Sep.	2002 21 Jul - 22 Sep	2003 20 Jul - 21 Sep	2004 20 Jul - 22 Sep	2005 19 Jul - 22 Sep	2006 18 Jul - 23 Sep	2007 19 Jul - 23 Sep	2008 19 Jul - 23 Sep	2009 19 Jul - 23 Sep	Code
Sharp-shinned Hawk		1															SSHA
American Kestrel					5												AMKE
Killdeer					1												KILL
Solitary Sandpiper															1		SOSA
Semipalmated Sandpiper							2										SESA
Least Sandpiper					1		5								1		LESA
Pectoral Sandpiper											2						PESA
Wilson's Snipe					6		2										WISN
Northern Pygmy-Owl																	NOPO
Boreal Owl										2	11		1				BOOW
Northern Saw-whet Owl			17	1	1	2	1		29	84	53	8	106	50	2		NSWO
Calliope Hummingbird												4	2	3	3	11	CAHU
Rufous Hummingbird												4	5	4	9	21	RUHU
Belted Kingfisher		2															BEKI
Yellow-bellied Sapsucker																	YBSA
Red-breasted Sapsucker	1																RBSA
Downy Woodpecker								1									DOWO
Am. Three-toed Woodpecker																	ATTW
Yellow-shafted Flicker					1												YSFL
Northern Flicker intergrade																	FLIN
Yellow-bellied Flycatcher																	YBFL
Alder Flycatcher	2	1					1	1									ALFL
Least Flycatcher	5	5			2		1	2									LEFL
Hammond's Flycatcher	3				2		11	1									HAFL
Dusky Flycatcher	1	2			1	1	1										DUFL
Western Flycatcher																	WEFL
Solitary Vireo					1												SOVI
Cassin's Vireo							1										CAVI
Blue-headed Vireo							1										BHVI
Warbling Vireo		2			2			1									WAVI

Species	1994 25-26 Aug. 11-12 Sep.	1998 (5 nets) 16-23 May	1995 11 Aug - 5 Sep 24 Sep	1996 5 Aug - 28 Sep	1998 21 Jul - 20 Sep	1999 19 Jul - 19 Sep	2000 23 Jul - 24 Sep	2001 22 Jul - 23 Sep	2002 21 Jul - 22 Sep	2003 20 Jul - 21 Sep	2004 20 Jul - 22 Sep	2005 19 Jul - 22 Sep	2006 18 Jul - 23 Sep	2007 19 Jul - 23 Sep	2008 19 Jul - 23 Sep	2009 19 Jul - 23 Sep	Code
Tree Swallow		1					1										TRES
Bank Swallow							2										BANS
Barn Swallow															4		BARS
Black-capped Chickadee	6						9										BCCH
Boreal Chickadee																	BOCH
<i>Hybrid Chickadee</i>																	HYCH
Red-breasted Nuthatch																	RBNU
Brown Creeper																	BRCR
Golden-crowned Kinglet	2																GCKI
Ruby-crowned Kinglet	50				6		15	1	1								RCKI
Mountain Bluebird					1												MOBL
Swainson's Thrush	3	4			1		2	1									SWTH
Hermit Thrush	3				1		2										HETH
American Robin		21					2										AMRO
Varied Thrush	1						1										VATH
American Pipit							14										AMPI
Cedar Waxwing						1		2									CEDW
Ovenbird																	OVEN
Northern Waterthrush	1	13															NOWA
Tennessee Warbler					1		1	1									TEWA
Orange-crowned Warbler	9	5			1		11	1									OCWA
MacGillivray's Warbler		1						1									MGWA
Common Yellowthroat	6	8					4										COYE
American Redstart	4	6					10	29									AMRE
Magnolia Warbler	2	1					3										MAWA
Yellow Warbler	1	6			1		2										YEWA
Blackpoll Warbler	2	1			5												BLPW
Western Palm Warbler																	WPWA

Species	1994 25-26 Aug. 11-12 Sep.	1998 (5 nets) 16-23 May	1995 11 Aug - 24 Sep	1996 5 Aug. - 28 Sep	1998 21 Jul - 20 Sep	1999 19 Jul - 19 Sep.	2000 23 Jul - 24 Sep	2001 22 Jul - 23 Sep.	2002 21 Jul - 22 Sep	2003 20 Jul - 21 Sep	2004 20 Jul - 22 Sep	2005 19 Jul - 22 Sep	2006 18 Jul - 23 Sep	2007 19 Jul - 23 Sep	2008 19 Jul - 23 Sep	2009 19 Jul - 23 Sep	Code
Unk. Yellow-rumped Warbler		1			3		4										UYRW
Myrtle Warbler	3	4			7		2	1									MYWA
Audubon's Warbler	12	12			3		1		1								AUWA
Total Yellow-rumped Warblers	15	17			13		7	1	1								YRWA
Townsend's Warbler	5				1		2										TOWA
Wilson's Warbler	5	28			1		18										WIWA
American Tree Sparrow																	ATSP
Chipping Sparrow																	CHSP
Clay-colored Sparrow																	CCSP
Savannah Sparrow	2	2			2		1										SAVS
Fox Sparrow	1																FOSP
Song Sparrow	2	3					4	1									SOSP
Lincoln's Sparrow	4	4					10										LISP
Swamp Sparrow	2						1										SWSP
White-throated Sparrow							1										WTSP
White-crowned Sparrow	4																WCSP
Gambel's White-crowned Sparrow					3		8										GWCS
Slate-colored Junco	1																SCIU
Oregon Junco	4				8		1	2									ORIU
Unidentified Dark-eyed Junco	2																UDEJ
Total Dark-eyed Juncos	7				8		1	2									DEJU
Western Tanager																	WETA
Red-winged Blackbird		5			1												RWBL
Rusty Blackbird		1			1		2										RUBL
Brown-headed Cowbird		2					1										BHCO
Purple Finch		9															PUFI
Common Redpoll							1										CORE
Pine Siskin	1	5			25			9									PSI
Total Number of Individuals	150	156	17	1	95	4	162	55	31	86	66	16	114	57	20	32	Total
Total Number of Species	28	26	1	1	27	3	38	16	3	2	3	3	4	3	6	2	#Species

Species	2010 17 Jul - 23 Sep	2011 19 Jul - 23 Sep	2012 19 Jul - 23 Sep	2013 19 Jul - 23 Sep	2014 19 Jul - 23 Sep	2015 19 Jul - 23 Sep	2016 18 Jul - 23 Sep	2017 19 Jul - 23 Sep	2018 19 Jul - 23 Sep	2019 19 Jul - 23 Sep	2021 19 Jul - 23 Sep	2022 19 Jul - 23 Sep	2023 19 Jul - 30 Sep	2024 Jun 11 - 30 Sep	1994-2019, 2021-2024 Total	Code
Sharp-shinned Hawk													1	1	3	SSHA
American Kestrel															5	AMKE
Killdeer															1	KILL
Solitary Sandpiper															1	SOSA
Semipalmated Sandpiper															2	SESA
Least Sandpiper															7	LESA
Pectoral Sandpiper															2	PESA
Wilson's Snipe															8	WISN
Northern Pygmy-Owl					2			1							3	NOPO
Boreal Owl		1			11	5	2	1		6	2				42	BOOW
Northern Saw-whet Owl		7	39	15	50	51	55	30	33	55	108	109	64		970	NSWO
Calliope Hummingbird	1										2				26	CAHU
Rufous Hummingbird	4		4			1					4				56	RUHU
Belted Kingfisher			2												4	BEKI
Yellow-bellied Sapsucker														3	3	YBSA
Red-breasted Sapsucker															1	RBSA
Downy Woodpecker														1	2	DOWO
Am. Three-toed Woodpecker														1	1	ATTW
Yellow-shafted Flicker														1	2	YSFL
Northern Flicker <i>intergrade</i>													1		1	FLIN
Yellow-bellied Flycatcher														2	2	YBFL
Alder Flycatcher													18	25	48	ALFL
Least Flycatcher													8	21	44	LEFL
Hammond's Flycatcher													8	11	36	HAFL
Dusky Flycatcher													7	21	34	DUFL
Western Flycatcher													1		1	WEFL
Solitary Vireo															1	SOVI
Cassin's Vireo														1	2	CAVI
Blue-headed Vireo													1	1	3	BHVI
Warbling Vireo													4	18	27	WAVI

Species	2010 17 Jul - 23 Sep	2011 19 Jul - 23 Sep	2012 19 Jul - 23 Sep	2013 19 Jul - 23 Sep	2014 19 Jul - 23 Sep	2015 19 Jul - 23 Sep	2016 18 Jul - 23 Sep	2017 19 Jul - 23 Sep	2018 19 Jul - 23 Sep	2019 19 Jul - 23 Sep	2021 19 Jul - 23 Sep	2022 19 Jul - 23 Sep	2023 19 Jul - 30 Sep	2024 Jun 11 - 30 Sep	1994-2019, 2021-2023 Total	Code
Tree Swallow														11	13	TRES
Bank Swallow															2	BANS
Barn Swallow														1	5	BARS
Black-capped Chickadee													5	44	64	BCCH
Boreal Chickadee														2	2	BOCH
<i>Hybrid Chickadee</i>														1	1	HYCH
Red-breasted Nuthatch													4	4	8	RBNU
Brown Creeper														1	1	BRCR
Golden-crowned Kinglet													46	35	83	GCKI
Ruby-crowned Kinglet													98	151	322	RCKI
Mountain Bluebird															1	MOBL
Swainson's Thrush													19	30	60	SWTH
Hermit Thrush													1	9	16	HETH
American Robin													9	5	37	AMRO
Varied Thrush													1		3	VATH
American Pipit															14	AMPI
Cedar Waxwing														13	16	CEDW
Ovenbird													2	3	5	OVEN
Northern Waterthrush													4	5	23	NOWA
Tennessee Warbler													2	4	9	TEWA
Orange-crowned Warbler													23	41	91	OCWA
MacGillivray's Warbler													2	1	5	MGWA
Common Yellowthroat													11	15	44	COYE
American Redstart													30	63	142	AMRE
Magnolia Warbler													10	21	37	MAWA
Yellow Warbler													2	14	26	YEWB
Blackpoll Warbler														1	9	BLPW
Western Palm Warbler													1		1	WPWA

Appendix 3: Birds Banded in Non-Standard Banding, 1994-2024 (rev. 2022), Mugaha Marsh

Species	2010 17 Jul - 23 Sep	2011 19 Jul - 23 Sep	2012 19 Jul - 23 Sep	2013 19 Jul - 23 Sep	2014 19 Jul - 23 Sep	2015 19 Jul - 23 Sep	2016 18 Jul - 23 Sep	2017 19 Jul - 23 Sep	2018 19 Jul - 23 Sep	2019 19 Jul - 23 Sep	2021 19 Jul - 23 Sep	2022 19 Jul - Sep 23	2023 19 Jul - Sep 30	2024 Jun 11 - 30 Sep	1994-2019, 2021-2024 Total	Code
<i>Unk. Yellow-rumped Warbler</i>													39	50	97	UYRW
<i>Myrtle Warbler</i>													21	6	44	MYWA
<i>Audubon's Warbler</i>													1	2	32	AUWA
Total Yellow-rumped Warblers													61	58	173	YRWA
Townsend's Warbler													1	1	10	TOWA
Wilson's Warbler													21	5	78	WIWA
American Tree Sparrow													4	4	8	ATSP
Chipping Sparrow													2	14	16	CHSP
Clay-colored Sparrow													1	5	6	CCSP
Savannah Sparrow													1		8	SAVS
Fox Sparrow															1	FOSP
Song Sparrow													2		12	SOSP
Lincoln's Sparrow													4	11	33	LISP
Swamp Sparrow													1		4	SWSP
White-throated Sparrow														12	13	WTSP
White-crowned Sparrow															4	WCSP
Gambel's White-crowned Sparrow													15	7	33	GWCS
<i>Slate-colored Junco</i>													2	2	5	SCJU
<i>Oregon Junco</i>													18	33	66	ORJU
<i>Unidentified Dark-eyed Junco</i>													2	27	31	UDEJ
Total Dark-eyed Juncos													22	62	102	DEJU
Western Tanager														1	1	WETA
Red-winged Blackbird															6	RWBL
Rusty Blackbird															4	RUBL
Brown-headed Cowbird															3	BHCO
Purple Finch														4	13	PUFI
Common Redpoll															1	CORE
Pine Siskin														4	44	PSIS
Total Number of Individuals	5	8	45	15	63	57	57	32	33	61	116	109	518	770	2951	Total
Total Number of Species	2	2	3	1	3	3	2	3	1	2	4	1	57	47	75	# Species

Appendix 4: Birds captured in Standard Banding, by Net, Fall 2024, Mugaha Marsh

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Species/Net	3	9	11	12	17	19	20	21	22	25	26	32	Unk	Total	Species
Alder Flycatcher	8	5	2	8	6	3	4	7	9	3		3		58	ALFL
American Redstart	12	14	5	9	16	28	37	49	25	18	27	44		284	AMRE
American Robin	2				1		1				1	2		7	AMRO
American Tree Sparrow			1					1						2	ATSP
Audubon Warbler	1										1	1		3	AUWA
Black-and-white Warbler							1				1	1		3	BAWW
Black-capped Chickadee	13		15	2	5	3	2	6	2	3	5	8		64	BCCH
Blue-headed Vireo							1							1	BHVI
Blackpoll Warbler	1			2	1		1	1				3		9	BLPW
Bohemian Waxwing										1	1			2	BOWA
Brown Creeper		1												1	BRCR
Cassin's Vireo				1										1	CAVI
Clay-colored Sparrow				1										1	CCSP
Cedar Waxwing	1										10			11	CEDW
Chipping Sparrow	3		2	6	2		2		2					17	CHSP
Common Yellowthroat	3		2			1	4	1	1		3			15	COYE
Downy Woodpecker				1								1		2	DOWO
Dusky Flycatcher	9		6	4	7	2		6		6	2	8		50	DUFL
Northern Flicker Intergrade												1		1	FLIN
Fox Sparrow			1			1	1				1			4	FOSP
Golden-crowned Kinglet	6		4	4	7	2	5	14	5	12	15	22		96	GCKI
Gambel's White-crowned Sparrow	1	1	2	5	2	1		3	1	1		3		20	GWCS
Hammond's Flycatcher	5	4	1	1	7		1	8	1	2	4	4		38	HAFL
Hermit Thrush						1	4	1	1	3	4	7		21	HETH
Hybrid Sapsucker										1				1	HYSA
Least Flycatcher	10	3	3	4	5	4	2	8	4	4	3	2		52	LEFL
Lincoln's Sparrow				4		1						2		7	LISP
Magnolia Warbler	6	1			4	12	13	8	3	3	10	14		74	MAWA
MacGillivray's Warbler		2	1	1	1	2		1	1					9	MGWA
Myrtle Warbler	10		2	2	3	2	1		1	1	5	5		32	MYWA
Northern Waterthrush	2		2		4	6	4	4	1	3	7	4		37	NOWA
Northern Rough-winged Swallow				1										1	NRWS

Species/Net	3	9	11	12	17	19	20	21	22	25	26	32	Unk	Total	Species
Orange-crowned Warbler	13	1	8	11	14	5	6	11	4	5	5	10		93	OCWA
Oregon Junco	14	6	3	7	6	7	8	7	4	19	32	47		160	ORJU
Olive-sided Flycatcher	1													1	OSFL
Ovenbird		1			3	2	2	1		1		1		11	OVEN
Pine Siskin	1	1			2	1				4		1		10	PIST
Purple Finch					1						6	3		10	PUFI
Red-breasted Nuthatch	5			1	3		1			2	3	2		17	RBNU
Red-breasted Sapsucker											1			1	RBSA
Ruby-crowned Kinglet	30	4	18	27	18	15	19	22	22	20	28	65		288	RCKI
Red-eyed Vireo	1						1							2	REVI
Savannah Sparrow				4					1					5	SAVS
Song Sparrow	1					1		1						3	SOSP
Sharp-shinned Hawk											1			1	SSHA
Swamp Sparrow				1							2			3	SWSP
Swainson's Thrush	1	15	2	3	11	12	16	9	10	19	18	31		147	SWTH
Tennessee Warbler	1		1				1		1			2		6	TEWA
Townsend's Warbler	2			1				2				6		11	TOWA
Tree Swallow				1	1									2	TRES
Unknown Dark-eyed Junco	11	1	3	4	3	6	7	4	5	8	8	42		102	UDEJ
Unknown Sapsucker		1												1	UNSA
Unidentified Yellow-rumped Warbler	39	3	11	19	6	3	5	5		10	9	13		123	UYRW
Warbling Vireo	5	1	4	7	6	1	6	7	6	4	2	2	1	52	WAVI
Western Flycatcher			1				1				1			3	WEFL
Western Tanager	7			2	1	1				1	8	1		21	WETA
Western Wood-Pewee				1										1	WEWP
Wilson's Warbler	6	2	4	4	6	3	8	7	2	1	4	7		54	WIWA
White-throated Sparrow		3		2		3	1	4	1		1	1		16	WTSP
Yellow-bellied Flycatcher	1					1								2	YBFL
Yellow-bellied Sapsucker	1	1	1								1	1		5	YBSA
Yellow Warbler	10	2	4	7	5	1	4	2	3	2		1		41	YEWA
Total	243	73	109	158	157	131	170	200	116	157	230	371	1	2116	Total
Net hours	305.25	361.00	303.25	334.50	360.50	360.25	360.25	360.25	360.50	334.75	325.00	361.25	-	4126.75	Net hours
Birds per net-hour	0.7961	0.2022	0.3594	0.4723	0.4355	0.3636	0.4719	0.5552	0.3218	0.4690	0.7077	1.0270	-	0.5128	Birds/net-hr

Species / Net #	3	9	11	12	17	19	20	21	22	26	32	Total	Code
American Redstart		1					2	1	1		1	6	AMRE
Black-and-white Warbler		1							1			2	BAWW
Black-capped Chickadee	1				1	1						3	BCCH
Common Yellowthroat			1	1								2	COYE
Hermit Thrush								1				1	HETH
Least Flycatcher		1										1	LEFL
Magnolia Warbler		1										1	MAWA
Dark-eyed Junco (Oregon)		1								1		2	ORJU
Purple Finch										1		1	PUFI
Yellow-rumped Warbler											1	1	UYRW
Warbling Vireo											1	1	WAVI
Total	1	5	1	1	1	1	2	2	2	2	3	21	Total

Appendix 6A: Details of Returns in Standard Banding, Fall 2024, Mugaha Marsh

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Band#	Species	Age	Sex	Date	Net	Time	Bander ID
Returns from 2021							
2930-19094	American Redstart	ASY	M	2021-08-08	19	8:30	LAT
2930-19094		ASY	M	2023-08-10	19	7:30	KLL
2930-19094		ASY	M	2024-07-31	22	6:15	BDB
2930-19094		ASY	M	2024-08-05	21	5:45	BDB
2930-19213	American Redstart	AHY	M	2021-08-14	17	6:30	KAM
2930-19213		AHY	M	2021-08-17	32	6:15	LAT
2930-19213		ASY	M	2022-08-01	26	8:45	LAT
2930-19213		ASY	M	2024-06-30	9	8:00	LAT
2930-19213		ASY	M	2024-07-21	25	5:30	BDB
2930-19243	American Redstart	HY	U	2021-08-15	17	8:15	KAM
2930-19243		AHY	F	2022-09-01	32	12:15	JAR
2930-19243		AHY	F	2023-09-04	21	7:45	LAT
2930-19243		AHY	F	2024-08-01	32	6:15	LAQ
2920-55626	Warbling Vireo	AHY	F	2021-07-28	9	11:00	ZJR
2920-55626		AHY	F	2024-07-19	32	8:15	BDB
Returns from 2022							
2950-41114	Least Flycatcher	AHY	F	2022-07-26	3	10:30	LAT
2950-41114		AHY	U	2024-07-26	9	7:00	LAT
2950-41114		AHY	U	2024-07-31	3	10:15	BDB
2960-49570	Black-capped Chickadee	HY	U	2022-07-28	12	9:45	ZJR
2960-49570		HY	U	2022-08-25	17	7:00	KLL
2960-49570		HY	U	2022-09-13	19	7:30	ZJR
2960-49570		AHY	U	2023-08-23	26	7:30	LAT
2960-49570		AHY	U	2023-09-16	21	7:45	KLL
2960-49570		AHY	U	2023-09-21	19	11:15	KLL
2960-49570		ASY	U	2024-08-08	17	7:00	KLL
2960-49570		AHY	U	2024-09-04	25	7:45	LAT
2960-49570		AHY	U	2024-09-09	3	7:30	LAT
2960-49570		AHY	U	2024-09-14	26	9:30	RAX
2960-51230	Black-capped Chickadee	AHY	U	2022-09-17	20	7:45	KLL
2960-51230		AHY	U	2024-08-24	19	7:00	LAQ
2960-51230		AHY	U	2024-09-13	9	9:30	RAX
2960-51230		AHY	U	2024-09-25	17	8:00	LAT
2920-56388	Common Yellowthroat	AHY	M	2022-07-19	11	8:30	ZJR
2920-56388		ASY	M	2024-07-12	12	9:00	LAT
2920-56388		AHY	M	2024-07-19	20	8:15	BDB
2920-56388		ASY	M	2024-07-20	14	5:30	BDB
2960-51022	Common Yellowthroat	AHY	F	2022-08-31	21	11:15	ZJR
2960-51022		AHY	F	2024-07-19	20	8:15	BDB
2621-91201	Purple Finch	AHY	M	2022-07-24	3	8:30	LAT
2621-91201		AHY	M	2024-07-19	26	6:15	BDB
Returns from 2023							
2960-51302	Black-capped Chickadee	HY	U	2023-07-19	16	9:30	LAT
2960-51302		HY	U	2023-08-03	12	6:45	LAT
2960-51302		HY	U	2023-08-22	14	7:15	LAT
2960-51302		HY	U	2023-09-01	9	11:45	LAT
2960-51302		HY	U	2023-09-16	20	7:45	KLL
2960-51302		AHY	U	2024-08-05	3	9:15	LAT
2960-51302		AHY	U	2024-09-11	26	12:00	SLH
2960-51302		AHY	U	2024-09-29	25	12:00	KAS
2950-41996	American Redstart	AHY	F	2023-07-20	9	10:00	LAT
2950-41996		AHY	F	2024-07-19	20	5:45	LAT
2950-42108	American Redstart	SY	M	2023-07-21	17	7:00	KLL
2950-42108		SY	M	2023-07-22	17	7:00	BDB
2950-42108		ASY	M	2024-08-05	21	6:45	LAT
2990-57105	American Redstart	AHY	M	2023-08-31	25	11:15	KLL
2990-57105		AHY	M	2024-08-25	20	7:00	LAQ

Appendix 6A: Details of Returns in Standard Banding, Fall 2024, Mugaha Marsh

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Band#	Species	Age	Sex	Date	Net	Time	Bander ID
Returns from 2022 (continued)							
2960-51407	Black-and-white Warbler	AHY	M	2023-07-20	17	5:30	LAT
2960-51407		AHY	M	2023-07-21	12	10:00	BDB
2960-51407		AHY	M	2023-07-31	22	5:15	BDB
2960-51407		SY	M	2023-08-11	17	10:00	KLL
2960-51407		ASY	M	2024-06-30	9	10:00	LAT
2960-51407		AHY	M	2024-08-18	17	7:15	KLL
2960-51691	Black-and-white Warbler	AHY	M	2023-08-17	20	8:15	KLL
2960-51691		AHY	M	2024-08-18	22	7:15	KLL
2950-42714	Magnolia Warbler	AHY	F	2023-08-21	26	6:45	LAT
2950-42714		AHY	F	2024-07-19	9	5:45	BDB
2950-42714		ASY	F	2024-07-21	26	9:30	KAS
2950-42714		AHY	F	2024-08-03	9	6:15	KLL
2950-42714		AHY	F	2024-08-24	25	10:00	LAT
2950-42714		AHY	F	2024-08-31	26	11:45	RAX
2960-51791	Yellow-rumped Warbler	AHY	F	2023-08-24	32	9:30	KLL
2960-51791		ASY	F	2024-07-21	32	5:30	LAT
2981-61678	Hermit Thrush	AHY	F	2023-08-06	21	7:45	LAT
2981-61678		SY	F	2023-08-23	19	12:00	KLL
2981-61678		ASY	F	2024-07-24	21	8:30	KAS
2981-61678		ASY	F	2024-08-03	22	5:45	LAQ
2981-61678		AHY	F	2024-08-21	21	8:15	LAT
2981-61678		AHY	U	2024-09-09	21	10:30	BDB
2621-91323	Dark-eyed Junco (Oregon)	AHY	F	2023-07-19	26	5:30	LAT
2621-91323		AHY	F	2023-07-20	32	6:00	BDB
2621-91323		AHY	F	2023-09-03	25	8:15	LAT
2621-91323		ASY	F	2024-08-11	9	10:00	KLL
2621-91544	Dark-eyed Junco (Oregon)	HY	M	2023-08-27	3	9:00	KAS
2621-91544		AHY	M	2024-09-18	26	7:15	LAT

Banders: BDB - Benjamin Breton; JAR - Jeannine Randall; KAM - Kristen Mancuso; KAS - Kalum Srochenski; KLL - Kirstin Lachance; LAQ - Laura Quinsey; LAT - Laura Tabbakh; Rae Xamin; SLH - Shaye Hill; ZJR - Zoe Roberts.

Age Codes: HY - Hatch Year, AHY - After Hatch Year, SY - Second Year; ASY - After Second Year.

Sex Codes: M -Male, F - Female, U - Unknown.

Appendix 6B: Details of Returns Non-standard Banding, Summer & Fall 2024, Mugaha Marsh

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Band Number	Species	Age	Sex	Date	Net	Time	Bander ID
Return from 2014							
2571-07856	Swainson's Thrush	HY	U	2014-07-29	19	6:15	CLB
2571-07856		AHY	U	2016-08-17	25	9:15	CAS
2571-07856		AHY	F	2017-07-21	9	5:30	DRF
2571-07856		AHY	F	2017-07-31	9	8:15	SMC
2571-07856		AHY	F	2022-07-19	9	11:00	KAS
2571-07856		AHY	F	2022-07-21	3	9:00	ZJR
2571-07856		AHY	F	2022-07-22	25	5:30	ZJR
2571-07856		AHY	F	2022-07-23	3	8:30	ZJR
2571-07856		AHY	F	2022-07-25	26	8:30	ZJR
2571-07856		ASY	F	2024-06-12	9	5:30	LAT
Return from 2018							
2741-77690	Swainson's Thrush	AHY	M	2018-07-19	32	10:00	DRP
2741-77690		AHY	U	2019-08-16	32	9:15	MLC
2741-77690		ASY	M	2024-06-11	3	6:00	LAT
Return from 2019							
2771-82373	White-throated Sparrow	AHY	U	2019-07-30	32	10:45	JK
2771-82373		AHY	F	2019-08-04	3	7:45	JK
2771-82373		AHY	U	2023-07-20	32	5:30	LAT
2771-82373		ASY	M	2024-06-11	25	6:30	LAT
Returns from 2021							
2771-82823	Swainson's Thrush	AHY	U	2021-07-19	19	5:30	LAT
2771-82823		AHY	U	2021-07-21	21	10:00	SK
2771-82823		AHY	U	2021-08-29	22	7:00	KAM
2771-82823		AHY	U	2022-07-27	17	7:30	LAT
2771-82823		AHY	U	2023-07-24	19	9:30	KLL
2771-82823		ASY	M	2024-06-20	20	5:10	LAT
2920-55474	Northern Waterthrush	AHY	U	2021-07-20	12	10:00	KAM
2920-55474		AHY	U	2021-08-24	22	9:00	KAM
2920-55474		AHY	U	2022-07-21	12	8:00	ZJR
2920-55474		AHY	U	2022-07-28	12	7:45	ZJR
2920-55474		AHY	U	2022-08-13	12	6:00	ZJR
2920-55474		AHY	U	2022-08-16	22	7:45	KLL
2920-55474		AHY	U	2023-08-04	19	6:45	KLL
2920-55474		AHY	M	2023-08-08	22	10:00	BDB
2920-55474		AHY	M	2023-08-13	20	8:00	BDB
2920-55474		AHY	M	2023-08-16	17	6:45	JAR
2920-55474		AHY	U	2023-08-23	22	7:00	KLL
2920-55474		ASY	M	2024-06-30	20	8:00	LAT
2920-55803	Northern Waterthrush	AHY	U	2021-08-10	22	8:00	ZJR
2920-55803		AHY	U	2021-08-16	22	6:45	ZJR
2920-55803		AHY	U	2022-08-12	20	6:30	ZJR
2920-55803		AHY	M	2023-08-10	20	6:00	KLL
2621-91378	<i>replacement</i>	AHY	M	2023-08-10	20	6:00	KLL
2621-91378		ASY	M	2024-06-20	19	5:10	LAT
Returns from 2022							
2981-61039	Ceder Waxwing	SY	M	2022-07-19	3	8:00	LAT
2981-61039		SY	U	2022-07-22	26	8:30	CDC
2981-61039		ASY	M	2024-06-20	11	5:10	LAT
2981-61101	Swainson's Thrush	AHY	U	2022-07-23	25	6:30	LAT
2981-61101		ASY	M	2024-06-11	9	5:30	LAT
2981-61101		ASY	M	2024-06-20	9	10:30	LAT
2981-61260	Swainson's Thrush	AHY	U	2022-08-22	20	8:00	LAT
2981-61260		ASY	F	2024-06-20	17	6:30	LAT
2960-51246	Black-capped Chickadee	HY	U	2022-09-21	19	8:15	ZJR
2960-51246		AHY	U	2024-09-29	17	8:00	KAS
2920-56378	Northern Waterthrush	AHY	F	2022-07-19	20	6:00	LAT
2920-56378		AHY	U	2022-08-17	22	8:15	ZJR
2920-56378		ASY	F	2024-06-20	22	5:10	LAT

Appendix 6B: Details of Returns, Non-standard Banding, Summer & Fall 2024, Mugaha Marsh

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Band Number	Species	Age	Sex	Date	Net	Time	Bander ID
Returns from 2023							
2231-20143	Red Breasted Sapsucker	SY	U	2023-08-10	32	8:30	KLL
2231-20143		TY	M	2024-06-11	26	10:30	LAT
2621-91374	Lincoln's Sparrow	HY	U	2023-08-07	3	7:00	BDB
2621-91374		SY	M	2024-06-30	17	6:30	LAT
2950-41982	Dusky Flycatcher	AHY	F	2023-07-19	11	9:00	LAT
2950-41982		ASY	F	2024-06-12	9	5:00	LAT
2950-42130	American Redstart	SY	M	2023-07-22	32	8:30	LAT
2950-42130		SY	M	2023-08-06	32	10:15	BDB
2950-42130		TY	M	2024-06-12	32	9:00	LAT
2960-51325	Northern Waterthrush	AHY	M	2023-08-04	22	7:15	KLL
2960-51325		AHY	M	2023-08-10	19	6:30	KLL
2960-51325		ASY	M	2024-06-30	22	6:30	LAT
2960-51421	Warbling Vireo	AHY	U	2023-07-20	11	11:00	KAS
2960-51421		AHY	U	2023-07-22	13	10:30	LAT
2960-51421		ASY	U	2024-06-30	20	8:00	LAT
2960-51851	Orange-crowned Warbler	HY	M	2023-08-29	22	8:30	LAT
2960-51851		SY	M	2024-06-20	19	5:10	LAT
2981-61470	Swainson's Thrush	HY	U	2023-07-27	32	8:30	LAT
2981-61470		SY	M	2024-06-12	32	7:30	LAT
2981-61723	Swainson's Thrush	AHY	U	2023-08-12	32	9:00	LAT
2981-61723		ASY	F	2024-06-11	25	5:30	LAT
2981-61952	White-throated Sparrow	HY	U	2023-08-21	32	9:15	KLL
2981-61952		SY	F	2024-06-20	22	8:00	LAT
2981-61952		SY	F	2024-06-30	22	5:30	LAT
2981-61989	Swainson's Thrush	AHY	U	2023-08-25	22	6:30	LAT
2981-61989		ASY	M	2024-06-30	22	7:30	LAT

Banders: BDB - Benjamin Breton; CAS - Chris Sukha; CDC - Christopher Coxson; CLB - Courtney Berdan; DRF - Devin Fisher; DRP - David Powe; JAR - Jeannine Randall; JK - Janos Kovacs; KAM - Kristen Mancuso; KAS - Kalum Srochenski; KLL - Kirstin Lachance; LAT - Laura Tabbakh; MLC - Maya Longpre-Croteau; SK - Sandra Kinsey; SMC - Sarah Chalmers; ZJR - Zoe Roberts.

Age Codes: HY - Hatch Year, AHY - After Hatch Year, ASY - After Second Year; TY - Third Year.

Sex Codes: M - Male, F - Female, U - Unknown.

Appendix 7: All Returns, Standard Banding, Fall 1996 – 2024, Mugaha Marsh

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Species	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alder Flycatcher		6	3	3	1	2	3	4	2	2	1	1			1
Alder/Least Flycatcher															
American Redstart	1	17	16	10	12	11	12	14	12	15	14	10	9	5	5
American Robin			2					1	1				3		1
Black-and-white Warbler															
Black-capped Chickadee	1		3	1	2	1		2	2		5	1	2	1	4
Clay-colored Sparrow															
Cedar Waxwing															
Common Yellowthroat		1	4	2		1		1	5	1	2	4	1		2
Dark-eyed Junco	2	4	4	2	4	2	5	2	2	7	2	2	1	1	1
Downy Woodpecker							1			1	2	2	2		
Dusky Flycatcher								1		3					
White-crowned Sparrow															
Hammond's Flycatcher														1	
Hairy Woodpecker													2		
Hermit Thrush							1								
Least Flycatcher	1			3	2	2	2		1		1	2	1	1	1
Least/Dusky Flycatcher	1														
Lincoln's Sparrow									1		1	1			
Magnolia Warbler									1	2	2				
MacGillivray's Warbler															
Northern Flicker				2	1						1		1		
Northern Waterthrush	2	12	10	17	3	2	2	6	11	9	11	14	6	6	2
Orange-crowned Warbler		1	2	3	2		1	2		2	1	1	2	3	4
Pine Siskin			2	1											
Purple Finch															
Red-breasted Nuthatch												1			
Red-breasted Sapsucker									1						
Ruby-crowned Kinglet			1	1						1	1			1	
Red-eyed Vireo				1			1	2	1	2					
Rusty Blackbird															
Sharp-shinned Hawk			1												
Song Sparrow	2	3	4	2	1	2		2	4	5	4	4	2	1	3
Solitary/Cassin's Vireo	1			1	1					2	3	1			
Swamp Sparrow															
Swainson's Thrush						1	4	5	2	3	3	2	8	5	2
Tennessee Warbler															
Warbling Vireo			3	1	1	1	1	2			2	1	3	1	1
Western Tanager								1	1			1	1	1	1
White-throated Sparrow															
Yellow-bellied Sapsucker													1		
Yellow Warbler	1	5	4	12	7	5	1	8	10	8	6	8	11	3	7
Yellow-rumped Warbler		2	5	2	1	2			3	1	2	1		1	1
Total	10	53	64	64	38	32	34	53	60	64	64	57	57	31	36

Appendix 7: All Returns, Fall, Standard Banding, 1996 – 2024, Mugaha Marsh

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Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2021	2022	2023	2024	Total
Alder Flycatcher	1			2	2	2	3	3	3	2	1	2		50
Alder/Least Flycatcher					1									1
American Redstart	2	9	4	4	4	9	8	6	5	6	10	4	6	240
American Robin									1					9
Black-and-white Warbler												1	2	1
Black-capped Chickadee		2	4	5				1	3		1	4	3	48
Clay-colored Sparrow			2		1									3
Cedar Waxwing					1					5				1
Common Yellowthroat	3	1	1	10	3	4	5	11	4	1	3	2	2	74
Dark-eyed Junco				2	2	1				1	2	2	2	53
Downy Woodpecker		1				1								10
Dusky Flycatcher					1	3			1			1		10
White-crowned Sparrow						1								1
Hammond's Flycatcher					1									2
Hairy Woodpecker														2
Hermit Thrush							1	1					1	3
Least Flycatcher	1	1			1	2	1						1	23
Least/Dusky Flycatcher														1
Lincoln's Sparrow		1	3	2	4		1					2		16
Magnolia Warbler	2	1		1		3			1			2	1	15
MacGillivray's Warbler												1		1
Northern Flicker														5
Northern Waterthrush		2	3	2		1	2	2		2	4	3		134
Orange-crowned Warbler	3	6	7	9	8	6	2	10	1	2	3	5		86
Pine Siskin														3
Purple Finch											3		1	3
Red-breasted Nuthatch														1
Red-breasted Sapsucker														1
Ruby-crowned Kinglet		2					1		1	1		1		11
Red-eyed Vireo				1								1		9
Rusty Blackbird			1											1
Sharp-shinned Hawk											1			2
Song Sparrow	4	5	4	8	7	4	8	3	2					84
Solitary/Cassin's Vireo						1		1						11
Swamp Sparrow								1						1
Swainson's Thrush	4	3	2	5	1	3	6	3	5	6	6	3		82
Tennessee Warbler					1			1						2
Warbling Vireo	3	2	1		5	4	1	1	4			3	1	42
Western Tanager							1					1		8
White-throated Sparrow	3		1	3	2	4	5	3	1	1	4	3		31
Yellow-bellied Sapsucker				1					1					3
Yellow Warbler	2	4	5	6	4	6	4	3	1	2	4	1		138
Yellow-rumped Warbler			2	2	4	4	2		1	1	1	2	1	41
Total	28	40	40	63	53	59	51	50	35	25	43	44	21	1269

Appendix 8. Owls Captured in Standard Banding, by Date, 2024, Mugaha Marsh

Species/Date	01-Sep	02-Sep	03-Sep	04-Sep	06-Sep	07-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep	16-Sep
Boreal Owl				3	1	1	4	1	1	1	2	1	
Northern Saw-whet Owl	2	8	4	1	3	3	3	15	7	1	5	6	2
Grand Total	2	8	4	4	4	4	7	16	8	2	7	7	2

Species/Date	17-Sep	18-Sep	19-Sep	20-Sep	22-Sep	23-Sep	24-Sep	25-Sep	27-Sep	28-Sep	29-Sep	Grand Total
Boreal Owl		1		2	1	1				2	1	23
Northern Saw-whet Owl	7	12	2	1	2	2	1	11	6	9	7	120
Grand Total	7	13	2	3	3	3	1	11	6	11	8	143

Appendix 9. Owls Captured in Standard Banding, by Net, 2024, Mugaha Marsh

Species/Net #	ON1	ON2	ON3	ON4X	ON5	OS1	OS2	OS3	OS4	OS4X	OS5	Grand Total
Boreal Owl						6	2	10	1	1	3	23
Northern Saw-whet Owl	20	15	15	3	7	13	12	13	11	3	8	120
Grand Total	20	15	15	3	7	19	14	23	12	4	11	143
NOTE: Boreal Owl calls were not played in the north nets.												