Field Protocol for Monitoring Bird Migration at McKellar Island Bird Observatory

(Latest revision March 2025)

by
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INTRODUCTION

McKellar Island Bird Observatory (MIBO - lat/long 48°22'42.10"N 089°13'36.21"W) was established in the spring of 2014 as a project of Save Our Songbirds, a registered charity (BN: 856371968RR0001). MIBO has ten-year, renewable lease on the site with its owner, Cenovus Energy.

MIBO is a provisional member of the Canadian Migration Monitoring Network (CMMN) and a participant in the CMMN's Trend Monitoring Program, aimed at documenting trends in populations of Canada's migratory birds. Migration monitoring methods at MIBO follow procedures recommended by the North American Migration Monitoring Council (Hussell and Ralph 1996, 2005). This protocol provides a description of field procedures at the McKellar Island site. These procedures must be followed by all personnel, current and future, if MIBO data are to continue to qualify for trend analysis.

Data are archived with Bird Studies Canada (BSC).

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OBJECTIVES

The main objectives of the migration monitoring program at MIBO are:

- To collect data suitable for trend analysis with the aim of documenting changes in populations of small landbirds that migrate through northwestern Ontario, as a contribution to the Trend Monitoring Program of the CMMN
- To collect data through banding on physical condition, age and sex of migrants, timing of migration, and other aspects of migration biology
- To provide volunteers with opportunities to learn new skills
- To engage in public outreach through demonstrations and on-site visits

LOCATION

McKellar Island Bird Observatory is located on 12 hectares of land on one of the islands, Mckellar Island, of the estuary of the Kaministiquia River, on a tributary, the McKellar River, close to where it empties into Lake Superior in Thunder Bay, Ontario. The observatory is accessed by road, 10 minutes from downtown Thunder Bay via east on Main Street to Island Drive, south to Baffin Street, east on Baffin St. for 1 km. The main trail into the observatory, is marked with a sign, on the south side of Baffin Street (Figure 1). The trail in is exactly 1 km from the turn off at Island Drive. Entry to MIBO should be from the Parking area on Baffin Street. The more western trail is dryer and convenient for egress but lies outside the MIBO study area. See Figure 1.

Figure 1. Site Map

Migration Monitoring Methods

1. Count Area

The Count Area is defined as the area within which the observer can identify birds when standing at the trailhead on Baffin St. or moving along the trail from the trailhead to the netting area (Figure 1), along the trails among nets, at the bird banding lab, and at the observation post on the river (Figure 2). Birds seen or heard from any of these locations must be documented, as described in section 5.

2. Count Period

Spring coverage starts on May 1 and ends on June 11 and fall coverage starts on August 1 and ends on October 31.

The daily Count Period starts upon entry to the Count Area from Baffin Street, 45 minutes before sunrise (15 min before nets are opened), and ends 6 hr and 45 min later, a half hour after nets are closed. See Appendix 1 for the daily schedule of the standard start and end times of the Count Period and each standard activity.

3. Trapping and Netting

a. Passerine Mist-nets

The standard mist net array of 17 nets arranged in a loop is shown in Figure 2, labelled 1 to 17. (See Table 1 for GPS coordinates of the centre of each net.) The nets are spaced relatively close together in a loop around the banding station. The net poles (3 m long sections of ¾ inch internal diameter electrical conduit) are placed on 0.6 m long pieces of 2.5 cm diameter rebar pounded 30 cm into the ground. The poles are further supported with tethers on both ends. The net poles and rebar are left in place when the station is closed. Net identification numbers are painted on each net pole. Clothes pins with the nets number are used to keep track of the nets each bird was captured in.

Mist net specifications are: 30 mm (1-1/4"), black mesh, polyester, 75 denier/2 ply thread, tethered, 12 m long and 4 pockets. All nets are set on the poles previously described. Heights and lengths of nets and heights of poles should be within ± 5% of the metric specification.

b. Hawk nets

Three, 100 mm mesh, 12 meter long, 2.6 m high, 5-panel, 210d/2ply black nylon thread, tethered hawk nets are set up at standard locations within the netting area as shown in Figure 3 (labelled H3 to H5). All nets are set on tethered, 15-foot-high poles (one inch diameter steel electrical conduit) placed on rebar pounded into the ground as with the mist-nets. The net poles and rebar are left in place when the station is closed. Net identification numbers are painted on each net pole.

c. Ground trap

One ground trap (25 mm x 12.5 mm welded mesh) is operated daily for 5 hours starting 30 minutes after sunrise. The ground trap is located 2 metres west of net 12 (Figure 3, Table 1). The ground trap is baited with a handful cracked corn and is moved to the side and flipped over at the end of each trapping session.

d. Bird Feeders

A bird feeder tray, measuring 60 cm by 60 cm, is located 1 m west of the west end of net 12 (Figure 3). It is stocked daily with 4 cups of black oil sunflower seeds and a handful of cracked corn. Seeds need to be replenished each morning because flying squirrels empty the feeder each night. The feeder needs to be raised to 4 m above the ground after each days' operation to keep it out of reach of bears and deer. The feeder is removed at the end of each season. A hummingbird feeder is attached to the rope suspending the feeder tray and is kept filled during spring and fall monitoring.

Figure 2. Net and trap locations

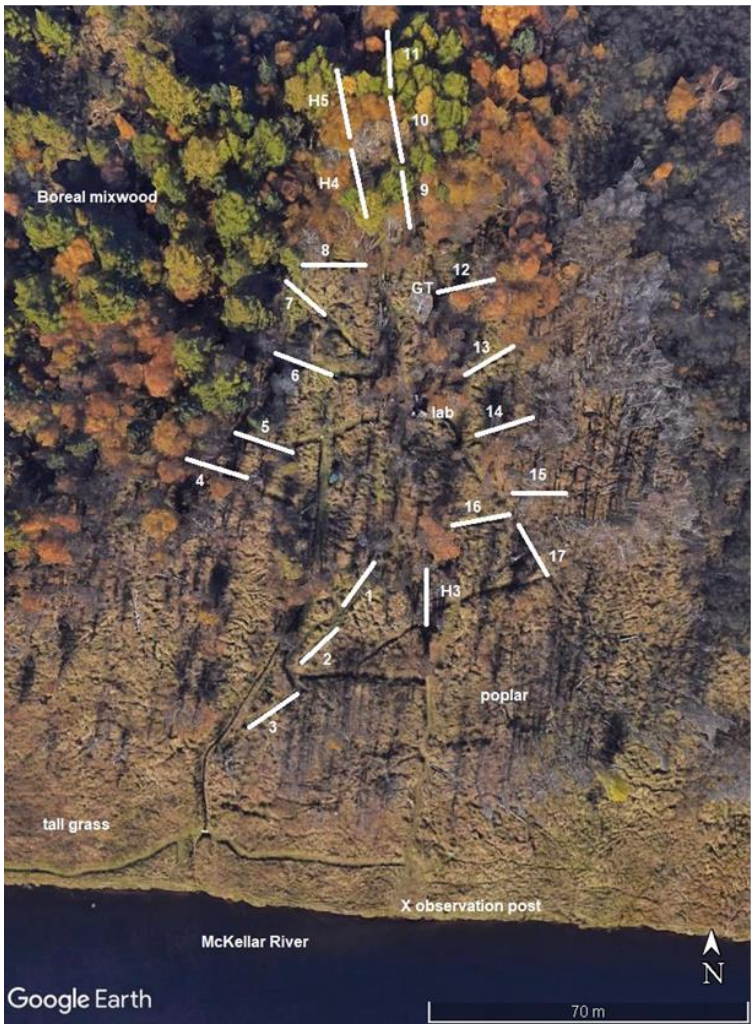

Figure 3. Bird feeders and ground trap at the west end of net 12 (note clothes pins on the tethers)

Table 1. Coordinates for the centre of each trap

net 1	48°22'40.87"N	89°13'36.88"W	net 13	48°22'42.44"N	89°13'35.55"W
net 2	48°22'40.49"N	89°13'37.28"W	net 14	48°22'41.99"N	89°13'35.34"W
net 3	48°22'39.99"N	89°13'37.82"W	net 15	48°22'41.56"N	89°13'35.03"W
net 4	48°22'41.70"N	89°13'38.45"W	net 16	48°22'41.35"N	89°13'35.57"W
net 5	48°22'41.89"N	89°13'37.89"W	net 17	48°22'41.05"N	89°13'34.99"W
net 6	48°22'42.44"N	89°13'37.54"W	H3	48°22'40.72"N	89°13'36.27"W
net 7	48°22'42.85"N	89°13'37.30"W	H4	48°22'43.78"N	89°13'37.13"W
net 8	48°22'43.17"N	89°13'37.09"W	H5	48°22'44.08"N	89°13'37.24"W
net 9	48°22'43.37"N	89°13'36.49"W	GT	48°22'42.80"N	89°13'36.36"W
net 10	48°22'43.80"N	89°13'36.54"W	lab	48°22'42.15"N	89°13'36.24"W
net 11	48°22'44.18"N	89°13'37.06"W	observation post	48°22'38.59"N	89°13'36.47"W
net 12	48°22'42.98"N	89°13'36.02"W	outhouse	48°22'41.59"N	89°13'37.12"W
bird feeder	48°22'42.85"N	89°13'36.32"W	trailhead on Baffin St	48°22'51.16"N	89°13'41.18"W

4. Banding operations

One licensed bander, designated as the bander-in-charge (BIC), must be present for any capture or banding to take place. The BIC, generally the most experienced member at the station,

is responsible for overseeing all aspects of operations including trapping, extracting, banding and data recording in accordance with this protocol.

We strive to have at least 2 extractors present every day, including the bander. In the spring, the numbers of birds captured are low enough on most days that the station can be operated by just one bander, provided he/she has extensive experience extracting and banding large numbers of birds alone. The last 2 weeks of October are also slow enough for one person to safely handle extracting and banding. Solo operation requires that nets continue to be checked at least every 30 minutes, and all captured birds can be processed and released in less than an hour. See section 4 for actions to be taken if these conditions cannot be met.

The standard Banding Period extends for 6 hours. Passerine mist-nets are opened 30 minutes before sunrise. Hawk nets are opened later, 30 min after sunrise, and are closed at the same time as the other nets, 5.5 hours after sunrise (see Appendix 1).

Nets must be opened and closed in the same order each day, starting with net 4 and proceeding clockwise & sequentially through nets 5 through 17 and finishing with nets 3, 2, & 1 in that order. Nets are checked every half hour in the same order. Nets must be checked more frequently if inclement weather threatens or there are large numbers of birds present. (See below for procedures for dealing with too many birds.) If more than one extractor is present, the second extractor will check the nets in the opposite direction. Extractors must not go back to the banding lab until they have met up with the other extractor(s).

Nets are checked for captured birds at 30-minute intervals. Nets are checked more frequently depending on weather conditions, extraction experience or number of people at the station, capture numbers, predators, or visitors. If it is cold, breezy, hot, or drizzling, nets should be checked more frequently. The Bander-in-Charge organizes net runs or delegates this responsibility to another staff member or intern. New volunteers are given a map of the station so they can learn net locations quickly. Each net should be checked along its full length, including corners, and the bottom pocket should be checked thoroughly by gently lifting the bottom panel. The nets should be checked in the same order each time to ensure that birds are not hanging longer than the decided net round time. Do not create short-cut trails between nets; this will help minimize our impact at the study site. Upon completion of checking assigned nets, volunteers/staff are to meet up with the other net checkers and help out if necessary.

Adverse weather conditions can affect capture rates and cause captured birds to become stressed. The Bander-in-Charge decides whether banding should be cancelled, the net opening time delayed, or the nets closed because of adverse weather. Nets are not operated under the following conditions: heavy or constant rain, snow, intense wind, and excessively hot or cold weather. If weather becomes unfavorable after the nets are opened, net runs should be conducted more frequently, and if the poor conditions continue the nets may need to be closed. When water (or snow) begins to bead (accumulate) on the nets or bird feathers become wet, the nets must be wind speeds are Code 4 Beaufort scale or higher, nets may need to be closed, particularly if the wind causes the nets to become entangled in nearby trees and shrubs. Nets must be re-opened if favorable conditions return. You do not need to close all nets; only those affected (e.g., by high winds). Occasionally in the fall, nets will freeze shut during the night after being soaked by rain. If attempts to open the nets are unsuccessful or are resulting in holes being ripped in the nets, leave the nets closed and wait for the weather to warm up. The nets should be opened as soon as possible, dried out, and re-furled for the next day of operation.

Immediately close a net or nets if a predator, such as a deer, weasel, squirrel, fox, chipmunk, skunk, or racoon is posing a threat to the health and safety of the birds. Even if you are forced to close a productive net, the safety of the birds always comes first.
Birds are placed in cloth bags with drawstrings after they are extracted from traps. Numbered clothes pins, stored on net tethers, are attached to each bag or set of bags from each net. Net numbers must be recorded along with the banding data (Appendix 3). Only one bird is placed in each bag. After checking nets, the full bags are returned to the banding lab and hung on one of the designated hooks on the wall. Bags that have been used are washed daily. No bird should be kept for more than one hour.

Re-trapped birds are fully processed at first capture each day (Appendix 4). Subsequent captures of the same individual the same day are documented only by adding a circled 'R' in the in the notes section of the recapture data sheet.

a. What to do if there are too many birds

If a large backlog of birds occurs the first step to take is to reduce the amount of data collected to speed up processing. Species and band number to be recorded as bare minimum; age & sex (if easy to eyeball), wing and weight as next in priority; fat, difficult age/sex ID etc. are lowest priority. Any bird held more than an hour must be released un-banded (after recording number of each species released). If a backlog is imminent the baited trap should be closed first, then the hawk nets, then the passerine nets. When the backlog has been dealt with re-open nets, nets in each of those groupings should be reopened together, in reverse order (passerine nets, then hawk nets, then ground trap).

If birds are released un-banded due to a backlog or otherwise, this should be noted in the Daily Log and the number of released birds of each species included in the Other Observations column of the Daily Log (Appendix 2). Only the standard nets and traps should be operated during the standard period.

b. Non-standard banding

Additional passerine netting, hawk netting or trapping after the normal closure time may be done at the discretion of the bander-in-charge. New bandings and recaptures outside of the standard Banding Period are denoted as ADB (Additional Banding) or ADR (Additional Retrap) on the banding data sheets or retrap sheets, respectively, and entered into the Add Band and Add Rec columns, respectively, of the Daily Log sheet (Appendix 2). Any additional netting or trapping effort should be recorded in the 'Additional Banding' section of the Daily Log sheet, even if no birds are captured.

5. Other Observations

Incidental observations of birds within the Count Area (section 1) should be recorded on the daily field checklist throughout the day, as detailed below. At a minimum, note the presence/absence of individual species on a daily basis. These data may be important for determining relative abundance and species richness. Incidental birds to be counted include those seen or heard around the banding station, on nets runs, on the way to or from the trailhead on Baffin St., (the north boundary of the count area) or on the river (the south boundary of the count

area). Record the number detected as closely as possible, but do not extrapolate. Everyone at the banding station that day should contribute to the incidental list, regardless of skill level.

a. Within the standard Count Period

Any birds seen or heard during the Count Period by observers who are within the Count Area, regardless of whether the birds themselves are within the Count Area, are noted down as 'Other Observations,' including numbers of any unidentified *Empidonax* flycatchers, sparrows, thrushes, etc.

At the end of the day these will be these will be scrutinized to remove probable duplicates and Known Stopovers (Section 6) before being incorporated into Estimated Totals (Section 7). All birds on or over the river, whether seen by naked or aided eye, are countable if the observer is at the designated river observation post. Size of flocks too large for accurate counts should be estimated to the best of the observer's ability, using a specific number rather than a range (e.g., 750 instead of 500-1000). The river is covered casually, when someone has the time or inclination, but at least one visit to the river is made each day. A scope may be used here. All unusual or rare sightings must be shared with all volunteers present at the station.

b. Outside standard Count Period.

The same rules apply as above, except that observations made outside the standard Count Period are recorded as 'Additional Observations,' and are not included in ETs (see section 7).

6. Known Stopovers (KS)

At MIBO, several of the target species for monitoring breed locally. On occasion, genuine migrants also stop over for one or more days. Because trend analysis procedures assume that all daily counts represent newly arrived migrants, we try to flag any birds recorded during the standard Count Period that are "Known Stopovers" (KS). Birds that meet the following criteria should be entered in the appropriate space in the KS Column. Do not guess. If there is no **clear evidence** that the bird was present on a previous day in the current season, it should be included in the Oth Obs column--not in the KS column.

Known stopovers are:

1. Banding recaptures (birds already banded or previously recaptured once in the same migration season).
2. Birds observed wearing bands but not actually recaptured on that day, as long as no other individuals of that species were banded or recaptured earlier on the same day.
3. Individuals recognizable, by plumage features or unusual or consistent behaviour (including sick and injured birds), as having been present on a previous day.
4. Rarities occurring so infrequently (either as individuals or as a flock), that new individuals are highly unlikely to appear on subsequent days. In such cases, assume that these are stopover individuals unless there is compelling evidence that they are new.
5. Individuals of species known to breed in the area that show territorial behaviour (including individuals singing from the same or nearly the same location each day), are associated

with a known nest site, are seen with a brood, are still completely in juvenal plumage and/or have growing remiges and rectrices or are adults in heavy flight feather moult (at least two primaries or secondaries missing or growing-in symmetrically).

6. In fall, adults or young (including young in juvenal plumage) of known breeding species found repeatedly in the same general location. This is most likely to occur prior to the normal migration period for the species, but it may continue into the migration period.
7. Special problems occur with Bald Eagles, Merlins and Peregrine Falcons that are seen regularly outside peak migration periods and are probably breeding nearby. Outside peak migration periods (i.e., between 15 April and 15 September) birds of these species that do not appear to be migrating should be recorded as KS. **During the migration periods they should be recorded as KS only if there is convincing evidence that they are local birds.** Such evidence might include daily or frequent observations of birds flying away from MIBO and returning inland (especially if this behavior has continued from before the migration period) and absence or little migration of other raptors on the same day. Peregrine Falcons identified as the *tundris* race are migrants that will rarely qualify as KS. Merlins and Peregrines flying high and directly in the appropriate migratory direction on days when other raptors are migrating should be treated as migrants and should not be recorded as KS.

7. Estimated Total (ET)

The Estimated Total (ET) is the best estimate of the number of newly-arrived individuals of each species detected during the standard Count Period. The ET has two components: newly-captured birds, and Other Observations, exclusive of Known Stopovers and probable duplicates.

The number of newly captured birds includes all new bandings (those listed in the Banding column in the Daily Log, plus MIBO-banded migratory species being recaptured for the first time since being banded in a previous migration season). The number of birds released un-banded, any mortalities, and foreign recaptures are included as 'Other Observations.'

All participants in the days' activities should contribute to decisions on which 'Other Observations' should be excluded from ETs because they are KS, or because they quite likely are duplicates of birds seen by others or already recorded in the 'Banding' column.

Known Stopovers, and any birds banded or observed outside the standard period should not be included in ET's.

If large numbers of unidentified thrushes, warblers etc. are recorded in the "Other Obs" column, it is sometimes justifiable to assign some of them to species in the ETs, approximately in proportion to the number of identified individuals observed or banded. However, this should only be done if the evidence is very good that the assignment is reasonable. For example, if a high proportion of identified individuals in a group (such as warblers or thrushes) consisted of only one or two species, similar proportions of the unknowns could be assigned to those species. However, no assumption should be made that less commonly identified species were also proportionately represented among the unknowns.

8. Record keeping

All daily field records (Appendices 2-5) must be completed daily.

In 1998, BSC in conjunction with the Canadian Wildlife Service released a computer program, the Canadian Migration Monitoring Network Daily Estimated Totals Management Program, which was designed specifically to enable Canadian Migration Monitoring Network stations to easily computerize the migration monitoring data they were collecting. The program was revised in 2013 and is used to record all the daily effort and observation data collected at MIBO. The order of the birds listed in this program and our daily log follow Fifty-fifth supplement to the American Ornithologists' Union Checklist of North American Birds with the following exception: falcons are listed with the other raptors. The bander-in-charge will be responsible for submitting all data to CMMN and the Bird Banding Office. Field data is proofed for gross errors as it is entered into a computer.

This task is ideally completed daily. The data is later printed and proofed line-by-line a second time against the original data, typically at the end of the season. Spring data should be submitted to CMMN & the BBO by late-July and fall data by mid-December, along with habitat monitoring information collected in that year, and any updates in the operations protocol (see section 12).

Table 2. Observer Codes for Daily Log Sheet (Appendix 2).

1	Can identify at least 95% of bird species encountered without need to consult references
2	Can identify over 50% of bird species encountered
3	Can identify less than 50% of bird species encountered

9. Training

All new personnel must be made familiar with the protocol. Training and supervision of new personnel should be done solely by the BIC, or by a qualified person designated by him/her. Supplementary material for trainees on opening/closing nets, extracting birds from nets and taking measurements are made available to new personnel.

10. Greeting visitors

Because MIBO is located close to the city of Thunder Bay, we receive many visitors at the migration station. These include both organized groups and independent visitors. Large groups should have arranged their tour through the Program Coordinator. There are often times when the banding staff need some help in giving demonstrations, ask the volunteer staff to help them out.

Protocol calls for the bander-in-charge to do all banding demonstrations. Volunteers may be asked to help or band during demonstrations, depending on their abilities. Only do demonstrations if you feel comfortable—never feel pressured to do them as an alternate arrangement can always be worked out. Formal banding demonstrations should address the key points listed below.

Drop-in visitors should be given the following information:

- Your name and your position at MIBO
- Information about MIBO (mention that we are a non-profit organization and that donations are always welcomed and appreciated—show them the guest book & photo albums.

• An explanation of our banding program (why we band birds and how we collect data, emphasize that birds are released unharmed)
• The schedule for our next banding demonstration (net run)

Visitors are invited to observe our banding. If a large, unexpected group arrives, you have two options: provide an informal demo or say that you don't have time right then. Sometimes, volunteers at the banding station take over at this point and explain the mist-netting and banding procedures. Bird safety is first. Use discretion when allowing/inviting visitors to accompany you on a net run. Do not take them to a net with recent predator problems. Warn them that nets are fragile, and do not let them to touch or attempt to remove a bird in a net or other trap.

Make sure that visitors sign our guest book. If they don't sign, be sure to include them in the visitor count recorded on the Daily Log. It is important that we document to our funders how many people visit our station. Thank them for stopping by and invite them to visit again.

Try to be courteous at all times—even if you are stressed and not exactly wanting visitors at the moment. Give visitors directions to the outhouse. Invite them to explore along the river.

11. Habitat Maintenance

All paths should be kept clear of fallen logs and other obstacles. Net lanes are maintained at about 1.7 m wide (3 passes with a 22-inch blade mower). Net lanes require annual clearing of fallen debris and trimming of vegetation that might foul nets. Trails are kept at 1.3 m wide (two passes with a 22-inch blade mower).

Vegetation within the netting area, consisting of a mix of long grass, shrub thickets and scattered small trees, requires regular trimming to maintain habitat structure of the site in as consistent a state as possible. Most sapling trees within the net area are topped to bring/maintain them at less than 4 metres height. Healthy saplings are removed if they start to fill in open spaces. Black Spruce seedling have been planted in the netting area. These will be trimmed annually to maintain a height of 3 m. Grass is to be kept short around the banding lab, picnic tables, beneath the bird feeder and nets, and on all designated trails or paths to reduce encounters with ticks. Refer to photographs (section 12) as a reminder of what the site should look like.

12. Habitat Monitoring

Digital photos of each net location were taken on Aug. 6, 2015, on July 11, 2017, on July 4, 2019, and on May 27, 2020. Starting in 2021 these photos will be taken annually in late May. Photos of each net lane should be taken in the morning, on overcast days, from about 2 metres from the east end of each net and looking down the net. Panorama photos from the roof of the banding lab were taken in 2020 and will be included in all future photo sets.

The digital image files (*.jpg) are named with the station name (MIBO), year, net number, date taken, and direction in which the photographer was facing. For example, a photo of net lane 1 taken in 2020 would be named '2020 net 1 May 1 facing SW.jpg'. Copies of the digital images should be placed in a folder named 'MIBO photos [Year],' to be submitted to Birds Canada along with annual submission of bird counts.

A standardized habitat assessment was completed in 2021 and should be repeated every five years thereafter, using the protocol developed by the MAPS (Monitoring Avian Production and Survivorship). As with photos, the habitat assessment files should be named with station name (MIBO), the year, habitat patch number, and date taken, and placed in a folder named

'MIBO habitat assessment [Year]'. The folder should be submitted to Birds Canada along with data submission for that year.

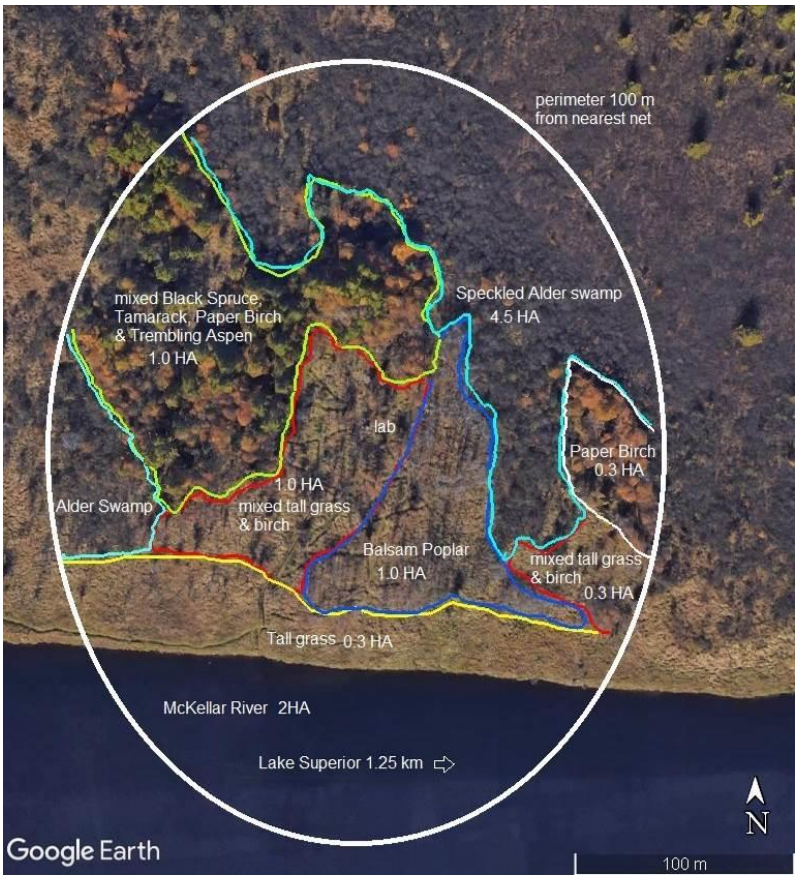

Figure 4. Vegetation patches for MAPS habitat assessment.

13. Changes or major interruptions in standardized data collection

Important interruptions to operations should be recorded here, such as flooding or lack of personnel that reduced effort for periods of a week or more. Also to be recorded are any permanent changes to data collection methods. Although operational changes are sometimes necessary (as when a netting location is destroyed), changes in data collection are not to be made unless absolutely necessary and must first be discussed with CMMN advisors.

If any standardized operational change or interruption occurs, enter details into the table below, underneath any previous entries. Refer to parts of the text that were changed (e.g., section number, altered locations on a map, new GPS points). Revise the 'latest version' date on page 1 of this protocol. If changes have been made to the protocol other than adding to the table below, submit a copy of the entire revised protocol to Birds Canada along with year-end data submission; otherwise, send only a copy of the table.

Date	Description of change and justification
2014 &2016	About 200 Black Spruce and 50 White Spruce seedlings planted in netting area.
2024	25% of surviving planted trees topped at 3 m; 50% more projected for topping in 2025. Decline in deer has also led to substantial regeneration of shrubbery. Data collected prior 2024 were probably affected by habitat change (especially species composition and abundance), so should be interpreted with care.

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Appendix 1

McKellar Island Bird Observatory Daily Operating Schedule

DATE	START COUNT	OPEN NETS	SUNRISE	CLOSE NETS	END COUNT
May					
1	5:55	6:10	6:35	12:10	12:40
2	5:45	6:00	6:30	12:00	12:30
3	5:45	6:00	6:30	12:00	12:30
4	5:45	6:00	6:30	12:00	12:30
5	5:45	6:00	6:25	12:00	12:30
6	5:45	6:00	6:25	12:00	12:30
7	5:45	6:00	6:25	12:00	12:30
8	5:45	6:00	6:25	12:00	12:30
9	5:35	5:50	6:20	11:50	12:20
10	5:35	5:50	6:20	11:50	12:20
11	5:35	5:50	6:20	11:50	12:20
12	5:35	5:50	6:15	11:50	12:20
13	5:35	5:50	6:15	11:50	12:20
14	5:35	5:50	6:15	11:50	12:20
15	5:35	5:50	6:15	11:50	12:20
16	5:25	5:40	6:10	11:40	12:10
17	5:25	5:40	6:10	11:40	12:10
18	5:25	5:40	6:10	11:40	12:10
19	5:25	5:40	6:10	11:40	12:10
20	5:25	5:40	6:05	11:40	12:10
21	5:25	5:40	6:05	11:40	12:10
22	5:25	5:40	6:05	11:40	12:10
23	5:25	5:40	6:05	11:40	12:10
24	5:15	5:30	6:00	11:30	12:00
25	5:15	5:30	6:00	11:30	12:00
26	5:15	5:30	6:00	11:30	12:00
27	5:15	5:30	6:00	11:30	12:00
28	5:15	5:30	6:00	11:30	12:00
29	5:15	5:30	6:00	11:30	12:00
30	5:15	5:30	5:55	11:30	12:00
31	5:15	5:30	5:55	11:30	12:00
June					
1	5:15	5:30	5:55	11:30	12:00
2	5:15	5:30	5:55	11:30	12:00
3	5:15	5:30	5:55	11:30	12:00
4	5:15	5:30	5:55	11:30	12:00
5	5:15	5:30	5:55	11:30	12:00
6	5:15	5:30	5:55	11:30	12:00
7	5:05	5:20	5:50	11:20	11:50
8	5:05	5:20	5:50	11:20	11:50
9	5:05	5:20	5:50	11:20	11:50

10	5:05	5:20	5:50	11:20	11:50
11	5:05	5:20	5:50	11:20	11:50

DATE	START COUNT	OPEN NETS	SUN RISE	CLOSE NETS	END COUNT
August					
1	5:45	6:00	6:33	12:00	12:30
2	5:45	6:00	6:34	12:00	12:30
3	5:55	6:10	6:35	12:10	12:40
4	5:55	6:10	6:37	12:10	12:40
5	5:55	6:10	6:38	12:10	12:40
6	5:55	6:10	6:39	12:10	12:40
7	5:55	6:10	6:41	12:10	12:40
8	5:55	6:10	6:42	12:10	12:40
9	5:55	6:10	6:43	12:10	12:40
10	6:05	6:20	6:45	12:20	12:50
11	6:05	6:20	6:46	12:20	12:50
12	6:05	6:20	6:48	12:20	12:50
13	6:05	6:20	6:49	12:20	12:50
14	6:05	6:20	6:50	12:20	12:50
15	6:05	6:20	6:52	12:20	12:50
16	6:05	6:20	6:53	12:20	12:50
17	6:05	6:20	6:54	12:20	12:50
18	6:15	6:30	6:56	12:30	13:00
19	6:15	6:30	6:57	12:30	13:00
20	6:15	6:30	6:59	12:30	13:00
21	6:15	6:30	7:00	12:30	13:00
22	6:15	6:30	7:01	12:30	13:00
23	6:15	6:30	7:03	12:30	13:00
24	6:15	6:30	7:04	12:30	13:00
25	6:25	6:40	7:06	12:40	13:10
26	6:25	6:40	7:07	12:40	13:10
27	6:25	6:40	7:08	12:40	13:10
28	6:25	6:40	7:10	12:40	13:10
29	6:25	6:40	7:11	12:40	13:10
30	6:25	6:40	7:12	12:40	13:10
31	6:25	6:40	7:14	12:40	13:10
September					
1	6:35	6:50	7:15	12:50	13:20
2	6:35	6:50	7:17	12:50	13:20
3	6:35	6:50	7:18	12:50	13:20
4	6:35	6:50	7:19	12:50	13:20
5	6:35	6:50	7:21	12:50	13:20
6	6:35	6:50	7:22	12:50	13:20
7	6:35	6:50	7:24	12:50	13:20
8	6:45	7:00	7:25	13:00	13:30
9	6:45	7:00	7:26	13:00	13:30
10	6:45	7:00	7:28	13:00	13:30
11	6:45	7:00	7:29	13:00	13:30
12	6:45	7:00	7:30	13:00	13:30

13	6:45	7:00	7:32	13:00	13:30
14	6:45	7:00	7:33	13:00	13:30
15	6:55	7:10	7:35	13:10	13:40
16	6:55	7:10	7:36	13:10	13:40
17	6:55	7:10	7:37	13:10	13:40
18	6:55	7:10	7:39	13:10	13:40
19	6:55	7:10	7:40	13:10	13:40
20	6:55	7:10	7:42	13:10	13:40
21	6:55	7:10	7:43	13:10	13:40
22	6:55	7:10	7:44	13:10	13:40
23	7:05	7:20	7:46	13:20	13:50
24	7:05	7:20	7:47	13:20	13:50
25	7:05	7:20	7:49	13:20	13:50
26	7:05	7:20	7:50	13:20	13:50
27	7:05	7:20	7:51	13:20	13:50
28	7:05	7:20	7:53	13:20	13:50
29	7:05	7:20	7:54	13:20	13:50
30	7:15	7:30	7:56	13:30	14:00
October					
1	7:15	7:30	7:57	13:30	14:00
2	7:15	7:30	7:59	13:30	14:00
3	7:15	7:30	8:00	13:30	14:00
4	7:15	7:30	8:01	13:30	14:00
5	7:15	7:30	8:03	13:30	14:00
6	7:15	7:30	8:04	13:30	14:00
7	7:25	7:40	8:06	13:40	14:10
8	7:25	7:40	8:07	13:40	14:10
9	7:25	7:40	8:09	13:40	14:10
10	7:25	7:40	8:10	13:40	14:10
11	7:25	7:40	8:12	13:40	14:10
12	7:25	7:40	8:13	13:40	14:10
13	7:35	7:50	8:15	13:50	14:20
14	7:35	7:50	8:16	13:50	14:20
15	7:35	7:50	8:18	13:50	14:20
16	7:35	7:50	8:19	13:50	14:20
17	7:35	7:50	8:21	13:50	14:20
18	7:35	7:50	8:22	13:50	14:20
19	7:35	7:50	8:24	13:50	14:20
20	7:45	8:00	8:25	14:00	14:30
21	7:45	8:00	8:27	14:00	14:30
22	7:45	8:00	8:28	14:00	14:30
23	7:45	8:00	8:30	14:00	14:30
24	7:45	8:00	8:31	14:00	14:30
25	7:45	8:00	8:33	14:00	14:30
26	7:45	8:00	8:34	14:00	14:30
27	7:55	8:10	8:36	14:10	14:40
28	7:55	8:10	8:37	14:10	14:40
29	7:55	8:10	8:39	14:10	14:40
30	7:55	8:10	8:41	14:10	14:40
31	7:55	8:10	8:42	14:10	14:40

Appendix 2 Daily log form – to be completed daily. See Table 2 for observer codes.

Page 1 of 4

McKellar Island Bird Observatory Daily Log

Date : 18 / May / 2020

PERSONNEL	Initials	Field Hours	Code
BIC = John Woodcock	JMW	7	1
Maureen Woodcock	MEW	7	1
Josh Levac	JLL	6	1

COVERAGE DURING STANDARD COUNT PERIOD					
Activity	Start	End	Hours	Daily effort in the standard count period	
Mist nets	540	1140	6	# of observers	3
Hawk nets	640	1140	5	Mist-net hours	98
Ground trap	640	1140	5	Hawk net hours	13
Census	no			Ground trap hours	5

CATCHING EFFORT IN THE STANDARD COUNT PERIOD			Add effort
Net	Net hours	Notes	Net hours
Mist-net 1			
Mist-net 2	4	closed early due to wind	
Mist-net 3	4	closed early due to wind	
Mist-net 4			
Mist-net 5			
Mist-net 6			
Mist-net 7			
Mist-net 8			
Mist-net 9			
Mist-net 10			
Mist-net 11			
Mist-net 12			
Mist-net 13			
Mist-net 14			
Mist-net 15			
Mist-net 16			
Mist-net 17			
Hawk net 3			
Hawk net 4			
Hawk net 5			

ADDITIONAL EFFORT	no
Additional net-hours	
MN	
HN	
GT	

OTHER BANDING/CAPTURE EFFORT

Notes: 3 visitors

Appendix 2 Continued

Page 2 of 4

McKellar Island Bird Observatory Daily Log

Date : 18 / May/ 2020

Species	Banded	Recaps	Oth Obs	KS	ET	Add Band	Add Rec	Add Obs
Canada Goose			8		8			
Mallard			13		13			
Blue-winged Teal								
Northern Shoveler								
Ring-necked Duck								
Greater Scaup								
Bufflehead			3		3			
Common Goldeneye			2		2			
Hooded Merganser								
Common Merganser								
Red-breasted Merganser								
Ruffed Grouse								
Common Loon								
Pied-billed Grebe								
Double-crested Cormorant								
American White Pelican								
Great Blue Heron								
Turkey Vulture								
Osprey								
Bald Eagle								
Northern Harrier								
Sharp-shinned Hawk								
Cooper's Hawk								
Broad-winged Hawk								
Red-tailed Hawk								
American Kestrel								
Merlin								
Peregrine Falcon						*observed after the count period*		
Sandhill Crane								
Killdeer								
Spotted Sandpiper								
Wilson's Snipe								
American Woodcock								
Long-eared Owl								1
Northern Saw-whet Owl	*banded yesterday hence known stopover*							
Common Nighthawk								
Ruby-throated Hummingbird								
Belted Kingfisher			1		1			
Yellow-bellied Sapsucker								
Downy Woodpecker	1	1	3	1	4			
Hairy Woodpecker								
American Three-toed Woodpecker								
Yellow-shafted Flicker								
Pileated Woodpecker			2	2	0			
Olive-sided Flycatcher								
Unidentified Empidonax								
Yellow-bellied Flycatcher								
Alder Flycatcher								
Traill's Flycatcher (Willow or Alder)								
Least Flycatcher		*nesting nearby hence known stopover*						
Eastern Phoebe								

Appendix 2 Continued

Page 3 of 4

McKellar Island Bird Observatory Daily Log

Date : 18 / May/ 2020

Species	Banded	Recaps	Oth Obs	KS	ET	Add Band	Add Rec	Add Obs
Eastern Kingbird	*one of a flock of 4 observed earlier*							
Blue-headed Vireo	*hence ET 4 not 5*							
Philadelphia Vireo								
Red-eyed Vireo								
Gray Jay								
Blue Jay	1		4		4			
American Crow			3		3			
Common Raven								
Tree Swallow			50	50		*nesting birds*		
Barn Swallow						*hence no ET*		
Black-capped Chickadee	19	2	10	1	30			
Red-breasted Nuthatch								
Brown Creeper								
Winter Wren								
Golden-crowned Kinglet								
Ruby-crowned Kinglet	*one of these birds was banded in 2018 and has not been*							
Eastern Bluebird	*encountered previously this season hence only one KS*							
Veery								
Gray-cheeked Thrush								
Swainson's Thrush								
Hermit Thrush		1		1				
American Robin								
Northern Mockingbird								
Cedar Waxwing								
Ovenbird								
Northern Waterthrush	*banded yesterday hence KS and not included in ET*							
Black-and-white Warbler								
Tennessee Warbler								
Orange-crowned Warbler								
Nashville Warbler								
Connecticut Warbler								
Mourning Warbler								
Common Yellowthroat								
American Redstart								
Cape May Warbler								
Northern Parula								
Black-throated Green Warbler								
Magnolia Warbler								
Bay-breasted Warbler	*no evidence to suggest that these are the same birds hence ET 4*							
Blackburnian Warbler								
Yellow Warbler								
Chestnut-sided Warbler								
Blackpoll Warbler								
Western Palm Warbler								
Myrtle Warbler	2		2		4			
Canada Warbler								
Wilson's Warbler								
American Tree Sparrow								
Chipping Sparrow								
Clay-colored Sparrow								
Savannah Sparrow	1				1			

Appendix 2 Continued

Page 4 of 4

McKellar Island Bird Observatory Daily Log

Date : 18 / May/ 2020

Species	Banded	Recaps	Oth Obs	KS	ET	Add Band	Add Rec	Add Obs
Le Conte's Sparrow								
Fox Sparrow								
Song Sparrow			2		2			
Lincoln's Sparrow								
Swamp Sparrow	3				3			
White-throated Sparrow	5		10		13			
White-crowned Sparrow (Eastern)			⇧		⇧			
White-crowned Sparrow (Gambell's)								
Slate-colored Junco			⇩		⇩			
Oregon Junco	*2 of these birds were likely banded today hence ET 13 not 15*							
Rose-breasted Grosbeak								
Red-winged Blackbird			2		2			
Rusty Blackbird								
Common Grackle								
Brown-headed Cowbird								
Purple Finch	1		4		5			
Pine Siskin	1	1	3	1	4			
American Goldfinch	2	2	6	1	9			

UNUSUAL SPECIES	Banded	Recaps	Oth Obs	KS	ET	Add Band	Add Rec	Add Obs
Red-bellied Woodpecker			1		1			

DAILY TOTALS	Banded	Recaps
Total # of individuals	35	8
Total # of Species	10	5

ET	ADB	ADR
20		

Other	Census	Other obs	Total	Add obs	Total
High-flying Warbler spp.					

Daily Banding Total	35

Season-to-date Banding Total	652

Data computerized	
Data proofed	

Appendix 3 – Field banding data sheet

A project of **Save Our Songbirds**
In collaboration with **Husky Energy**
Phone (807)-709-6870
Email mckellar@hotmail.ca

McKellar Island Bird Observatory - Banding Sheet

Bander ____________________ **Initials** ________

Band Size [ ]

First Band Number on this page:

Prefix	-	Suffix	Permit No.	Year
	-		1 0 6 1 0	2 0

Band Last 2 Digits	Species	Sp. Code	FAT	Wing	SKULL	AGE	How Aged	SEX	How Sexed	Weight	Date Mo.	Date Day	Bander Initials	Time Trapped	TRAP	A N	D S	B B	Notes:
										.				0					
										.				0					
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Last Band Number:

Prefix	-	Suffix
	-	

Proofed (Initials) [ ] Entered (Initials) [ ]

Age	
0 Unknown	5 second year
1 After hatch year	6 After second year
2 Hatch year	7 Third year
4 Local (nestling)	8 After third year

Sex
0 Unknown
4 Male
5 Female

How Aged and Sexed	B Brood patch	C Cloacal protuberance
1 adult plumage	J retained juvenal plum	T Tail shape and wear
2 juvenal plumage	L molt limit present	M Multiple age remiges
3 eye colour	S Skull	W Wing cord
F Feather wear	P Primary covert shape and/or shape/wear	

`Appendix 4 Field recapture data sheet

A project of Save Our Songbirds
In collaboration with Husky Energy
Phone (807)-709-6870
Email mckellar@hotmail.ca

McKellar Island Bird Observatory - Recapture Sheet

RECAPTURES

Permit No.	Year
1 0 6 1 0	2 0

Bander ______________________ Initials ________

whole band number	Species	Sp. Code	FAT	Wing	SKULL	AGE	How Aged	SEX	How Sexed	Weight	Date Mo.	Date Day	Bander Initials	Time Trapped	TRAP	A N	D S	B B	Notes:
										.				0					
										.				0					
										.				0					
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Proofed Initials ___ Entered Initials ___

Age	
0 Unknown	5 second year
1 After hatch year	6 After second year
2 Hatch year	7 Third year
4 Local (nestling)	8 After third year

Sex
0 Unknown
4 Male
5 Female

How Aged and Sexed			
		B Brood patch	**C** Cloacal protuberance
1 adult plumage	**J** retained juvenal plumage		**T** Tail shape and wear
2 juvenal plumage	**L** molt limit present		**M** Multiple ages of remiges
3 eye colour	**S** Skulling		**W** Wing chord
F Feather wear	**P** Primary covert shape and/or shape/wear		

Appendix 5 Daily observations field sheet for recording ‘Other Observations’

McKellar Island Bird Observatory Daily Observations Date:_____202

Observers:

Canada Goose	Black-capped Chickadee
American Black Duck	Red-breasted Nuthatch
Mallard	Brown Creeper
Blue-winged Teal	Winter Wren
Northern Pintail	Golden-crowned Kinglet
Am. Green-winged Teal	Ruby-crowned Kinglet
Lesser Scaup	Eastern Bluebird
White-winged Scoter	Veery
Bufflehead	Gray-cheeked Thrush
Common Goldeneye	Swainson's Thrush
Common Merganser	Hermit Thrush
Red-breasted Merganser	American Robin
Ruffed Grouse	Cedar Waxwing
Common Loon	Ovenbird
Horned Grebe	Northern Waterthrush
Rock Pigeon	Black-and-white Warbler
Red-necked Grebe	Tennessee Warbler
Double-crested Cormorant	Orange-crowned Warbler
American White Pelican	Nashville Warbler
Great Blue Heron	Mourning Warbler
Turkey Vulture	Common Yellowthroat
Osprey	American Redstart
Bald Eagle	Cape May Warbler
Northern Harrier	Northern Parula
Sharp-shinned Hawk	Magnolia Warbler
Northern Goshawk	Bay-breasted Warbler
Broad-winged Hawk	Blackburnian Warbler
Red-tailed Hawk	Yellow Warbler
Rough-legged Hawk	Chestnut-sided Warbler
American Kestrel	Blackpoll Warbler
Merlin	Western Palm Warbler
Peregrine Falcon	Myrtle Warbler
Killdeer	Black-throated Green Warbler
Spotted Sandpiper	Canada Warbler
Wilson's Snipe	Wilson's Warbler
Least Sandpiper	American Tree Sparrow
Northern Saw-whet Owl	Chipping Sparrow
Common Nighthawk	Clay-colored Sparrow
Chimney Swift	Savannah Sparrow
Ruby-throated Hummingbird	Fox Sparrow
Belted Kingfisher	Song Sparrow
Yellow-bellied Sapsucker	Lincoln's Sparrow
Downy Woodpecker	Swamp Sparrow
Hairy Woodpecker	White-throated Sparrow
Black-backed Woodpecker	Harris's Sparrow
Yellow-shafted Flicker	White-crowned Sparrow
Pileated Woodpecker	E. White-crowned Sparrow
Olive-sided Flycatcher	G. White-crowned Sparrow
Empidonax sp.	Slate-colored Junco
Yellow-bellied Flycatcher	Rose-breasted Grosbeak
Traill's Flycatcher	Red-winged Blackbird
Least Flycatcher	Rusty Blackbird
Eastern Kingbird	Common Grackle
Blue-headed Vireo	Brown-headed Cowbird
Red-eyed Vireo	Purple Finch
Gray Jay	Common Redpoll
Blue Jay	Pine Siskin
American Crow	American Goldfinch
Common Raven	Evening Grosbeak
Tree Swallow	
Barn Swallow	
	email mckellar@hotmail.ca phone 709-6870