

Long Point Bird Observatory Migration Monitoring Protocol



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Contact: LPBO Coordinator (lpbo@birdscanada.org)
c/o Birds Canada, P.O. Box 160 (115 Front Road), Port Rowan, Ontario N0E 1M0, Canada



Canadian Migration
Monitoring Network



Réseau canadien
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des migrations

INTRODUCTION

The Long Point Bird Observatory (LPBO) is a project of Birds Canada, which operates three research stations on Long Point on the north shore of Lake Erie in Ontario (Figure 1):

- A1: Tip station: (42.583, -80.397), on land owned by the Canadian Coast Guard and Ontario Ministry of Natural Resources and Forestry.
- A2: Breakwater (42.583, -80.397), on land owned by the Long Point Company.
- A3: Old Cut: (42.583, 42.583), on land owned by the Ministry of Natural Resources.

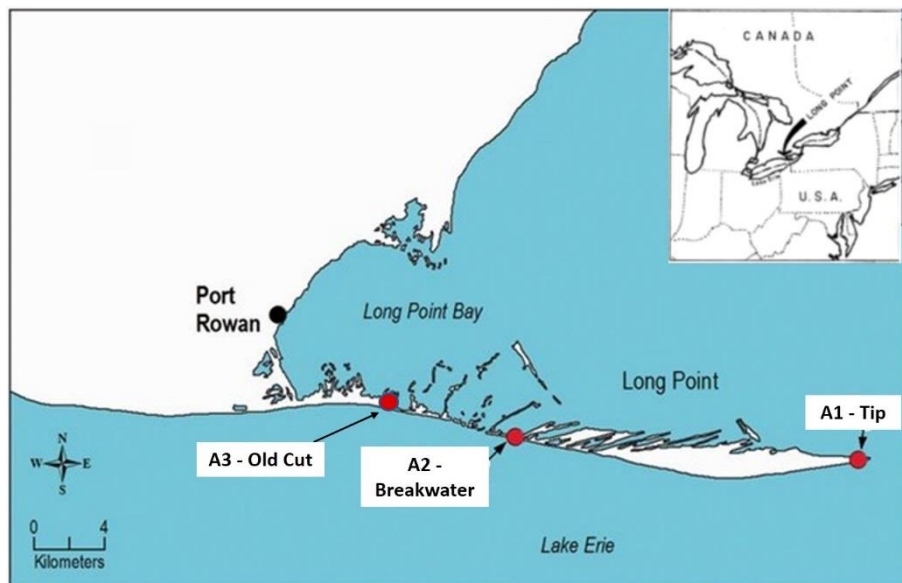


Figure 1. Location of the three LPBO stations along the Long Point peninsula in Lake Erie, Ontario, Canada.

LPBO is a participant in the Trend Monitoring Program (TMP), a cooperative project among members of the Canadian Migration Monitoring Network (CMMN). The TMP consists of standardized daily counts that can be used to calculate meaningful population trends, which are especially valuable for tracking the status of boreal-nesting species that are poorly sampled by breeding season population surveys. The key to standardization is **consistency of operations** from day to day and year to year.

This protocol provides instruction for data collection to ensure operations remain consistent over time while also providing key information to researchers using those data. Scientific analyses based on LPBO data are only as good as the quality, reliability and consistency of the underlying data and its documentation. Lead staff for each site should remind themselves of protocol requirements, and ensure that instructions are made clear to all seasonal staff and volunteers. Throughout, **instructions that differ among the three sites are in bold type.**

1.0 GENERAL OPERATIONS

1.1 Staffing levels:

Sufficient personnel should be in place for each season to conduct all standardized procedures, recognizing that there will likely be a few days each season when normal staffing levels may not be sufficient. The number of personnel typically needed for operating the standard set of nets and completing census varies among the three sites. In an ideal situation, all require:

- One Bander-in-Charge (BIC)/ Field Supervisor: an experienced birder and bander, eligible for a master banding permit/sub-permit who is charge of day-to-day operations. If concerns arise at the banding station or cooperators have any questions, the BIC should be the first person of contact.
- One experienced Field Assistant: able to identify > 90% of birds likely to occur in the Great Lakes region by sight and sound, such that they can conduct the Daily Census, as well as assist with the mist-netting, and
- One or more additional Field Assistants/Intern who assist with various aspects of the operation.
 - o **The Tip** can be run satisfactorily with 3-4 people total, but is optimally covered by 5-6.
 - o **Breakwater** can be run by 2 people, but 3-4 is optimal.
 - o **Old Cut:** 2-3 can operate the site, 4-5 is optimal.

1.2 Seasonal Coverage

Spring target dates are 1 April – 10 June, but starts at A1 and A2 are often delayed by weather. Fall coverage is 10 August - 15 November, except that **A2 closes at start of the hunting season [3rd Saturday in September], and A3 operates a week or two longer at season end.** Traps are operated on a more restricted set of dates as indicated in Table 1.

Table 1. J-trap and ground trap schedules.

Trap	Station	Number of Traps	Spring	Fall
JT	Tip	1	Apr 10 - May 21	Sep 15 - Nov 15
GT	Tip	4	Apr 10 - May 21	Sep 15 - Nov 15
JT	Breakwater	1	Start date - May 21	NA
GT	Breakwater	4	Start date - May 21	NA
JT	Old Cut	1	Apr 1 - May 21	Oct 1 - Nov 15
GT	Old Cut	4	Apr 1 - May 21	Oct 1 - Nov 15

1.3 Daily Coverage

Daily coverage starts with the opening of nets 20 minutes before dawn. Nets are closed after 6 hours of operation, but the standard Daily Coverage period continues for the rest of the day, with personnel typically spending 10-12 hours collectively in the field. If poor weather interrupts banding, and nets need to be closed, the standard banding hours would still end 6 hours after opening.

1.4 Coverage Area

All birds are countable that are inside the official Count Area boundaries or flying over the Count Area, whether or not the observer is inside the boundaries. Observers who are themselves within the Count Area boundaries may also count all birds detected outside the Count Area, no matter how distant.

The Count Areas at all sites encompass the areas within the closed loops of the census routes and all paths to nets and traps that lie outside that loop, plus about a meter beyond the outermost paths that allows observers to step off path when necessary to identify a bird. Depending on site, the Count Area may extend slightly further outward, as detailed in the titles to Figures 2-4.

At the Tip, the Count Area and census route have periodically been shifted due to large changes in dimensions of the Point (see section 6.0). However, the Census route has consistently been about a mile long (1.4 to 1.8 km), following the south shore eastward to the end of vegetation at the Tip, then going west along the north shore before connecting the shorelines across the Point at the western end, currently (since about 1986) at an angle that parallels the characteristic NE-SW ridges. The Count Area encompasses all beach along the shoreline portions of the census route. Figure 2 shows the route used from 1986 to 2020. Following major changes to the Tip in 2020-2022 (including loss of all vegetation east of lighthouse) the census route was modified to extend approximately 250m farther west (Figure 2a). Simultaneously, banding operations were moved from the area between the house and the tip to the new trapping area shown in Fig. 2a.



Figure 2. Census route at the Tip (A1; 2019 photo). Arrows indicate the direction of travel.



Figure 2a. Census route at the Tip in 2024 (on 2019 photo. Photo taken April 2020 shows no vegetation remaining east of the lighthouse.)



Figure 3. Census route at Breakwater (A2; 2019 photo), with mist net lanes and trap locations. Where the census route parallels the shoreline, the Count Area extends as far as the water's edge. Arrows indicate the direction of travel. GT = ground trap and JT = J-trap. [N.B.: See Appendix 1b for numbering and locations of the 4 standard ground traps operated at this site.]



Figure 4. Census route at Old Cut (A3), with arrows indicating direction of travel. Enlarged inset below shows net and trap locations (GT = ground trap, JT = J-trap, ON = Owl nets, and HN = hawk net).

[N.B.: JT moved 50m in 2022 from SW of platform to NE. See Appendix 1c for location details and numbering of ground traps]



2.0 OBSERVATIONS

2.1 Census

Census is the highest priority on any given day, and begins 1 hr after sunrise. Start can be delayed (but not cancelled) due to precipitation, preferably starting no later than 9 a.m. If necessary, shut nets temporarily to conduct census at the normal time. If it starts to rain during the census, abort and start over again when the rain stops. (i.e., do not complete half the census at one time and the other half later on.) Use of binoculars is required.

The individual conducting census should be able to identify at least 90% of expected species by sight and sound. If more than one person qualifies it is best to rotate among them to randomize the influence of variable skill levels among observers, ensuring consistency of average skills across years. Census can normally be done by one person. Any companions must not distract the lead census counter.

- At the beginning of census record the air temperature (°C), precipitation, cloud cover and wind speed using the Beaufort Scale (Table 4).
- Record all birds detected from the route, including flyovers and birds outside the Count Area boundaries.
- Stay on the route (key points documented in Appendix 1)
- Try to keep up a steady pace whether there are many or few birds. Take the best count you can, recognizing that you are taking a standardized 'snapshot' of bird activity in a set time period rather than making an exact count. Census should last about **1 hour at Old Cut and Breakwater, but 1.25 hours at the Tip.**
- Do not wander from route or spend undue time identifying a bird of particular interest. Record numbers of unidentified birds as closely as possible (e.g., dowitcher species, *Empidonax* species, warbler species).
- Estimate flock sizes with a single number rather than a range.
- No bird is to go uncounted, even if unidentified.
- **At the Tip, check for lighthouse casualties** as part of census. Pick up any bodies for recording ID and measurement in the daily log. Label and freeze any unusual specimens for skinning.
- Make sure to submit and share (in Cooperators WhatsApp group) census ebird checklist immediately after census. The checklist should only include the standardized census effort, no more, no less.

2.2 Observations

The standard daily Coverage Period at LPBO is **all day**. All personnel should strive to be outdoors and alert to birds as much as possible whenever free from other duties. Birding should always be a high priority even when banding is occurring. Always be birding!

- **At Old Cut**, the Dyke can be incredibly productive during the first and last hours of the day, and at any time it's a great place to observe visible migration and the goings on in the woodlot.
- **At the Breakwater and Tip**, supplementary birding in all parts of the census area is an important part of the day's activities. This is particularly true for the Tip, where constant change of land form and vegetative cover preclude permanent siting of traps and nets, but where the open habitat allows ready assessment of daily bird activity. Lake and raptor watches are done opportunistically (early spring and late fall in particular) when flights are apparent. LPBO waterbird pro-tip – look out, look often, look wide, look twice. LPBO raptor and landbird pro-tip:

Look up, look high, look west, look often. At both the Breakwater and the Tip, a purposeful supplementary census is important for ensuring that observations continue to be recorded throughout the day and, this is required in autumn. Keep notes: Don't rely on memory. If you leave before the day's records are written up, be sure to leave a copy of your records behind for those compiling the daily logs and ETs. If it's not written down, it doesn't exist.

- If you see a rare bird, record your notes and impressions BEFORE consulting literature. Complete LPBO Rarity Report and/or ensure the same level of documentation is in eBird.

3.0 BANDING

3.1 Standard Capture

Birds are captured using mist nets and a variety of traps. Mist nets are 12m long (Ecotone or Avinet, 32mm, Nylon, 5 panel, 110/2 denier). The standard traps and nets at Old Cut and Breakwater have permanent locations (Figures 3 and 4; details in Appendix 1). Standardized capture is a key feature of the Trend Monitoring Program, which strives to ensure that observation and capture effort is consistent from day to day and year to year. See Section 6.0 for instruction on recording necessary change. Coordinates of net and trap locations are shown in Appendix 1.

Nets at the Tip must sometimes be relocated because changes in physical configuration of the Point and distribution of vegetation. However, since approximately 1986, the same number of nets and ground traps have been used each year, and moves have been made only when necessary. because of destruction of the previous site or its vegetation (see Figures 2 and 2a) To the extent possible, nets and traps are moved to equivalent locations with respect to vegetation, shoreline, dune and other habitat features, so the probability of capturing birds will be similar to that of past years. Photographic records (section 5.1) should be used as a guide to past conditions. **Whenever a net or trap at the Tip is moved, take new photographs (section 5.1), record new GPS coordinates (Appendix 1), prepare a new Figure 2, update the 'change' table (section 6) and submit an updated version of the protocol to CMMN when submitting data for the year. An annual table of net/trap locations at the Tip should be put in the daily log.**

Nets and the Heligoland trap are operated every day, and are never baited. No water drips, feeders, audio lures or other attractive devices are allowed in the vicinity of nets, **except for the feeders at Old Cut.**

Traps should be kept baited with a small amount of cracked corn topped up once daily. Feeders are not to be used in the netting area and only to be used near the cabins. Nonetheless, birds visiting feeders within the Count Area are recorded in daily Estimated Totals (ETs), so should be used consistently to ensure that the species using them are counted on a regular basis. **This is especially important for feeders at A3 (Figure 4).** These should be filled immediately after the nets are opened, using Armstrong cracked corn, black oil sunflower seed, and whole peanuts only. Hummingbird and oriole feeders should be filled with new food made every two or three days. All feeders should be consistently cleaned throughout the spring and fall season.

3.2 Non-standard capture:

Birds captured during the 6-hr banding period by any means other than the nets and traps in Figures 2-4, or by any means after the end of the standard banding period, are recorded as "non-standard banding" (NSB) in daily records (e.g. banding of Saw-whet Owls, raptors or shorebirds). NSB capture

should only be done with the explicit permission of the BIC, and must not interfere with standard operations or other needs.

3.3 Banding procedures

The BIC is in charge of deciding when conditions are suitable for banding making careful assessments of wind, temperature, humidity, and precipitation. BIC's will constantly monitor current conditions and monitoring forecasts and radar. Nets are opened 30 minutes before sunrise, and repeated every 20 minutes thereafter; more or less often depending on weather, bird activity and **(at Old Cut)** visitor numbers. Nets are always checked in the same order, even for non-standing owl banding following the order in which they are numbered

The **Heligoland trap (HT) at the Tip** should be run at least 6 X/day (Figure 5). Use 2 or 3 people, out about 50 m from the mouth of the trap, and simultaneously walk towards the trap, clapping and shouting to herd birds as you converge, picking up speed close to the trap and chasing birds to the capture room at the end. Close the door so birds cannot escape, leaving one person inside to shoo birds into the capture box.



Figure 5. Heligoland trap, illustrating paths taken during a 'run.'

Each extracted bird is placed in a cloth bag, and a numbered (MN#) or labelled (GT, JT, HT) clothes peg attached to mark the capture location.

If a bat is captured, **do not handle it**, and notify the BIC immediately. Only individuals vaccinated for Rabies are allowed to handle bats; during bat handling, impenetrable gloves should also be worn at all times.

All personnel are trained in safe extraction and handling of birds, and all aspects of as detailed in the [North American Banding Council Banders' Study Guide and LPBO Training Protocol](#). The information here is mainly for researchers seeking to understand what measurements are taken and how (see banding sheet, (Appendix 2). Also recorded are the time trapped and weighed (local time, rounded to the nearest 10 min using the 24-hr clock); where captured (e.g. net, trap or box number), the bander and scribe's initials, and the day, month and year the bird was captured (Appendix 2 Figure 2A). Additional information can be written in the "Comments" column. Always place the band on a bird

before taking any other measurements or photos! When applying a band, ensure that the bander recites the band number to the scribe before applying the band to the bird.

Table 2. Typical banding data collected during LPBO banding operations.

Species	No bird is banded or released if the identity is in doubt unless authorized by the BIC. Any bird of uncertain identify will be thoroughly documented (photographs, detailed measurements) prior to release.
Band number and size	8 or 9 digit number. 3-4 digit prefix followed by a 5 number suffix.
Age and how aged	LPBO strives for a minimum of 75% of birds aged by skulling during fall, using the criteria in Appendix 2, Figure 2C. If skull and plumage or moult don't match up, skull takes precedence. LPBO uses the Wolfe-Ryder Pyle age classification system.
Sex and how sexed	Bases on best available information in field guides and Pyle (2022).
Fat	LPBO uses a 7-level system (Appendix 2 Figure 2D).
Wing chord	Relaxed wing cord in natural position measured to nearest mm.
Weight	All birds are measured to the nearest 0.1g

Other data sometimes collected (as described with NABC Bander's Study Guide or other specific protocols).	
Flattened Wing Chord	Often used for shorebirds.
Tail	
Muscle	Amount of muscle visible in the keel. (not yet standardized (find best metric)
Moult status/condition	Using Wolfe-Ryder Pyle age classification system, or specific moult cards to document specific moult conditions.
Tarsus	
Additional notes:	Notes on plumage aberrations, parasites, infections, any modifications from the normal protocol or special data collected.

3.4 Recaptures

Even when a captured bird is already banded, it must always be brought back to the banding lab to be processed unless you are *100% certain* that it is a same day repeat. The first time in the day a bird is recaptured it is process as usual, with data recorded on a retrap form. If recaptured again the same day, the bird is simply released after being brought back to the lab to confirm the band number.

3.5 Bird Handling

Birds must not be held for more than one hour from the time they are extracted from nets. Banders must always be aware of the time birds have been in captivity and adjust processes accordingly. See [Guidelines for prioritizing bird safety during high volume events for more information.](#)

Stressed birds are either released immediately or held in captivity for a short time to recover, as per guidelines in the NABC Study Guides. Any casualties (injuries and mortalities) are detailed on a Casualty Form and are noted in the Daily Log. Any injured birds that plan to be brought to a local rehabilitator can

be help in the aviary or within a heated/cooled (depending on season) container such as a plastic tote or cooler, and then transported after the banding day unless immediate attention is required.

4.0 RECORD KEEPING

4.1. Daily Logs

Pages 3-4: Summary of counts and daily totals

Columns of data for each species record:

- Band = numbers banded: all birds captured for the first time in the season.
- Rec = numbers recaptured that had already been captured at the site within the same season, including foreign recaps and birds banded locally in a previous year.
- Cens = numbers recorded on census
- Obs = numbers recorded by all participants during the day and those that may be captured, but not banded.
- ET = Estimated Totals are our best estimate of the total number of each species detected in the station areas during daylight hours each day. They have been adjusted to remove likely duplicates among count methods and provide the best available reflection of daily migration activity across the Count Area as a whole; **especially important for the Tip** where Count Area coverage has always been more standardized than net location.
- Data for unidentified species groups (e.g. unidentified scaup) should be written in the blank lines at the end of the species list when a specific row doesn't exist.

ETs should be recorded every day during the migration season and for any other day on which reasonably representative observations were made (a census **plus** several hours of observation and/or banding). Note that a census is a prerequisite for ETs; they **cannot** be derived without a census. The ETs are compiled after all other record-keeping for the day has been completed, ideally with all personnel present.

Instructions for ET's

1. Data are first filled in for the numbers of each species banded, retrapped, and seen on census.
2. The ET recorder then runs down the list of species, summarizing the observations for each species that day. For example, "American Robin — 8 banded, 2 retrapped, 20 censused — any additional observations?"
3. In recording 'Obs,' briefly discuss time, location, direction of movement (and if relevant, the behaviour) of the observed birds in order to eliminate probable duplicates before entering a number. Do not include dependent young in ETs (nestlings, waterfowl broods accompanied by adults).
4. The daily estimated total (ET) is the sum of the data columns (Band, retrap, NSB, census, Obs), after removal of likely duplicates, as was done in the previous step. The ET is the best consensus estimate of the number of birds that were **actually detected** that day by observers who were inside the Count Area, i.e. with no extrapolation to periods with no actual observation.
5. Rarely, it may be reasonable to **conservatively and judiciously** assign **some** unidentified birds to species. For example, if there were 100 unidentified warblers (certain not to include duplicates), but several times larger numbers were identified during the day of which half were MAWA, half of the unidentified warblers could be added to the ET for that species. However, when identified

individuals cover a broad mix of species, or when overall numbers identified are low, there is no justification for assigning the unknowns to species.

5.0 HABITAT MONITORING

5.1 Photographic records

Photographs are to be taken at the locations indicated in Appendix 1, when leaves are full (June through October), at least once every 5 years beginning in 2023, but sooner if there have been big changes that affect much of the Count Area. If only one net or trap is affected, take new photograph of that location at the time of change, but otherwise keep to the current 5 year schedule.

Photo locations for census route at the Tip are defined by position along the route rather than as permanent locations, and coordinates in Appendix 1 should be updated accordingly. Photo positions are at each 'corner' of the triangular census route (Figure 4; i.e. at north and south ends of path at west end that connects shorelines, and at the Tip), from the mid-point between Tip and north end of the connecting path, and from points 1/3 and 2/3 of the way along the southern leg of the route.

When the image files are downloaded, rename them to define the location and date. The file name for each photo should follow this convention: '[PHOTO SUBJECT_[LPBO STATION NAME]_ [DAY MONTH YEAR].'. Example: 'Net03_LPBO-A22_20 June 2021.'. Use the photo subject names listed in Appendix 1. Place photos in separate folders for each year (combining files from all three sites) – e.g.: 'Site photos_LPBO_2021.'. A copy of this folder is to be archived at LPBO and another copy should be sent to Birds Canada along with the annual data submission.

5.2 Assessment of habitat structure

A formal habitat assessment following the MAPS protocol is to be carried out once every 5 years beginning in 2023, and whenever there has been a significant change that widely affects the Count Area (especially relevant for the Tip). Habitat assessments are to be carried out in June-October, using instructions provided by the CMMN Steering Committee.

File name for each habitat patch: HSA-[PATCH ID]_[LPBO STATION NAME]_[YEAR]. Example: for the dominant habitat at Old Cut in 2022, the file name would be 'HSA-A_LPBO-A3_2022' and all assessment results from that year would be saved in a folder that combines results for all LPBO sites combined, labelled 'Habitat assessment_LPBO_2022'. A copy of the habitat assessment folder is to be archived electronically by LPBO, and another copy will be submitted to Birds Canada along with year-end submission of bird data.

6.0 Record of changes or major interruptions in standardized data collection

Changes or interruptions to operations should be recorded here if they are likely to have affected the consistency of the long-term data set. The purpose is to alert researchers to issues that may affect the appropriate use and interpretation of the data set. Examples include change in dates or daily hours of coverage, or gaps of a week or more in coverage (e.g. due to lack of personnel or site access).

Instructions for record keeping

If any standardized operational change or notable interruption occurs, enter details into the table below under any previous entries. 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 (if applicable); main effect on trend results
1961	Daily census route established, as in Figure 2 except that tip of point extended much further east, and west end joining north and south shores was just west of lightkeepers' houses. (See note for 1987)
1963	A2: No coverage LPBO trend results based solely on A1
1965 spring	A1: No coverage. Year excluded from trend analysis
1973 spring	A1: Much of season not covered. Year excluded from trend analysis
1974 fall	A1: data lost in fire. Year excluded from trend analysis. One of 4 HTs once at Tip lost sometime before this date (date to be researched).
1983	A3: New site established. All LPBO annual indices hereafter are based on all 3 sites.
1986	A1: Buildings destroyed in Dec 1985 storm. Operations run from tents. Migration monitoring effort "modest," but contribution of A2 and A3 counts to composite trend may have compensated sufficiently for annual indices to be little affected
1987	A1: New cabin built (Figure 2). This may be the year that census route was extended westward to compensate for severe erosion of the tip. (Research into this is ongoing)
1998	A1: First of remaining 2 HTs Decommissioned.
2000	All sites: Net numbering initiated at all sites.
2001	A1: New HT built 50m east of Lighthouse on north shore.
2010	A2: HT decommissioned
2005	All sites: Fat scoring system changed to 7-level scale. Important to users of banding data, but no effect on trends
After 2005	All sites: 3-level skill codes altered by addition of a new level 1. (Not used in trend analyses.)
2005	A2: 2 nd JT near net 10 decommissioned.
2017	A1: 2 nd JT in 'Grapes' on south shore decommissioned.
2019	A1: Last remaining HT and JT decommissioned.
Spring 2019-2022	A3: Extensive flooding required closure of Net 6 from 15 April to 15 May.- replaced with MX in comparable location on trail to Dyke.
2020	A1: Operation and trapping and banding effort moved back to Tip Cabin. Lighthouse keepers house demolished in fall 2020. Census route modified to reflect changing Tip. (See Figures 2 and 2a).
2022	A2: No coverage in spring, and daily census only in fall (Covid-19 restrictions). Combined LPBO trend results based on A1 and A3 only. A1: JT replaced in new location.
2023	A3: JT moved from position shown in Figure 4 to 100m NE of previous location. JT at Breakwater replaced and moved 10m SW. Old Cut census instructions changed from only counting passerines 'inside' the Count Area to counting all that can be observed <i>from</i> within the Count Area, to simplify instructions and match the practice at LPBO's other two sites.
2024	Observer experience codes changed from 3 to 4 levels. See Table 3.1

APPENDICES

Appendix 1a. Locations for standard photo data collection at the Tip (A1). **Coordinates to be added to tables in 2024. Net and trap placement from c. 1986 through 2020 were approximately constant and records are archived**

Location	Coordinates	Where to stand for photo	direction to point camera
Cabin		In front	At building
Net-1		N end of net	along net
Net-2		N end of net	along net
Net-3		N end of net	along net
Net-4		N end of net	along net
Net-5		N end of net	along net
Net-6		N end of net	along net
Net-7		N end of net	along net
Net-8		N end of net	along net
Net-9		N end of net	along net
Net-10		N end of net	along net
Net-11		N end of net	along net
Net-12		N end of net	along net
HT4		See note	Trap box looking east
J-trap 1		See note	
GT-1		See note	
GT-2		See note	
GT-3		See note	
GT4		See note	
NE 'corner' of Census		NE 'corner' of Census	2 photos - along W and E legs
SE 'corner' of census		SE 'corner' of census	3 photos - to N and to W along route, and S to show beach
SW 'corner' of Census		SW 'corner' of Census	3 photos- to E and to NE, and to S to show beach

Note: Stand far enough back for photo to include habitat within about 1-2 m around each trap. For HT, take a photo from side to show height and type of vegetation around trap from end to end.

Appendix 1b. Locations for standard photo data collection at the Breakwater (A2).

Coordinates to be added to tables in 2024.

Location	Coordinates	Where to stand for photo	direction to point camera
Cabin			
Net-1		N end of net	along net
Net-2		N end of net	along net
Net-3		N end of net	along net
Net-4		N end of net	along net
Net-5		N end of net	along net
Net-6		N end of net	along net
Net-7		N end of net	along net
Net-8		N end of net	along net
Net-9		N end of net	along net
Net-10		N end of net	along net
Net-11		N end of net	along net
Net-12		N end of net	along net
Net-13		N end of net	along net
J-trap		See note	
GT-1		See note	
GT-2		See note	
GT-3		See note	
GT4		See note	
NE 'corner' of Census		NE 'corner' of Census	2 photos - along W and E legs
NW 'corner' of Census		NW 'corner' of Census	2 photos - along W and E legs
SE 'corner' of census		SE 'corner' of census	3 photos - to N and to W along route, and S to show beach
SW 'corner' of Census		SW 'corner' of Census	3 photos- to E and to NE, and to S to show beach

Note: Stand far enough back for photo to include habitat within about 1-2 m around each trap. For HT, take a photo from side to show height and type of vegetation around trap from end to end.

Appendix 1c. Locations for standard photo data collection at Old Cut (A3).

Coordinates to be added to tables in 2024

Location	Coordinates	Where to stand for photo	direction to point camera
Net-1		W end of net	along net
Net-2		W end of net	along net
Net-3		W end of net	along net
Net-4		W end of net	along net
Net-5		W end of net	along net
Net-6		W end of net	along net
Net-7		W end of net	along net
Net-8		W end of net	along net
Net-9		W end of net	along net
Net-10		W end of net	along net
Net-11		W end of net	along net
Net-12		W end of net	along net
Net-13		W end of net	along net
Net-14		W end of net	along net
J-Trap		On path from platform	
GT-1		See note	
GT-2		See note	
GT-3		See note	
GT-4		See note	
ON 1-3			
HN-1		S end of net	along net
Feeder-1			
Feeder-2			
Dyke		From platform	Towards JT
View from Dyke			4 photos: to NW, NE, SE, and SW
View from N end of Lighthouse Crescent		Fence at N end of Lighthouse Crescent	2 photos: N up the road, and E along the path on south side of woodlot

Note: Stand far enough back for photo to include habitat within about 1-2 m around each trap.

Appendix 2. Banding Forms

Figure 2A – Sample banding sheet (TO BE MODIFIED IN 2024 FOR ELECTRONIC ENTRY)

The sample illustrates how data are entered manually.

- Use black, ball-point pen.
- Right-justify all data in the spaces provided.
- Record the full band number at the top of the sheet and underline the prefix.
- Denote repeated entries with a solid horizontal line – not ditto marks.
- For retraps, always record everything in full with the exception of date.
- If a partial string of bands is to be used (e.g. because it was started in the previous season), then record the first band number on the appropriate line on the banding sheet, not at the top of the sheet. Previously used bands should be indicated by filling in "Bands Previously Used" in the blank space
- Record lost or destroyed bands as "Band Lost" (BALO) or "Band Destroyed" (BADE) on the appropriate line for that band. The next data line must be filled out **completely** (e.g. re-enter the data as if you were starting a new sheet), with no ditto lines.
- [4 and 6-letter species codes](#) used in the banding operation are the codes provided by the bird banding office
- Codes for age, location etc. are printed on the back of every page (Figure 2B).

LPBO Field Station Banding Data Form

Bird Studies Canada
Long Point Bird Observatory

First Band Number:
Prefix: 19161 Suffix: 8711 Permit No.: 1017 Year: 2014

Bander: HEAVILY BEARDED MAN Initials: HBM
PETER N. PIPER Initials: PNP
STRONG MAN Initials: SAM
CHARMING FRIENDS Initials: CAF

18

 Band Size

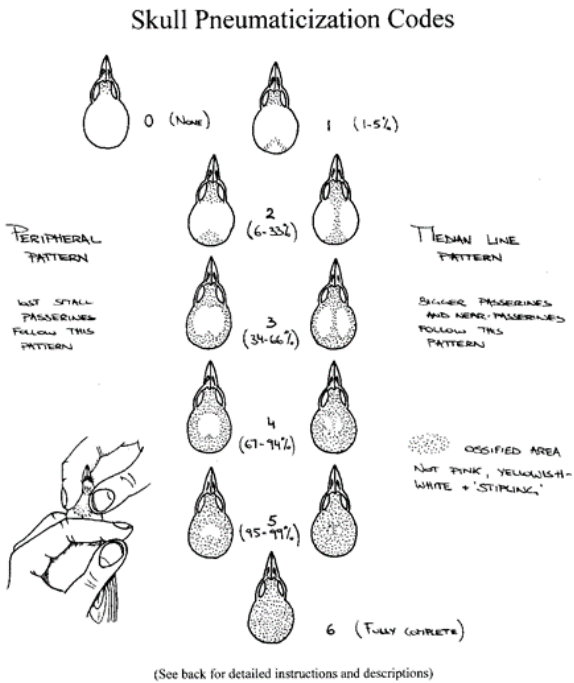
Band Last 2 Digits	Species	Sp. Code	Age	Sex	How	Wing	T	Weight	Status	Date		Time	Bander	Area	Time	Trap	Type	No.	Prob Age	Remarks	Notes
										Mo.	Day										
USED PREVIOUSLY																					
87	HERMIT THRUSH	HETH	2	1	0	9	953	323	300	10	26	09	0	HBM	13	08	5	0	NN	14	TICK REMOVED SMALL WINDOWS RETAINED 4.3MM
88	HERMIT	HETH	2	1	0	9	973	319													
89	BAND LOST	BALO																			BAND LOST
90	BAND LOST	BALO																			BAND LOST
91	DONNY WOODP.	DNWO	2	1	5	1	930	288	300	11	07	09	2	PNP	13	08	5	0	NN	11	
92	WH. THR. SPARROW	WTSPO	2	1	4	4	760	259				09	3	0		09	2	0	ST	1	HEAD IN PIN - UNSKULLABLE TAIL NARROW & TAPERED & EYE BROWN
93	BAND DESTROYED	BADE																			BAND DESTROYED
94	BAND DESTROYED	BADE																			BAND DESTROYED
95	SONG SPARROW	SOSP	1	2	0	9	627	200	300	11	15	11	0	SAM	13	11	0	NN	06	P 7=DATE	
96	BALTIMORE ORIOLE	BATOR	2	1	5	1	883	298		09	06	06	3	CAF	13	06	0	NN	02	DD	BAND SIZE O.K. & DATE O.K.
97	CAROLINA WREN	CARN	2	2	0	A	118	232				06	4	0		06	3	0	DD	9=1	
98	LARK SPARROW	LASP	1	1	1	1	854	300	300	11	16	10	2	HBM	13	09	5	0	10		DOCUMENTATION IN LPBO FILES
99	FOX SPARROW	FOSP	1	1	1	1	772	245				11	7	0	PNP					25	
00	XXXXXX																				XXXXXX

Last Band Number:
Prefix: 19161 Suffix: 8711 DD
 Datasheet: Proofed Entered

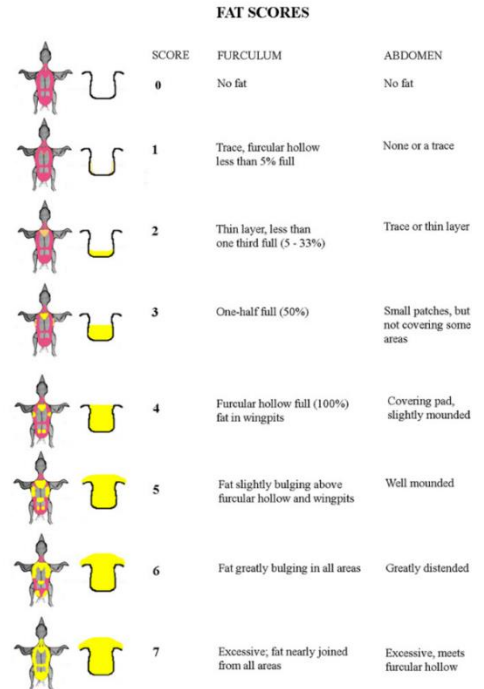
Figure 2B. Banding codes

Banding Data Form Codes					F
Age	Sex	How Aged and Sexed	Trap Type	Moult (Active Moult)	
0 Unknown	0 Unknown	1 Plumage	MN Mist net	MX Non-standard MN	P Present (moult card required)
1 After hatch year	4 Male	2 Skull	HN Hawk net	GX Non-standard GT	A Absent
2 Hatch year	5 Female	3 Eye colour	GT Ground trap	JX Non-standard JT	
4 Local (nestling)		4 Wing length	JT Jay trap	HX Non-standard HT	
5 second year		5 Cloacal protuberance	HT Heligoland trap		NSB
6 After second year		6 Brood Patch	NB Nest Box		Check if non-standard banding
7 Third year	(NOTE: Probable Age/Sex field uses same codes)	7 Mouth/Bill colour	HA Hand		(all MX, GX, JX, HX)
8 After third year		8 Culmen length	BW Bow net		
		9 Other (specify in notes)	PT Potter trap		
			OT Other (specify in notes)		
Status		Location			
300 Normal banded bird		01 Eastern Tip of Long Point	23 Sewage Lagoons TRES grid		
301 Colour banded bird		02 Breakwater	28 Rondeau Prov. Park-10 km E of Blenheim		
302 Equipped with a neck collar		03 Backus Woods	43 St. Williams forest		
318 Blood sample taken		11 Tip Tree Swallow grid	53 Mud Creek TRES grid		
399 Equipped with radio transmitter		13 Old Cut/LP Prov. Park	09 Other (specify in notes)		
500 Injured, released in under 24 hours		14 S. Walsingham/Hahn Woods			
700 Injured, rehabilitated, released. Held for more than 24 hours					
685 Combination of two or more codes					
Remark Code- to be used only by data proofers					
** Reserved for Custom Remark	08 Injured, held for less than 24 hrs, released healthy				
DC Date sequence OK	09 Injured, held for greater than 24 hrs, rehabilitated, released healthy				
01 Could not age or sex - released	21 Radio transmitter attached				
02 Band size used in error, fit ok	25 Measured Leg for Correct Band Size				
03 Sex not recorded					
04 Age not recorded					
07 (NSWG ONLY) Sex determined using the wing-mass DF available from Project Owinet					

Figure 2C. Skulling codes



2D. Fat Score codes



Appendix 3. Daily Log Forms

Notes and codes:

LPBO's logs are scannable forms, so extreme care must be taken to neatly and accurately record all data.

- Do not write over or destroy the angle markers at each corner of the pages.
- Print neatly using a **black** pen ONLY. Stay within the boxes provided.
- The scanner can only read letters and numbers. NO PARENTHESES. The scanner recognizes zeros with diagonal lines through it, but often mistakes zeros that are not completely closed for sixes.
- If there is no value to enter, LEAVE BLANK, do not write "NA" or a dash "-".
- In case of mistakes, do not write over with dark pen. Neatly apply correction fluid and re-write the correct entry.
- All times are in 24 hour clock.
- Be sure to fill in date and site at the top of every page.

Page 1: Effort levels

- **Volunteer effort:** Participant names and initials (as used on banding sheets and in notes), number of hours spent in the field observing (excluding hours indoors, in the banding lab, when active observation was not occurring), and a code ('cd') indicating bird ID skill level (Table 3.1). A combination of 4 letters and numbers can be used for volunteer initials. To avoid duplicates, please consult the BIC who can access the master "observer" table. Use middle initials instead of numbers whenever possible (i.e. ECK instead of EK2). "Field hours" for volunteers must contain a value or else the scanner omits this record. Enter "99.9" if no value is available. Field hours are defined as the number of hours spent doing visual/audible observations of birds, excluding banding. If birds were observed during banding hours (e.g. heard from banding lab or seen during net runs) then the field hours should be approximately based on the realistic number of hours spent birding. For example, if you spent 1 hour banding in the lab and you also did net checks, you likely only had 20-30 minutes of field hours.
- Coverage code (Table 3.2)
- Weather:
 - Wind: N, NE, E, SE, S, SW, W, NW
 - Wind Strength: Beaufort scale, posted in each banding cabin
 - Cloud: (10ths)
 - Temp(C): 0 to 99. If negative, write "--" in the first box (i.e., for '-2', enter '-', blank, 2'). Leave blank if +, as the "+" is not recognized by the scanner]
 - Precipitation: Rain = RA, Fog = FO, Snow = SN
 - Synopsis: general account of the day (e.g. Cloudy in the morning then cleared. Thunderstorms throughout the day.).
- Census effort: time, duration, observer initials
- Trapping operation hours and minutes (to nearest net round; i.e. 20 min interval) for all trap and net types (or, for HT's, number of active drives). A longer table shows open and closing time(s) for each net (but not for traps). If net Open and Close times are the same as for the preceding net, you can put a small 'x' in the "Ditto" box instead of filling in times again. However, the total net hours for each net must be filled out individually. These are only to be used for the standard period. All other netting should be covered in additional Extra Net coverage boxes. For traps and extra nets, the number of traps/nets should be recorded as well as the number of hours those traps were active.

Table 3.1 – Observer Experience Codes

Code	Description
1	Able to identify greater than 95% of all birds that regularly occur in the Great Lakes region by sight and sound. Very experienced birder.
2	Able to identify 75-95% of the above. Experienced birder.
3	Able to identify 50-75% of the above. Amateur birder.
4	Able to identify less than 50% of the above. Novice birder.

Table 3.2. Daily Coverage codes.

Code	Description
0	No coverage. Use of this code should occur only very rarely.
1	Incidental observations and/or casual banding only
2	Census only. No Observations or banding
3	Fair coverage, including census, and 6 hours of observation within the Count Area and some level of banding. Use this code if there is only one qualified observer and banding has to be interrupted to do the census, or if weather interrupts banding for more than an hour.
4	Good coverage, Full standardized coverage: census, 6 hr of banding/observations as weather permits, two experienced observers. This is the code most frequently used.
5	Excellent coverage, including census/SDTs, 6 hr of banding, and 3+ experienced birders.

The Narrative is required to be written at all stations, every day. It gives the flavour of the day, both for bird and non-bird activity, and captures the happenings at the research stations. It summarizes the day's migration and noteworthy observations. Species names are **underlined** to enable easy extraction of unusual/interesting records. Observer names are listed for proper credit in published reports. The narrative also records noteworthy observations of non-bird fauna or flora, and human activity such as station and equipment maintenance, personnel switches, special projects, and anything else that made the day particularly memorable (water spouts over the lake, trouble with boats, a birthday celebration).

The table of Unusual Species at the bottom of the page summarizes the circumstances and numbers recorded, and some additional information as noted below.

- **Old Cut Estimated # of Visitors:** Estimate of the number of visitors to the station throughout the day.
- **Old Cut Total # of Visitor Groups:** The number of **organized** groups (school groups, field naturalist outings, etc.) visiting the Old Cut station is entered here.
- **Tip Total # of boats on Shore:** The estimated total number of boats on or moored off the Tip's shore during the day.
- **Lighthouse Attraction at the Tip:** Record the following information into the daily log (on a separate sheet if necessary): Species, Date of death, names(s) of people identifying and recording species, list of species, number of deaths, and if possible, the age and sex (including how aged and sexed.)

1575562685

LPBO Daily Log

Day Month Year Area
 10/10 2004 0.1

Volunteer Effort			
Vol Initials	Observers (Migration Program)	Field hrs	cd
CAF	Christian Frin	8.0	1
RWN	Ross Wood	8.0	1
D.R.R	Dave Restno	6.0	2
E.A.W	Anne Wynn	5.0	2
D.J.G	Derel Grnar	6.0	1
F.A.B	Tiffany Backy	5.0	2
Other Station Personnel (swallows, BBC, etc)			

Coverage Code 4

	Weather			
	Dawn	Cens.	Noon	Dusk
Wind Direction	N	N.W	N	N
Wind Strength	3	3	2	1
Cloud(10ths)	7	8	9	2
Temp. (C)	11	11	10	16
Precipitation				
Synopsis:				

Census			
Start Time (24hr)	End Time (24hr)	Duration(min)	Initials
8:31	9:46	75	R.W.N
Supplementary Censuses? (Y/N)			
Y			

Trap	# Traps	Trap	
		Hrs	Min
JT	2	12	00
GT	4	24	00
Other			
Drives			
HT	0	7	

Extra Nets	# of Nets	# of	
		Hrs	Min
30mm	4	13	15
>30mm	2	4	50
Owl Nets			

Migration Monitoring Summary			
	Band	Census	ET
# individuals	47		
# spp	19	35	74
Season-to-Date Banding Total 15,377			

Net	Banding Effort									Total	
	Open	Close	Ditto	Re-Open	Re-Close	Ditto	Re-Open	Re-Close	Ditto	Hours	Min
1											
2											
3	10:20	12:45								2	25
4	06:45	12:45								6	00
5	10:20	12:45								2	25
6	06:45	10:15								3	30
7											
8	11:00	12:45								1	45
9	06:45	08:10		11:00	12:45					3	10
10											
11											
12											
13											
14											
Grand Total										17	15
Net Hr/Min											

LPBO Daily Log

Day Month Year Area
 10 10 2004 0.1

Narrative:

Summary of Bird Migration:

Today started off slow because of wind & cold, but things sped up a bit throughout the morning - our MX nets pulled thru for us again, Yay! we banded a beautiful Savannah Sparrow - a lifer for me! Later that afternoon, after some time at the Tip, I took a wonderful walk which ended in a very "enlightening" venture out to the tippy tip of the Tip - I took advantage of its desertedness - not a gull or a cormorant there - except for some dead Ringers, a dead sanderling, & a poor lovely Greater Black-backed gull dying of Botulism -- real life, raw & out in the open - w/ a gorgeous landscape surrounding me - It reminded me of the Galapagos & the lovely ision

Facilities & Site Changes/Activities: of Española... ~~etc~~ so it was an absolutely gorgeous sunset behind the lighthouse - I watched a Dunlin, some sanderlings, & a Black-bellied plover scamper around before heading back - fun stuff.

Other Remarks:

Yay Stars! I learned several new constellations tonight - *

Signature: *Jiffay Beauty*

Unusual Species						
Species Code	Species Name	Band	Rec	Cens	Obs	ET
R.W.B.R.	Rusty Blackbird			7	15	22
E.C.S.P.	Clay-Coloured Sparrow			1		1
O.L.W.A.	Orange-crowned Warbler				1	1

Old Cut Estimated # Visitors	
Old Cut Total # Visitor Groups	
Tip Total # of boats on Shore	1
Lighthouse Attraction Put details in Narrative	
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Not Checked

Monarch Butterfly Summary	
Afternoon Census	43
Comments:	

2738562687

8376440912

Species Totals

Day 1.0 / Month 1.0 / Year 2004 / Area 0.1

Species	Band	Rec.	Cens	Obs	ET	Species	Band	Rec.	Cens	Obs	ET
Common Loon				6	6	Unid. Yellowlegs					
Pied-billed Grebe						Solitary Sandpiper					
Double-cr. Cormorant			4500	15600	20000	Spotted Sandpiper					
American Bittern						Ruddy Turnstone					
Great Blue Heron			1		1	Sanderling			9		9
Green Heron						Semipalmated Sandpiper					
Tundra Swan						Least Sandpiper					
Mute Swan						Pectoral Sandpiper					
Canada Goose				2	2	Dunlin			4	1	5
Wood Duck						Short-billed Dowitcher					
Green-winged Teal						Unid. Dowitcher					
American Black Duck						Common Snipe				4	4
Mallard			3	1	4	American Woodcock				1	1
Northern Pintail						Bonaparte's Gull					
Blue-winged Teal						Ring-billed Gull			1200		1200
Gadwall						Herring Gull			10	40	50
American Wigeon						Gr. Black-backed Gull			4	1	5
Canvasback						Caspian Tern				1	1
Redhead				6	6	Common Tern					

Wood Thrush						Lincoln's Sparrow					
American Robin			3	12	15	Swamp Sparrow	1			8	9
Gray Catbird	1			1	2	White-thr Sparrow	4		12	25	41
Brown Thrasher						White-cr Sparrow	2		2	10	14
American Pipit						Slate-colored Junco	2		3	5	10
Cedar Waxwing			4	10	14	Bobolink					
European Starling			7	5	12	Red-winged Blackbird			70	210	290
Blue-headed Vireo				1	1	Eastern Meadowlark			1		1
Warbling Vireo						Common Grackle				4	4
Philadelphia Vireo						Brown-hd Cowbird					
Red-eyed Vireo						Baltimore Oriole					
Tennessee Wa						Purple Finch					
Nashville Wa	1			2	3	House Finch				7	7
Yellow Wa						Pine Siskin				31	31
Chestnut-sided Wa						American Goldfinch	13		55	122	180
Magnolia Wa						House Sparrow					
Cape May Wa				1	1	Sub-total (4)					
Black-thr Blue Wa						Total #	47				
Myrtle Wa	6		45	69	120	# of Species	19		35		74
Black-thr Green Wa	1		1	1	3						
Blackburnian Wa											
Sub-total (3)											