



Migration Monitoring Protocol

2020 (6th edition)



Canadian Migration
Monitoring Network



Réseau canadien
de surveillance
des migrations

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Introduction

Welcome to the [Long Point Bird Observatory](#) (LPBO). As an LPBO Cooperator (volunteer, guest, research collaborator, or staff), you're joining a 60+ year lineage that have delivered a wide variety of programs to an exceptionally high standard. From day one, our mantra has been that a number of dedicated volunteers working together can accomplish more than a few professionals working alone. That philosophy continues to this day and we can't thank you enough for the time and effort you've dedicated to LPBO.

This protocol provides detailed descriptions of our day to day activities which deliver the highest quality data in the most consistent form possible from year to year. The protocol is designed to provide a thorough understanding of LPBO programs, the methods used, and how cooperators can maximize their enjoyment and contribution to the organization. It also outlines the rules and guidelines that keep all volunteers safe and comfortable. Whether you're a new volunteer or a returning one, everyone is **required** to read this manual. It is essential that everyone know how we do things, and that everyone follows the LPBO routine, regardless of how things might be done at other observatories, or how things might have been done in the past.



Figure 1. Welcome to LPBO, every bander's and birder's dream come true! Black-and-white Warbler (top left), Northern Cardinal (bottom left), and Blue-headed Vireo (bottom right). Illustration by Birds Canada's Meghan Wilcox.

Long Point Bird Observatory

In October 1959, six members of the [Ontario Bird Banding Association](#) made the first expedition to the Tip of Long Point in search of an ideal location to study bird migration. In the spring of 1960, the Long Point Bird Observatory (LPBO) and its Migration Monitoring Program were born. LPBO is the oldest bird observatory in the Western Hemisphere and houses one of the largest data sets on migratory birds in the world.

In addition to work on Long Point, LPBO implemented numerous regional, provincial and national bird monitoring, research, and conservation programs such as the Canadian Lakes Loon Survey, Project FeederWatch, and the Marsh Monitoring Program, and initiating North America's first sponsored bird count fundraiser: the Baillie Birdathon (now the [Great Canadian Birdathon](#)). The organization continued to grow with the initiation and coordination of a wider range of provincial, national and international programs and initiatives. In 1998, in recognition of the



Figure 2. The Ontario Bird Banding Association took the first steps in establishing LPBO way back in 1959.

organization's national breadth and future aspirations, LPBO membership voted to create [Birds Canada](#). LPBO was then reinvented as a program of Birds Canada operating research, education, and training programs that focus on ornithology, conservation, and other aspects of natural history at Long Point.

Within the larger context of Birds Canada, LPBO programs include: the Migration Monitoring Program, the [Doug Tarry Natural History Fund](#) (Young Ornithologists` Workshop and Internship), the Tree Swallow Project, the Latin American Training Program, Long Point Breeding Bird Census, and an active and diverse program of public education, professional training, and collaborative research.

Birds Canada

Birds Canada is the country's leading science-based bird conservation organization. Birds Canada's mission is to conserve the wild birds of Canada through sound science, on-the-ground actions, innovative partnerships, public engagement, and science-based advocacy.

Birds Canada is a national charity built on the contributions of thousands of supporters and citizen scientists. Using data from our volunteer monitoring programs and targeted research, our scientists identify significant population changes and direct conservation planning. We are a strong partner in [BirdLife International](#), the world's largest conservation alliance for nature and people, active in more than 120 countries and territories.

Canadian Migration Monitoring Network

Long Point Bird Observatory is a founding member of the [Canadian Migration Monitoring Network](#) (CMMN). The CMMN consists of a network of independent bird migration monitoring and research stations operated by volunteers and/or paid staff. It is a collaborative initiative among the member stations: Birds Canada and Environment Canada's Canadian Wildlife Service. The mission of the CMMN is to contribute to conservation, knowledge, and public understanding of Canadian migrant birds and bird migration through a network of independent stations. CMMN has identified two types of goals needed to carry out its mission and achieve its vision:

Science and Conservation Goals:

- To generate high quality research and monitoring information on population trends (Figure 4), catchment basins, bird migration corridors/routes, migration/dispersal windows, stop-over sites and other aspects of the ecology of migrant birds.
- To influence bird conservation by making results readily accessible to the scientific community, decision makers, the general public and to CMMN member stations, including their staff and volunteers.

Institutional Goals:

- To strengthen and expand the network of independent migration monitoring and research stations.
- To enhance sustainability of its monitoring programs.
- To increase organizational capacity for science, research and fundraising.

Life at LPBO

We all take tremendous pride and pleasure from our work at LPBO; no matter how tedious or minor a task may be, it's important! All cooperators are encouraged to immerse themselves in all aspects of the day to day life at LPBO. Maximize your experience here by learning all there is to learn and participating in as many aspects of the operation as possible. In the process, you will build many new friendships and learn more about people, birds, science, conservation, handy-skills, technology, and yourself than you ever expected.

During migration periods, the normal day consists of getting up just before first light, beginning six hours of intensive bird monitoring and banding, and running the daily census. The afternoons are filled with additional observations, supplementary censuses, daily chores and maintenance tasks, participation in other observatory monitoring or research activities, and rest. The evenings are devoted to last-minute evening watches, and after what is preferably, a **communal supper**, the data collected for the day are compiled in our daily log books. The procedure on any given day will depend upon the personnel available, weather conditions, the number of birds around, and the logistical needs of the station. It all makes for a long but fulfilling day.

Required Reading

In addition to this protocol, all cooperators participating in the Migration Monitoring Program must read the following, all of which (except for the excerpts from Pyle) will be provided in an email before the beginning of the banding season. Hard copies of all of these materials are also available at LPBO:

- *LPBO Migration Monitoring Protocol*
- *LPBO Cooperators Fact Sheet*
- [*The North American Banders' Manual for Banding Passerines and Near Passerines*](#) by the North American Banding Council
- [*The North American Banders' Study Guide*](#) by the North American Banding Council
- [*Guidelines for Prioritizing Bird Safety during High Capture Events*](#) by Stu Mackenzie and Marcel Gahbauer.
- The introduction and special sections of *Identification Guide to North American Birds, Part I*, by Peter Pyle.

Required for Certain Cooperators and Staff:

- *LPBO Health and Safety Rules and Guidelines* (**must** be read by all BICs and vehicle operators)
- *LPBO Boat Operation and Safety Guide* (**must** be read by all boat operators)
- *LPBO Tree Swallow Manual* (**must** be read by all Tree Swallow Project cooperators)
- *LPBO Northern Saw-whet Owl Protocol* (**must** be read by anyone doing owl banding)

Other recommended reading: Anyone wishing to undergo certification as a North American Banding Council Bander or especially Trainer at LPBO should read and understand all of these documents.

- [*Mist-netting with the Public: a Guide for Communicating Science through Bird Banding*](#) by Melissa Pitkin
- [*Ageing North American Landbirds by Molt Limits*](#) by Dan Froehlich

- [Birding by Feather: A Molt Primer](#) by Peter Pyle
- [Finding Order Amid the Chaos](#) by Steve Howell
- [The Variety of Molt Strategies](#) by Steve Howell
- [Peterson Reference Guide to Molt in North American Birds](#) by Steve Howell
- [Piranga: a Bird-Bander's Aid to Identifying, Aging and Sexing Birds of the Western Hemisphere](#)
- *Modifications to a molt-based ageing system proposed by Wolfe et al. (2010)* by Erik Johnson et al.
- *Bird Observatories: An Underutilized Resource for Migration Study* by Erica Dunn

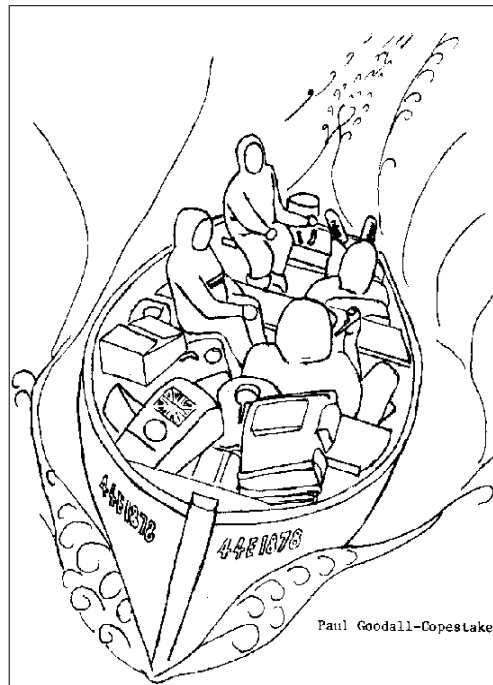


Figure 3. LPBO has welcomed cooperators from right across Canada, the United States and over thirty other countries (map). Boat trips on Lake Erie and Long Point Bay offer fantastic birding and a chance to see just how wild and unspoilt Long Point is.

Contact Information

Volunteers and researchers may have mail sent to:

Long Point Bird Observatory c/o Birds Canada
 P.O. Box 160,
 115 Front Road
 Port Rowan, Ontario, Canada
 NOE 1M0

Important phone numbers:

- LPBO Program Manager Cell: 519-429-0540
 Office: 519-586-3531, extension 118
- Old Cut Research Station 519-586-3531, extension 200 or 201
- Birds Canada Headquarters 1-888-448-BIRD

LPBO Staff and the Chain of Command

At any given time there are two to four LPBO staff on duty. The **Program Manager and Coordinator(s), or Bander-In-Charge** (see below) are responsible for all of the day-to-day operations at LPBO. They are always available to answer questions and address any concerns you might have. In addition, the Program Coordinator, in consultation with the assistants, oversees the general operations of all three stations, coordinates the movement of volunteers between stations, supply runs, and other administrative needs.

The Program Manager and Coordinators report to the Director of Migration Ecology who oversees the LPBO program, [Thunder Cape Bird Observatory](#), aspects of the CMMN, the [Motus Wildlife Tracking System](#), and other migration related science at Birds Canada.

From time to time other Birds Canada staff will visit the field stations. Every effort should be made to introduce yourself to Birds Canada staff, and engage with them. Many of them have decades of experience as banders and birders, and many have very colourful personalities, so do your best to get to know them.

The Bander-In-Charge

The Program Manager is normally the Bander-In-Charge (BIC) at Old Cut, and a Program Coordinator is normally the BIC at the Tip, though the positions switch locations periodically. Other Birds Canada staff, or more experienced volunteers, may also be designated as the BIC on any given day. It is a great honour and responsibility to be a BIC.

The BIC is in charge of the day to day migration monitoring operations at their respective stations, and are responsible for deriving the estimated totals for the day. They decide how many nets and traps are to be run and for how long on any given day. The BIC is ultimately responsible for the safety of all cooperators, birds, and the quality of data being collected. They generally decide who does what and when (i.e., who will do net runs, who will band, who will do data entry, as well as coordinating other activities such as daily chores, cleaning the lab, washing bird bags, etc). The BICs also implement training, logistics, maintenance, inter-station communication, and generally ensure that the program is exceptionally well organized and conducted at exceptionally high standards.

Migration Monitoring Program

Migration Monitoring is a standardized scientific method used to monitor bird populations through a combination of banding and counting migratory birds. Migration monitoring was pioneered at LPBO in the 1960's and remains in use today as a fundamental tool for gathering data on the population trends of migratory birds all across Canada (Figure 4). A great deal of effort goes into counting or estimating exactly how many individuals of each species pass through each station every day. After the migration

monitoring seasons are over, these data are statistically corrected for various factors and used to generate an index of species abundance. The present year's data are combined with past years' data to develop long-term population trends that show which species are increasing or decreasing over time. Since many of our migrant songbirds breed and winter in inaccessible areas where other kinds of monitoring, such as Breeding Bird Surveys, can't readily be done, our population monitoring program is one of the most important bird population monitoring datasets in the entire world! Results from Long Point and other CMMN stations across Canada are available through [NatureCounts](#).

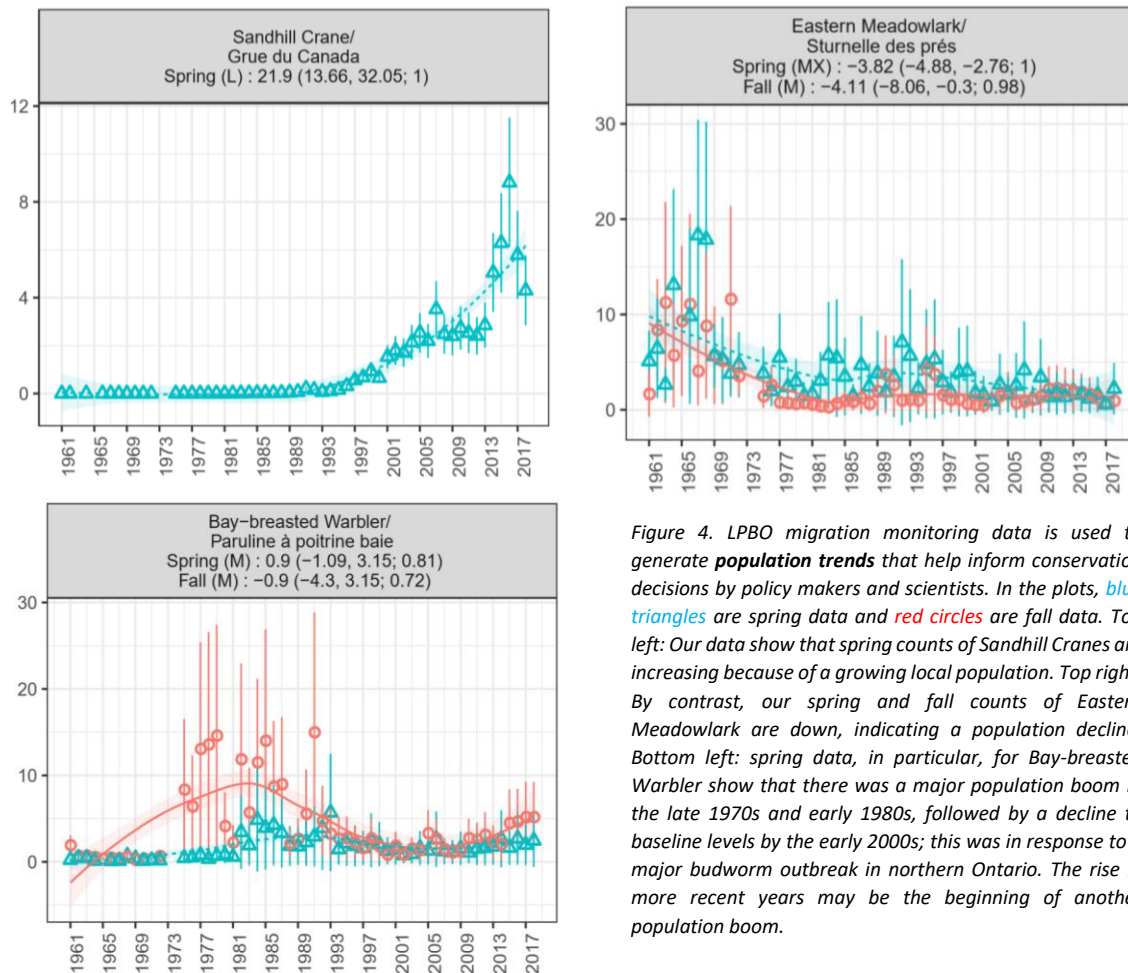


Figure 4. LPBO migration monitoring data is used to generate **population trends** that help inform conservation decisions by policy makers and scientists. In the plots, **blue triangles** are spring data and **red circles** are fall data. Top left: Our data show that spring counts of Sandhill Cranes are increasing because of a growing local population. Top right: By contrast, our spring and fall counts of Eastern Meadowlark are down, indicating a population decline. Bottom left: spring data, in particular, for Bay-breasted Warbler show that there was a major population boom in the late 1970s and early 1980s, followed by a decline to baseline levels by the early 2000s; this was in response to a major budworm outbreak in northern Ontario. The rise in more recent years may be the beginning of another population boom.

Our data are also used for documenting migration timing, routes, and longevity. The recovery rate for songbirds is very low. For most LPBO species, less than one percent of all birds banded are ever recovered elsewhere. Large numbers must therefore be banded before we get enough recoveries to document where these birds breed, migrate and winter, and how long they live. The age and sex data obtained during banding can be combined with estimated totals (ETs) to show dates of migration for each age and sex class within a species, and can be used to gauge annual productivity. The collection of various morphometric data allow for measuring body condition corrected for body size.

There are many things yet to be learned about migratory behaviour. For example, an analysis of banding data has shown that immature warblers are usually far more common at the Breakwater station in fall than at inland banding sites. This difference in abundance was found to be true for other Great Lakes coastal sites as well, except in the vicinity of lighted anthropogenic structures. These findings led to publication of original hypotheses about different migratory behaviours in immature and adult warblers.

Birds have high metabolic rates and must eat frequently to maintain health. The weight and fat measurements we record are good indicators of a bird's condition. Our banding data can be used to document weight changes according to season, or time of day, and show how much weight birds gain while stopping over at each of Long Point's field stations during migration. Weights of birds found dead at the lighthouse were used to provide the first estimates of energy use during migration — information previously not obtainable in any other way.

LPBO data and cooperators have been involved in a wide variety of ornithological and natural history research resulting in more than 200 peer-reviewed publications in almost every ecology-based journal. This work is not limited to birds as LPBO regularly contributes to studies on migratory bats, insects, such as monarch butterflies, reptiles, amphibians, and other species at risk. Other examples of integrated collaborative research include using ETs in studies correlating migration to weather conditions; colour-banding in studies of behaviour and breeding biology of resident birds; studying patterns of moult; studies of migration timing with respect to climate change, assessing existing techniques for ageing and sexing and discovering new ones; studying parasites and illnesses of birds; energetics and physiology of migration, and understanding short and long-distance movements of birds between LPBO banding stations, and more regional movements, etc. A complete list of LPBO publications can be found in our annual report, or in our publications repository.

Research Stations

LPBO operates three permanent research stations on Long Point: the Tip, Breakwater and Old Cut. Birds Canada headquarters is located in Port Rowan, just north of Long Point. While each station can gather meaningful data if only one person is present, this is not highly desirable and generally only occurs when logistical factors, such as boat trips or personnel movements come into play. Each station is somewhat different in its personnel needs due to area of coverage and other factors.

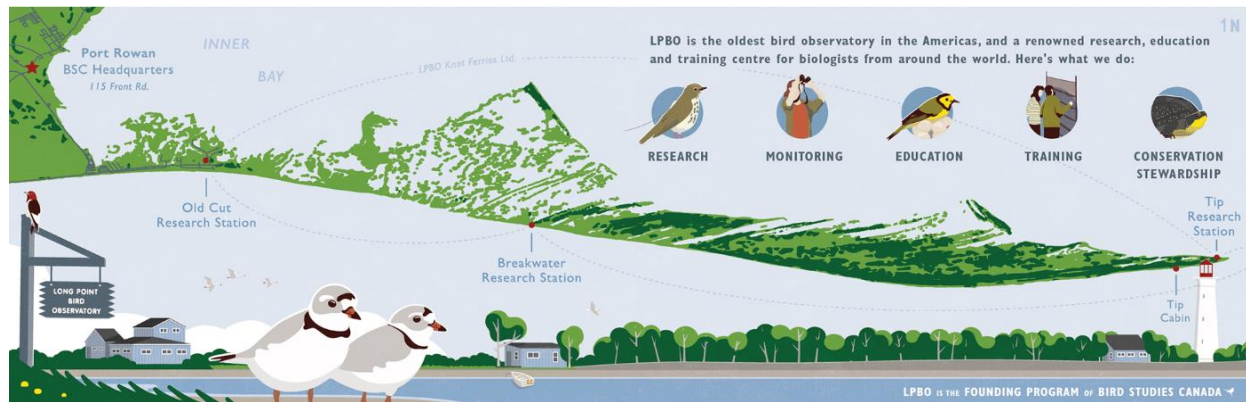


Figure 5. The longest freshwater sandspit in the world, Long Point stretches 40 km into Lake Erie. LPBO operates three research stations on the point: the Tip, Breakwater, and Old Cut. The Birds Canada headquarters is located on the mainland, in Port Rowan.

The Tip

The Tip (Area 01), LPBO's (and the Western Hemisphere's) first and longest-running research station, was established in 1960. Given its long history, operation of the Tip takes priority over Breakwater and Old Cut. With data stretching back six decades, the Tip is the most important site for migration monitoring in all of Canada. As the name suggests, it is situated at the eastern tip of Long Point, on property owned by the Canadian Coast Guard and Ontario Ministry of Natural Resources and Forestry. Apart from the lighthouse, LPBO owns all of the buildings and rents scientific privileges for the use of the land on which we operate our programs. Access to the Tip is by a 30 km boat trip, which usually takes between one and 1.5 hours depending on the weather and the amount of cargo onboard. Most of the land at the Tip is contained within a provincial nature reserve, for which LPBO also acts as the primary steward. The reserve is characterized by ponds and wet meadows, set among rolling sand dunes covered with an open Eastern Cottonwood and Eastern Red Cedar savannah. Migration oscillates between heavy influxes of birds and very slow periods with few to no migrants. When migration is in full swing, the number of birds can be astounding, and rarities show up frequently. Over 350 species have been recorded at the Tip, including Canada's only Chihuahuan Raven (May 1976).

Coverage Strategy: The Tip is the Olympics of migration monitoring. Net rounds and censuses are long and sandy, birds can be plentiful and conditions are generally challenging, harsh and unpredictable. There is no room or patience for complacency at the Tip. Every cooperators needs to be at the top of their game at all times, especially the BIC! The Tip runs optimally with five or six people but can run satisfactorily with three to four people. Under optimal conditions: two to three cooperators will be in the banding laboratory, two to three monitoring the nets and traps, and one to two conducting census, observing and rotating between positions as needed. While some training takes place at the Tip, the personnel who reside there are typically the most experienced volunteers.

Someone should be stationed at or near the extreme Tip, but not in close proximity to the nets, at all times during the standard six hour migration monitoring period! This individual can spend the time between net rounds observing waterbirds off the Tip and is otherwise 'at the ready' in case weather, birds, or other conditions require immediate attention at the nets. Whoever is stationed at the Tip should rotate every net round or two. It takes discipline, particularly on the part of the BIC, in order to

ensure this process is maintained, but it is the **best** way to safely operate the Tip. The Tip will always have three to four portable radios. The BIC will always have a radio and radios will be present in the banding lab, with an extractor team, and with the person stationed at the Tip. The BIC should know where everyone is at all times – make their job easy by communicating with them regularly. Daily minimum field hours should be in the range of 6-10 hours/day/person. See Appendix A.

Breakwater

Breakwater (Area 02, aka B-Dub) was established in 1962 and is the second highest priority station. Breakwater is located about 12 km from the base of Long Point on property owned by the Long Point Company, a private hunting club. Access to Breakwater is only by boat on the south shore of Long Point. It's either a 12 km long trip from Old Cut or an 18 km trip from the Tip. The habitat is an oak-maple-hackberry dune ridge with lots of grassy savannah. Small ponds abound, and the site is fringed by a huge marsh complex. Although still very episodic, migration here is generally more consistent day-to-day than at the Tip and is at the apex of a major diurnal flyway for passerines leaving or entering Long Point – one way or another, everything has to fly past Breakwater. Nearly 300 species have been recorded at Breakwater, including Canada's first ever Black-capped Vireo (April 1991).

Coverage Strategy: Breakwater is probably one of the easiest research stations in the world to operate, but the honour should not be taken lightly. Among all the stations, Breakwater is often the most esteemed among experienced LPBO alumni. Breakwater can sleep up to six people, but rarely sees this many people as facilities can get cramped with any more than three or four. The area of coverage at Breakwater is much smaller than at the Tip and two experienced people can easily run the station though three is optimal. Generally, the BIC here is a qualified volunteer and one or both of the other volunteers have had a reasonable amount of training (at least a week) at the Tip or Old Cut. There is really no reason to ever be inside the cabin at Breakwater, so the average field hours should be in the range of 10-12 hour/day/person. Someone should be on the deck counting the passage of passerines overhead or through the bushes and scanning over the marsh or lake with some regularity throughout the day. See Appendix A.

Old Cut

Old Cut (Area 13) was established in 1983, and is located near the base of Long Point proper. Despite consistently being the busiest station both from a monitoring/research and public outreach perspective, it is the observatory's lowest priority in terms of migration coverage. It doesn't happen often but sometimes the operation at Old Cut needs to be sacrificed in order to keep the other stations and projects running.

LPBO owns the immediate grounds and buildings at Old Cut but most of the net lanes and adjacent lands are owned by the Ministry of Natural Resources and Forestry. Old Cut is very much a multi-functional facility. It is the public face of LPBO, providing educational opportunities to school groups and opportunities for visitors to view banding. It is not uncommon for local experienced banders to pop by, unannounced, for the morning's banding. Introduce yourself to them if they haven't already. Their assistance is quite helpful. The majority of training is conducted at Old Cut before anyone is shipped out to the other stations and it is also the main logistical hub and supply depot for all of the observatory's

work on Long Point. The vast majority of LPBO's collaborative research is also conducted at Old Cut which provides cooperators with a wide range of potential experiences to take advantage of. Because Old Cut is the jumping off point for the remote stations, living conditions are almost always congested. A dozen or more people may be living on site, especially during the busy spring/summer period. Privacy is nearly impossible. Stress levels are higher. But somehow, almost everyone manages to fit in and acclimate. Another major benefit of Old Cut, compared to the other stations, is access to the mainland. If you are interested in exploring some of the most biologically diverse habitats in all of Canada, you can find them a short drive away from Old Cut.

The Old Cut woodlot is comprised of native Eastern Cottonwood, White Spruce, Red-osier Dogwood and River Grape, as well as many naturalized non-native species such as Scots Pine. The woodlot is situated between a neighbourhood with lush gardens and large expanses of marsh. On average, Old Cut bands the greatest numbers of birds per day in comparison to the two other research stations and often has the highest landbird diversity. Just like the other stations, bird migration here can be quite phenomenal, and over 300 species have been recorded, including LPBO's only Violet-green Swallow (Aug 2014).

Coverage Strategy: Old Cut nets are fairly close together and the coverage area is small. The migration program can easily be run by two to three experienced people. However, the immediate contact with the public usually means that more people are needed to ensure net rounds are done frequently and the public is dealt with in a hospitable manner. Old Cut is best managed with a crew of four to five cooperators depending on the time of year and number of birds. This allows for a rotation of two people in the laboratory processing, two people regularly attending to nets and traps, and one person on the observation platform, conducting census, observing birds, or available for other station duties. Old Cut can be incredibly busy with birds, people, and additional research activities so, like the Tip, the BIC must be on high alert and know where everyone is at all times.

The two most active times for visible migration is the hour before/after sunrise and the hour before sunset. Following net setup, someone should be stationed on the platform at the Dyke until census. It does not have to be the same person, so people can rotate in between net rounds. Someone should also be stationed on the Dyke in the hour before sunset. The minimum expectation of field hours at Old Cut is 4 to 6 hours/day/person. See Appendix A.

The Friends of LPBO

The Friends of LPBO are a group of more than 20, mostly local, volunteers who greet and inform visitors to Old Cut while also running the LPBO Shop and helping with a myriad of other tasks around the station, including scribing, extracting, and gathering observations. Revenue from the shop provides critical support for LPBO programs. The presence of the Friends dramatically increased the quality of our visitor and education services at Old Cut and takes a great deal of pressure off of the BICs and cooperators. Take the time to introduce yourself to the Friends and help with their duties. Do not assume that the Friends will greet everyone, clean up, or take care of everything in the visitor centre. Everything at LPBO is a team effort so lend the Friends a hand whenever you can – they certainly help us every single day!

Integrated Collaborative Research

Collaborative research is a common fixture at LPBO. It usually occurs at Old Cut but can be conducted to varying degrees at each station with a variety of topics and taxa. The “value” of those birds involved in collaborative research is often far greater than those associated with the regular monitoring program (banding, counting, or training). While our general migration monitoring protocol needs to be strictly adhered to, modifications are often made at the discretion of the BIC to accommodate collaborative research needs. The BIC will carefully communicate these modifications to every cooperator so there is no confusion. We often accommodate many needs of various projects in parallel. **All researchers are required to complete a LPBO Collaborative Research Agreement and a LPBO Visiting Researcher Health and Safety Information form;** both of these documents will be provided by the Program Manager or the Director of Migration Ecology.

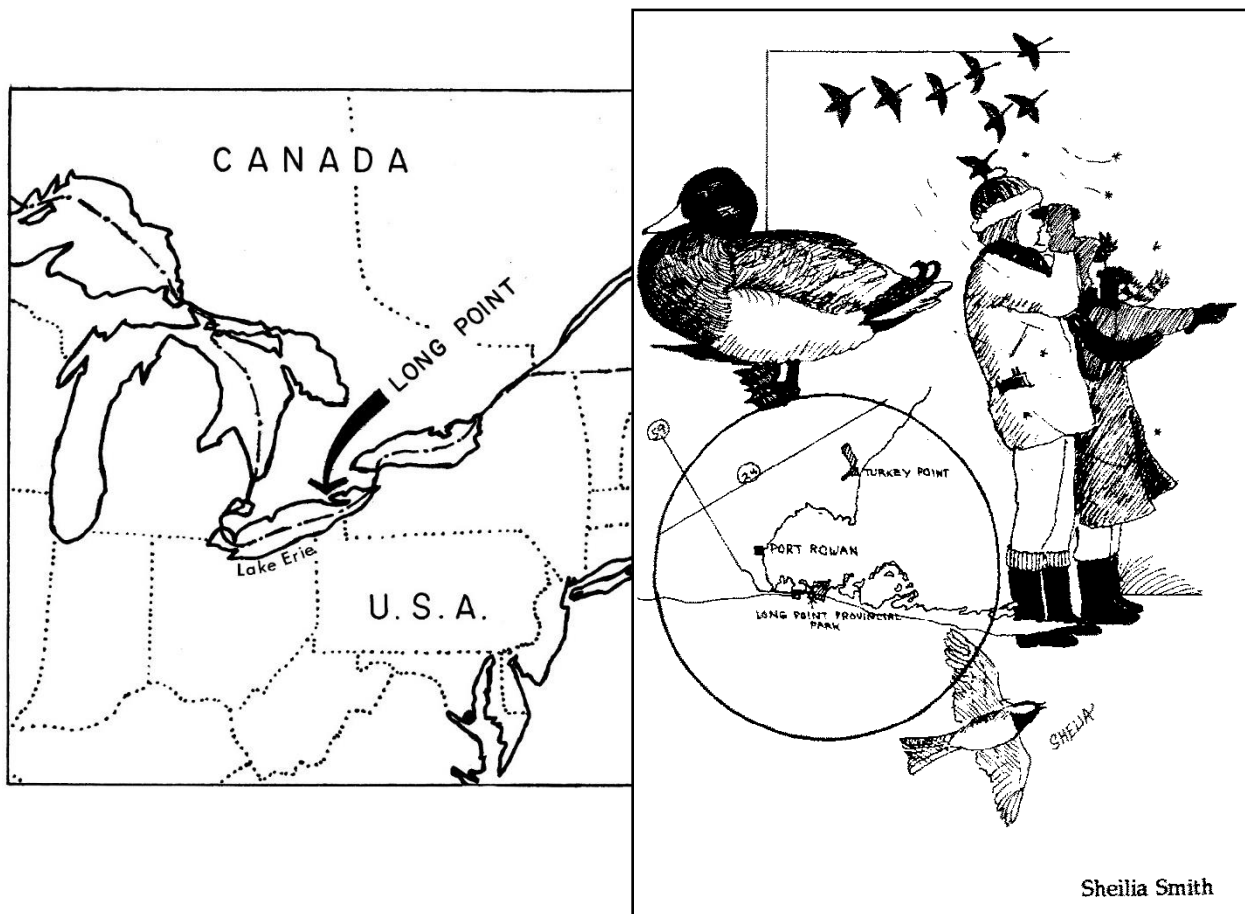


Figure 6. LPBO is located in southwestern Ontario, Canada, on the north shore of Lake Erie, the world's thirteenth largest lake. The adjacent town of Port Rowan (population \approx 1500) has most of the services needed to operate our research stations. Our incredible biodiversity, almost unmatched in Canada, is part of a UNESCO World Biosphere Reserve, a Ramsar Wetland of International Significance, an International Monarch Butterfly Reserve, and an Important Bird and Biodiversity Area. Much of the point and the surrounding wetlands are protected by Long Point and Big Creek National Wildlife Areas, Long Point Provincial Park, as well as privately owned and managed lands of the Long Point Company. Birders and naturalists come from all over the world to explore Long Point's remarkable beauty and ecology.

General Rules, Policies, and Information

The following is a summary of the most important policies, rules and guidelines at LPBO. If you don't understand why we have a particular rule or policy, please ask. The first priority for all LPBO cooperators and visitors is personal safety. If you ever feel your personal safety is at risk or is about to be put at risk, immediately talk to the BIC, who will take prompt action to help solve the issue.

LPBO's Cardinal Rule: Treat every person (colleague, member of the public, or guest) in a respectful and courteous fashion. Always leave a place (room, kitchen, bathroom, research station or field site), or thing (equipment, boat, or vehicle) in better condition than when you found it. Please don't ever leave a field station without cleaning up your own and, sometimes, other people's mess. **All personnel** must help with daily clean-up and other chores. All stations must be presentable daily and immaculate weekly. At best, uncooperative or chronic slackers likely won't be allowed back; nor will they receive a particularly favourable job reference if they want to use their LPBO experience on their resumes.

Communal Living

Communal living is as ubiquitous at LPBO as birds. Cooperators share close quarters with anywhere from one to 16 people at a time. As such, everyone should be equally prepared to cook, clean, organize, and be friendly and courteous with up to 16 people. Each cooperator, whether they're staying at LPBO, paying guests or not, has equal responsibility for the day to day upkeep, cleaning and maintenance of the facilities. Much of what is required should be common sense but, if you're ever uncertain about what could be done, ask the BIC. This manual also outlines various day to day tasks that should become instinctual to LPBO cooperators.

General Housekeeping and Maintenance:

- All cooperators must help keep the stations looking exceptionally well-kept on a daily basis.
- Immediately report all facility repairs, equipment breakdowns, supply deficiencies, or any minor problems to the coordinators.
- All LPBO facilities are communal spaces, so please take care of your personal belongings and do not leave them in common areas.

Garbage and Recycling: All garbage and recycling generated at the Tip and Breakwater must be brought to Old Cut - don't let it accumulate. At Old Cut, garbage and recycling pickup happens early Monday morning (or on Tuesday following holidays). Garbage and recycling are to be placed out at the end of the driveway immediately after nets are open. Do not put the garbage and recycling out the night before because animals will rip open bags and create a mess. There are garbage storage containers at all stations. Larger items that require disposal at the dump can be stored in the compound beside the boat garage at Old Cut. Similar items at the Tip or Breakwater should be brought to Old Cut as soon as possible. Do not let junk accumulate! Each station has a composter to deal with organic waste.

Departing LPBO: Before you leave, make sure that you've squared up all of your accounts with the Program Manager. Short-term volunteers and researchers can pay by cash or cheque at any time. Credit card payments should be done at the Birds Canada headquarters in Port Rowan during business hours (Monday to Friday, 8:30 am to 4:30 pm), or you can leave your card details with the Program Manager. Ensure your room is cleaned and make sure you leave with everything you brought to LPBO. We cannot mail left behind items at the end of the season.

Security: In general, Long Point is a safe place for you and your belongings. Break-ins are rare, but they do occur. More serious crimes are almost unheard of. The main house at Old Cut is usually left unlocked throughout the field season because personnel are coming and going at all hours of the day and night. However, the banding lab, workshop, shed, garage, and LPBO Shop are to be locked at all times when not in use. There are no locks on the facilities at Breakwater. All buildings at the Tip are to be locked when left unattended even if you think there is no one around. LPBO is not responsible for your personal belongings left in the facilities or, in personal vehicles. If you need to store personal belongings in a secure location, notify the Program Manager and they can store them somewhere safe.

Fire: Fire is a major danger - we've already lost one cabin to fire.

- Do not leave lit stoves, fires, propane lights, heaters or other heat sources unattended.
- Do not unhook or remove batteries from smoke detectors. Notify one of the Program Manager or Program Coordinator if your room does not have a working smoke detector and replacements will be found immediately.
- Do not use candles!
- At Old Cut, use space heaters only when absolutely necessary and do not leave them unattended when in use. Do not put anything on or near heaters.
- Smoking is not permitted inside any LPBO facility.

Pests: We have a zero tolerance policy when it comes to pests. Kill or remove all spiders, woodroaches, ants, and mice you find indoors! **No exceptions!** If you are not willing to do this yourself, find somebody who is. Mice are the primary vector of Lyme Disease (~90% are infected), and may also carry Hanta Virus. Keeping a clean living space, workspace, and banding lab at all times will minimize problems with pests and potentially lethal diseases they may carry.

Phones and Internet: Landlines at Old Cut are available for use as needed, local and long-distance (North America). Internet is freely available to all but, there is one important caveat: avoid using high bandwidth activities such as FaceTime, Skype or other video chat services at Old Cut but they can be used sparingly when needed. **Video streaming or downloading of media is prohibited at any time.** If the internet is not working tell the BIC immediately. Under no circumstances is anyone except the BIC allowed to touch any routers or connections. Cell coverage at Breakwater and Old Cut is usually reliable. Cell coverage at the Tip is usually unreliable. If you are going to the Tip, it is best to consider yourself out of cell/data contact. **Personal phone use is prohibited during standard monitoring hours except for photos, eBird Canada, iNaturalist, and digital field guides. BIC's are exempt for inter-station communication and logistics purposes.**

Substance Abuse: Everybody is responsible for maintaining a safe and productive alcohol and drug free environment during active work and monitoring periods. We don't mind you enjoying yourself and having a few drinks during off hours, but under no circumstances should anyone handle any birds or operate any equipment or machinery under the influence of alcohol or drugs.

Boating

Boats are operated only by the coordinators and other authorized personnel that have a [Coast Guard Pleasure Craft Operators Card](#).

- All operators must read the *LPBO Boat Operation and Safety Guide* before every season.
- Radios at all stations must be monitored whenever a trip is underway.
- **The first priority when getting on shore at the end of every boat trip is to let everyone know when you've arrived safely.** Everything else is secondary to communicating your arrival at your destination.
- Do not leave gas tanks, oars, life jackets, safety boxes, oil, other valuables, or garbage unattended in beached or docked boats.
- Always offer assistance to any LPBO personnel before or after any boat trip. Help is **always** needed to launch boats, or carry cargo to and from the dock/water.
- Do not allow sand to enter the boat gas lines. Inspect, wash off and shake sand from gas lines prior to hook up. Inspect and wash off the tops of the gas tanks too. Keep equipment out of the sand!

Vehicles

- Cooperators driving LPBO vehicles must read the *LPBO Health and Safety Manual* before every season.
- Vehicles are only to be used for LPBO business.
- Fill out the mileage log at the beginning and end of each trip.
- Only drivers who are insured by Birds Canada are permitted to drive any LPBO vehicles or boats.
- Regularly inspect oil, transmission fluid, and tire pressure.
- Obey all traffic laws.
- Do not leave any garbage in vehicles.
- Smoking is not permitted inside any LPBO vehicle.
- **LPBO All-Terrain Vehicles (ATVs) and boats can only be driven by authorized personnel insured by Birds Canada.** A helmet must be worn by the ATV driver and all passengers. Passengers can only be taken in the trailer, never on the ATV itself. Drive only on designated pathways, never over dunes or through vegetation. When driving on the beach, stay close to the water line so that wave action will wash away the tracks. Anyone found to be using the ATV or boats in an unsafe or disrespectful manner either to LPBO, other cooperators, wildlife or the biosphere, will be banned from their use immediately.

Trespassing

Never trespass on the Long Point National Wildlife Area (LPNWA) or the Long Point Company property. Failure to comply will result in immediate dismissal. It is everyone's responsibility to know where they are in relation to the boundaries at each station. If you are unsure where the acceptable boundaries are, ask the BIC to show you. Note that, contrary to other locations, you do not have free access to the beach below the high water line on Long Point.

- At the Tip, LPBO personnel can travel as far west as the posted signs marking the boundary of the LPNWA, about 2 km from the very Tip. On the south shore, look for a large white sign on the dune, among the Marram Grass. There may or may not be smaller white and blue signs on the beach itself. On the north shore, look for a small white and blue sign on the beach or atop the adjacent small dune near a clump of Eastern Red Cedars. The boundary across the interior of the point is not marked; if you are unsure of your location, do not go any further.

- At Breakwater, you can walk the length of Courtright Ridge up to the posted signs before the Long Point Company warden's residence, but you cannot venture off of the ridge or take extended walks in any direction on the beach. Do not walk west on the dirt road in front of the station.
- At Old Cut, you have much more freedom of movement. It goes without saying that you must stay out of neighbours' yards. You can walk into Long Point Provincial Park on the road or on the beach. You can also walk along the beach, but not among the dunes, of the Thoroughfare Unit of the LPNWA. Do not go past the line of Long Point Company's signs posted across the beach.
- In certain circumstances access to the LPNWA will be permitted (e.g., Breeding Bird Census or shorebird surveys). In these cases, all personnel must have a valid permit. If you forget your permit, go back and get it. You cannot be on the LPNWA without a permit - it's the same as trespassing.
- The land at the Tip and at Old Cut is publicly accessible. Thus, visitors are not trespassers, and should be treated with respect and friendliness. At Breakwater, if you see someone you don't recognize or who looks completely out of place (i.e., obviously not an employee or member of the Long Point Company), notify the BIC immediately. Do not try to enforce any kind of trespassing rules upon them, you never know, they may actually have permission to be there.

Migration Monitoring and the Daily Routine

LPBO operates research stations, not banding stations. We combine standardized counts of migratory birds, daily census, and banding data to monitor bird populations. Counting birds outside of the nets and banding lab is just as important, if not more important than banding! Consider banding to be an added bonus to your day. **If you are not counting birds outside of the nets and lab, then you are only doing part of your job as a cooperator at LPBO.** A breakdown in the daily routine for each station to help you with this goal can be found in Appendix A.

Inter-station communication

Each station is equipped with a VHF radio for inter-station communication, every BIC has a cell phone, and the Tip has an In Reach satellite communication device.

Radios: The BICs are usually the ones to talk on the radio and communicate between stations; however, it is important that everyone receives instruction on radio use and care for safety reasons. Instructions for radio operation are posted by each radio. The Old Cut radio must be left on all day and night. If remote stations miss two calls in a row, and communication cannot be made with the In Reach, or a cell phone, emergency procedures will be set in motion to find out what has happened out there. This could involve sending out the Coast Guard.

LPBO Operations WhatsApp Group: LPBO staff communicate primarily through an LPBO Operations WhatsApp Group. All communications should be sent through the group so that everyone knows what's going on at all times. Do not have side conversations. Post all reports, bird sightings, information, lists, requests and questions to the whole group. This keeps everyone in the loop. It is mandatory for each BIC to send out two summaries of daily activities that are to be shared with the entire operations team including facilities and equipment maintenance:

1. Immediately following census: provide a summary including information such as number of species, which species were most common, and any unusual species observed. Also include a general description of migration so far that morning (e.g., how many birds captured on an average net round, what species are most abundant in the woodlot, is the weather cooperating, etc).
2. Immediately following the completion of ET's: provide a summary of the number of birds and species banded and recaptured as well as the total number of species ET's for the day. Summarize which species were the most common, highlight any high counts, low counts or rarities. These summaries are invaluable for keeping everyone informed of what is going on at the other stations so please make sure to make them comprehensive and send them daily.

The Public and Birds

The Old Cut Research Station is open to the public 24/7, 365 days a year. This requires staff and volunteers to be especially diligent and pragmatic in every aspect of the operation and communication with the public.

LPBO's non-negotiable policy and ubiquitous practice is that **every visitor to LPBO, in the banding lab or otherwise, needs to be proactively greeted immediately and given a basic explanation of what is going on.**

- The default reaction to visitors is to embrace and educate them. Ignoring them or assuming that they have already been here or know what's going on is wrong.
- Never turn your back to visitors in the banding lab. Your default reaction in the banding lab should be to pivot toward them and share with them everything that you're doing.

Do not allow the public to handle birds. Do not allow the public to hold, pet, release, or otherwise touch the birds. Do not allow the public to extract birds from the nets. Be polite but very firm. Only banders that have been trained or otherwise approved by BICs may touch birds. This means that experienced banders from other stations who are visiting LPBO may not handle birds unless the BIC explicitly says they can. Remember that LPBO gives hands-off demos only! Visitors are not permitted to handle the birds and should be discouraged from touching them. Emphasize that we are always sensitive to the physical and emotional health of the birds we handle. We do not put them through any more stress than is absolutely necessary. Photography of birds in the hand is fine, just as long as it doesn't get out-of-hand and over-stresses the bird or keeps you away from more pressing concerns (see below for more on photographing birds).

Sometimes, past LPBO personnel arrive on site and start to extract birds unannounced (they should always introduce themselves first but often they don't!). Approach these mysterious helpers and politely ask them to step aside. Then you should take over, explaining to them how important it is that people wishing to assist communicate with the BIC first. They're usually only trying to help. Direct them to the BIC if they have further questions. Also, pay attention to any of the public's concerns. Visitors sometimes come rushing to tell you that a bird has been caught or that one seems to be having a problem (e.g., dangling by a foot or tongue). Quickly attend to things and reassure them as best you can. Don't just shrug and nod. You should actually demonstrate to them that you take their concerns seriously and that you are on top of things. Personnel should consult the [*Mist-netting with the Public: a Guide for Communicating Science through Bird Banding*](#).

At Old Cut, it is often necessary to scale back the banding operation during peak visitor periods, especially on weekends and holidays. In general, on any day we are open to the public, both the bird and the visitor situation should be gauged. If there are lots of birds and/or visitors, then the netting operation **must** be scaled back accordingly. If there are few birds and/or visitors, then a full netting operation may be continued or extra traps and nets set to catch a bird or two for the demonstration. It will be a daily judgement call on the part of the BIC and what they decide must be followed. At times, the BIC will decide to close any number of nets, sometimes even the whole set.

The reason behind this is obvious—a full-blown netting operation simply cannot function efficiently or safely when there are lots of visitors. To put it bluntly, there is a much greater risk of birds being injured if there are visitors present. This is not only very hard on the birds but is extremely bad for public relations! Hence, attempting to operate a netting operation at capacity, when visitors are present, is completely unacceptable. At Old Cut, Nets 5, 6, and 8 through 11 are permanently closed to the public. These trails should be signed and gated at all times during the monitoring period, but they should be opened to the public at other times of day.

Remember, under no circumstances are you to sacrifice a bird's safety in the name of banding as many birds as possible. In order of priority, our banding operation puts the bird's safety first, followed by data quality, followed by "quantity". If this simple rule is followed, visitors will sense where our priorities are and things will be fine!

Banding Demos for the General Public

Formal banding demonstrations are conducted in the viewing area set up in the banding lab (and occasionally outside if circumstances dictate). With few exceptions, visitors are not permitted inside the portion of the room where the banding is actually going on. Visitors are only permitted in the visitor section of the laboratory.

Only well-trained, experienced banders should give the demos; trainees can scribe and generally help out until they're sufficiently adept at the entire process. Banding in front of the public is an important part of life at LPBO, but it can take some getting used to.

Banding Demos for School Groups

Group visits can be a lot of fun. They are also a very efficient way of educating a lot of people in a short time. Group visits are booked in as space and time permit. Group size is generally limited to a maximum of 30 people (split into 2 teams); 15 is a nice size to work with at one time, especially around the mist nets.

Groups are typically handled for 1-2 hours (almost never longer), during which time they are invited into the Visitor Centre and given a brief introduction about Long Point, LPBO's history and mandate, the role of bird banding and migration monitoring, and trapping methods. A short slide show may also be warranted. This is usually followed by a demonstration and talk about different bird catching methods, a guided walk around the net lanes and finishes off with a banding demo. Some school groups are taken on a census as well, but this depends on what the teachers want, the number of kids involved, and time constraints of staff.

When groups are scheduled, make sure that there are not too many nets open, keeping in mind that groups take time and that you don't want to get a back-log of birds. In general, scale the netting operation

back by one-half (unless there are so few birds around that it looks as if you may not get any for "show-and-tell"). Don't let visitors (especially kids) handle or touch birds, though they can photograph them while you hold them. Some people insist on poking their fingers at the bird and before you know it everyone is doing it and it really is quite upsetting to the bird. Moreover, the bird will probably bite. Again, only the most experienced banders should be doing the hands-on work in front of groups.

At least two people are required to handle a group, and three is nice. When giving a tour of the net lanes, politely remind the group **frequently** not to touch the nets or the birds. They should watch that their buttons don't get caught up in the nets. Also, because of Poison-ivy and ticks, they should stay on the trails.

The net-lane tour generally requires two people, unless the group is really small. An experienced person acts as the leader, does most of the talking and most (or all) of the bird extractions. The other person generally helps out, often bringing up the rear to make sure there are no laggards and to keep an eye on the people who inevitably get buttons caught on the nets, poke at the birds or nets, or try to venture off by themselves. While the leader is stopped for a while at a particular net, the other person should take a quick dash alone around some upcoming nets, to make sure there are no "difficult" birds caught. Any upcoming difficulties can then be relayed quietly to the leader who might choose to avoid a particular net. If the other person can extract difficult birds quickly before reporting back to the leader, then so much the better.

"Difficult" birds include ones that are tongued, exceedingly tangled, caught by a foot, etc. We know that they are really quite OK and are not harmed but visitors can understandably get a different impression. The assistant on the net check should also be on the lookout for nets that are catching too many birds, and should start to extract the birds and/or close more nets if necessary. Again, it is important that not too many nets are open when visitors are present and to remember that visitors are going to slow you down so that you won't be able to process nearly as many birds as quickly as you could otherwise. Do not get a backlog of birds.

Back in the banding lab, an experienced bander runs through the process slowly at first, gradually speeding up with each successive bird. At first, describe everything that's going on as well as interesting things about the birds themselves. There are several documents in the banding lab that offer good talking points, such as the *Longevity Records for Select LPBO Species*. The bird's safety should be stressed at all times. If you think that the actual banding demo is eating into valuable time that should normally be devoted to a net check, get someone to do a quick net run. Remember that nets must be checked a minimum of once every half hour. If you've got more than a half dozen birds on hand, speed up the operation so that by the end you are processing birds as quickly as you normally would. Point out that ideally the bird is handled for about a minute before being set free - get the visitors to time you!

Neighbours and Visitors

Maintaining good relations with our neighbours is essential! Be friendly, courteous, and helpful at all times, no matter how someone else is acting towards you. Our neighbours include home and small business owners near Old Cut and in Port Rowan, employees and members of the Long Point Company, cottagers at Gravelly Bay (located about 4 km from the Tip on Long Point's north shore), employees of the Canadian Wildlife Service, Transport Canada, the Canadian Coast Guard, and the Ontario Ministry of Natural Resources and Forestry.

- Avoid any questionable or loud social activities that might offend other personnel or neighbours.
- Do not allow dogs or bicycles into the net lanes at the Tip or Old Cut. Politely ask visitors to secure their pets away from the net lanes. Sometimes pet owners insist on doing what they want despite your most polite pleas. In that case, let them go ahead, but keep a close watch on things.
- At Old Cut, keep day visitors informed and made to feel welcome as much as possible. Introduce them to the Friends of Long Point, who will provide much of what they need, besides a banding demo. Point out the sightings board for interesting observations, direct them to the Visitor Centre, be friendly, and let them know about memberships and items for sale (e.g., checklists, bird finding guides, clothing, etc.).
- VIP's regularly arrive at Old Cut unannounced. You're not likely to be able to distinguish them from the regular public. Hence, you simply treat all visitors as VIPs. VIPs include employees of government agencies, all of our benefactors, members of the Birds Canada Board of Directors, the Birds Canada President, all neighbours, anyone who helped construct the facilities, and indeed all past LPBO volunteers - there are over 1000 of them.
- Treat all local store owners and businesses with friendliness and respect. We rely heavily on their support, and we do try to support them as much as possible.
- Never put traps or nets within the view of neighbours or general passers-by (e.g., no traps or nets are permitted on the west or south side of the Old Cut buildings).

Social Media

Please be very careful when posting photographs of bird banding operations on social media. There is a small but vocal group of people who believe bird banding is unethical and will seize upon any photo or story posted on social media that will discredit our profession. We follow the [North American Banding Council's](#) (NABC) [Photographic Guidelines](#):

- The primary uses of photography of birds in the hand are for documentation and education. Standardized documentary poses of the birds clearly demonstrate key features that identify species, age and sex, and they should be used to document: rarities; individual markers; specific rare conditions such as indicators of disease, malformations, or injury; and molt.
- Banders are also encouraged to contribute to [Piranga](#), an educational website that provides photographic guidelines and a forum for banders to upload, share, discuss and peruse photographs of birds in the hand.
- To minimize time in the hand, photographers should arrange their shots before the bird is posed. **Birds should be held no more than one minute for photographic purposes.**
- Birds should be held by an experienced bander in a grip that is appropriate to the species and that considers bird and handler safety. For example, passerines with powerful pectoral muscles held in a photographer's grip without additionally securing the wings could risk some injury. Species with weak legs such as shorebirds, hummingbirds, and goatsuckers should not be held by the legs.
- Birds should only be photographed when they show no signs of stress such as closed eyes, gaping, fluffed or ruffled plumage, or are continually flapping their wings.
- Avoid flash photography. If flash must be used, it would be best to ensure that the bird's eyes have time to adjust before it is released.

- LPBO considers **selfies with birds no longer appropriate**. Pictures of you working safely with birds as part of the normal handling process are acceptable, however.
- Consider carefully what images are appropriate to take and share. If you are uncertain about the appropriateness of a particular photograph, it is best not to use it.
- While any photograph can potentially be misinterpreted, this can be minimized by thoughtful commentary. Information associated with posted images and videos should be factual and professional, and provide context that enables viewers to appreciate the value of banding.
- Ensure that all commentary captured on video is appropriate.
- LPBO appreciates the generosity of cooperators to lend their photos to LPBO for promotional use. We will always make the greatest effort to acknowledge the photographer.

We do not monitor your postings on social media but inappropriate photos have a way of grabbing the attention of Birds Canada staff and, worse, concerned members of the public. Think carefully before you post and, if in doubt, don't!

Binoculars and Notepads

Always wear your binoculars and carry a notepad! If you are at one of the research stations you should be looking for and recording birds constantly. Note taking is an essential part of the life at LPBO. Our general rule of thumb is that **if it isn't written down, it doesn't exist**. No matter how good you think your memory is, days blend together and you will forget things. This is a bird **observatory after all**; you should be looking for **and recording** birds!

Bird Feeders

Standard bird feeders should be filled everyday immediately after the nets are opened. It is prudent not to operate full feeders in close proximity to traps. You may wish to keep some feeders out of operation when you're relying on ground traps as birds will not respond to traps. Do not stock the feeders with cracked corn, instead use an Armstrong seed mix or black oil sunflower seed. Cracked corn can be spread on the ground, or tables under the feeders and on platform feeders. You may not bait nets during the standard banding period. Hummingbird and oriole feeders should have new food made every two or three days. Do not let the sugar water go bad or become contaminated by insects. All feeders should be cleaned with hot water and bleach at least once per season to reduce the transmission of diseases. During the off season every attempt should be made to keep the feeders full. Feeders attract birders and their donations, which is more important than attracting birds.

eBird and iNaturalist

eBird and iNaturalist are used regularly by all LPBO cooperators. It should not be hard to track the whereabouts of LPBO cooperators through their eBird checklists or iNaturalist sightings.

While not mandatory, LPBO cooperators are strongly encouraged to track all bird observations on [eBird Canada](#), and other wildlife observations in [iNaturalist Canada](#). Please use the Canadian portals for eBird and iNaturalist (Birds Canada actually maintains the eBird Canada so we strongly encourage its use). For those unfamiliar with these platforms, they are enormous public databases that thousands of birders and naturalists around the world contribute their sightings to. The data are publicly available and used

not only by birders to locate wildlife they want to see but also by scientists who are interested in many kinds of population and ecological questions.

Please take time to read the [instructions and protocols](#) for submitting checklists on eBird Canada. Ideally, one should keep separate daily eBird checklists at the research stations. One for all activities (net checks, extraction time, banding time, etc.) related to banding using the eBird Banding protocol for a daily list. And two, for periods when the primary focus is birding using the Complete Checklist protocol. Each period devoted to birding during the day should be submitted as a separate checklist. The daily census should be submitted as a separate checklist by the census taker(s). Unless you spend the entire day concentrating on birding and nothing else, do not submit a list for an entire day or lengthy period of time as a Complete Checklist.

eBird Canada checklists must only include actual birds and numbers seen and counted (or carefully estimated visually) and never an estimated total of birds that were probably present.

Please use the provided hotspots when birding at the Tip, Breakwater, and Old Cut.

Please provide complete descriptions of rare or flagged birds, regardless of how relevant you think the flag is. Describe the identifying field marks first and the circumstances second. Keep in mind that these descriptions will potentially be scrutinized many years from now and if they are inadequate they may not be accepted by future ornithologists. Descriptions don't need to be exhaustive but should be detailed enough to document how you identified the bird or came to the number that you did.

If you are not prepared to use eBird Canada properly or, are unwilling to properly document your sightings carefully, we would prefer that it not be used at all.

Rare Birds

You should expect to find rare birds at Long Point. If you find one, informing as many people as possible should be your immediate reaction! Do not wait until the ETs at the end of day. **Make spreading the word the top priority after confirming the identification and properly documenting the bird through photos, a field sketch, or a written description. At the very least, you must tell the BIC who will pass on the information to the Program Manager and Director immediately. Red list birds** are any that are highlighted in **red** text on *A Seasonal Checklist of the Birds of the Long Point Area* (available as a separate document at every station) and must be reported to the BIC immediately! **A list of all red list birds and other uncommon species is found in Appendix B. Report all of these birds immediately. Any bird seen out of season should also be reported.** If the species you observed is on the Ontario Field Ornithologists, Ontario Bird Review Committee [South Review List](#) (as noted in Appendix B), a report is required if you want it to be considered part of the official record.

LPBO cooperators are prohibited from sharing information about rare birds on Long Point proper (i.e., the Tip, Breakwater, or other remote locations on Long Point) on eBird Canada, social media, or other means, without explicit permission from the Program Manager, or until it has been shared through LPBO's official channels. Cooperators can then share information provided from LPBO accounts. We do this to limit the disturbance to birds and ecosystems, to manage relationships with our neighbours and local landowners, and to ensure that LPBO is properly acknowledged in rare bird reports, OntBirds posts, eBird Canada posts, social media and (as occasionally happens) news reports.

LPBO Bird Alert WhatsApp Group

All regional bird sightings of interest are tracked and shared using the LPBO Bird Alert WhatsApp Group (as distinct from the LPBO Operations WhatsApp Group, see above). This group is the primary source of real-time information about the occurrence, location, and details of significant bird life in Norfolk County. While some general chit-chat and banter is expected, please use discretion when posting to the group. [Four-letter species codes](#) are acceptable. As with eBird Canada and social media, sightings of rare birds from remote locations should not be shared to this group without explicit permission from the Program Manager.

If you want to join the LPBO Bird Alert, ask a BIC to add you, or use this link:
<https://chat.whatsapp.com/2XjR8Ayx37Mqrvd2ixg>.

Daily Log Datasheet

See Appendix C for an example daily log datasheet. When filling out a daily log datasheet make sure that all data are completed, accurately and neatly – this is one of the most important things you will do all day. **Never leave daily logs and ETs until the next day. Failure of BICs to ensure the proper completion of daily logs, including daily narratives, will result in immediate removal of their BIC responsibilities and may result in expulsion from LPBO.**

Rules of Using Scorable Forms

LPBO's logs are scorable forms. Therefore utmost care must be taken to neatly and accurately record all data.

- The angles at each corner of the page, along with the numbers at one corner of the page **cannot** be written on or destroyed. If this happens the form will not scan, and will have to be entered manually.
- Please keep your printing **very neat** and in block capital letters. A **black pen** should be used (no felt tips or no blue ink).
- **The scanner can only read letters and numbers. Do not put any value in parentheses.**
- Keep all letters and numbers within each box provided. Please do not allow any lines to run outside the box.
- **Do not strike out fields when there is no value.** The scanner reads these lines erroneously. Leave these fields blank (**except in the case of Volunteer Effort**).
- In case of mistakes, do not write over with dark pen. Neatly apply correction fluid and re-write the correct entry.
- If you have notes or comments for a certain field, place them in the "Narrative" section.
- **Ensure all information is filled out and accurate.** If there is a box, chances are it requires data. BICs should make it a daily habit to proof read the previous day's log for missing data or inaccuracies.

Codes for Scorable Forms

Weather:

1. Wind direction **must** be denoted as a two-part code: N, NE, E, SE, S, SW, W, or NW. Do not use three-part wind codes such as ENE.

2. Wind strength **must** be denoted as a single number: 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9. These numbers follow the Beaufort Wind Scale (Table 1).
3. Cloud cover is estimated in 10ths and **must** be denoted as: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10.
4. Temperature is recorded in °C and **must** be denoted as a whole number (i.e., no half numbers such as 18.5). **Negative temperature values are denoted by adding a “-” to the first box. Do not add a “+” if the temperature is a positive value, simply write the temperature.**
5. Precipitation **must** be denoted as: Rain = RA, Fog = FO, and Snow = SN. **If there is no precipitation, leave this box blank, do not write a “-”.**

Banding Effort:

- All times are in the **24 hour clock** (e.g., 2:30 pm = 14:30).
- The “ditto box” can **must** be filled in when the preceding Open and Close times are the same as the line above. The “ditto box” **must** be filled with a small “x”. There is no “ditto box” for net hours – they **must** be filled in for every net. **Net hours with a value of zero must be left blank.**

Volunteer Effort:

- Before filling in volunteer initials, even if you have volunteered in the past, verify initials with the “observer” table posted at the front of the binder. Various codes have had to be changed because of duplicates. A combination of up to 4 letters and numbers may be used. Use middle initials instead of numbers whenever possible (e.g., ECK instead of EK2). List any new entries at the bottom of the table, which will be updated during data entry.
- Volunteer initials **must** be entered starting in the left-most box - this helps the scanner recognize the volunteer without having to delete the first space.
- **Field hours for volunteers must contain a value or else the scanner omits this record. Enter “99.9” if no value is available.**

Writing 0’s and 7’s: The scanner recognizes a 0 with diagonal line through it, but often mistakes a 0 that is not completely closed for a 6. Do not put a line through a 7.

Coverage Code:

0 – No coverage at all bird wise. Use of this code should occur only rarely.

1 – Casual observations and/or casual banding only, no census or ETs. Similar to code 0, but some casual observations were made within the recording area. Casual banding might involve Tree Swallow nest monitoring or educational banding at Old Cut.

2 – Census only, but no other data to contribute to ETs. Can occur if travel needs result in early departure from a field station, or if other activities preclude any banding or other observations.

3 – Fair coverage, including census and ETs (may or may not include some banding). Inexperienced observers may use this code if they feel that some species were missed, or it may apply if experienced observers spend most their time on activities such as construction, maintenance, or transporting personnel.

4 – Good coverage, including census and ETs, and 6 hours of banding (weather permitting). Observer(s) active for much of the day. This is the code most frequently used.

5 – Excellent coverage, including census and ETs, 6 hours of banding (weather permitting), a lake watch (Tip and Breakwater), and/or a supplementary census, and/or visible migration

watch (e.g., a deck watch at Breakwater or a Dyke watch at Old Cut). Two or more observers, active for virtually the entire day. Note that a score of “5” can’t occur with just a single contributing observer.

Number of Visitors at Old Cut: During each day of the season, the number of visitors at Old Cut **must** be either counted or estimated. This includes visitors to the banding lab and Visitor Centre, as well as people wandering in the wood lot. Ask the Friends to assist with this.

Table 1. Beaufort Wind Scale. Use the numbers in the force column to complete the wind strength section in the log. BICs should also use the force numbers when relaying wind and lake conditions from station to station in preparation for boat trips, for example. Except in emergencies boat trips will not take place when winds are in excess of Beaufort 3.

Force	Wind Speed		Term	Effect on Lake Erie	Effect on Land
	Km/h	Knots			
0	< 1	< 1	Calm	Lake like a mirror.	Smoke rises vertically.
1	1 - 5	1 - 3	Light air	Ripples with the appearance of scales, but without foam crests.	Direction of wind shown by smoke drift, but not wind vanes.
2	6 - 11	4 - 6	Light breeze	Small wavelets. Crests do not break. When visibility good, horizon line always very clear.	Wind felt on face. Leaves rustle. Ordinary vane moved by wind.
3	12 - 19	7 - 10	Gentle breeze	Large wavelets. Crests begin to break. Perhaps scattered whitecaps.	Leaves and small twigs in constant motion. Light flag extended.
4	20 - 28	11 - 16	Moderate breeze	Small waves, becoming longer. Fairly frequent whitecaps.	Raises dust and loose paper. Small branches are moved.
5	29 - 38	17 - 21	Fresh breeze	Moderate waves, taking a more pronounced long form. Many whitecaps are formed. Chance of some spray.	Small trees with leaves begin to sway. Crested wavelets form on the channel and ponds.
6	39 - 49	22 - 27	Strong breeze	Large waves begin to form. The white foam crests are more extensive everywhere. Probably some spray.	Large branches in motion. Whistling heard in telephone wires. Umbrellas used with difficulty.
7	50 - 61	28 - 33	Near gale	Lake heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Whole trees in motion. Inconvenience felt in walking against wind.
8	62 - 74	34 - 40	Gale	Moderately high waves of greater length. Edges of crests begin to break into the spindrift. The foam is blown in well-marked streaks along the direction of the wind.	Breaks twigs off trees. Generally impedes progress. Walking into wind almost impossible.
9	75 - 88	41 - 47	Strong gale	High waves. Dense streaks of foam along the direction of the wind. Crests of waves begin to topple, tumble and roll over. Spray may affect visibility.	Slight structural damage occurs, e.g. roofing shingles may become loose or blow off.

Number of Organized Groups at Old Cut: The number of **organized** groups (e.g., school groups, field naturalist outings, etc.) visiting Old Cut station **must** be entered daily. Do not count families as organized groups. An organized group will always have some sort of official leader. There are many days without organized group visits, in which case the box **must** be left blank.

Number of Boats on Shore at the Tip: Count or estimate the total number of boats on or moored off the Tip's shore during the day. This is meant to be a count of sightseers, not passersby or fisherman.

Lighthouse Attraction: This should be done every morning on census at the Tip; however, since the lighthouse bulb was changed in the mid-90's, we do not have many lighthouse casualties anymore, but some events do occur. Attractions and deaths occur most often in fall, on moonless nights with poor weather, especially when it's foggy. In fact, if you wake up during the night, take note of the weather outside and then on what may be illuminated by the lighthouse beam. If it's foggy, pay special attention, you may see birds flying around the light.

Check the area around the base of the lighthouse each morning (during the census is a convenient time) to see if there are any dead birds. Pick up all bodies, and bring them back to the station for identification, measuring, weighing, etc. After recording all of the information, dispose of the bodies (bury if there are a lot). Save unusual specimens for skinning by wrapping in a plastic bag, labelling with date, place and circumstances of death, and putting into the freezer. Better yet, if you know how to prepare study skins, then skin them on the spot (and sex and age them based upon internal characters too if you can)! It is worthwhile checking the lighthouse each evening, particularly foggy ones, to see if any birds are flying around the lighthouse beam.

Record the following information into the daily log (on a separate sheet if necessary):

- Date of death.
- Names(s) of people identifying and recording species.
- List of species, the number of deaths and if possible, the age and sex. Also note how the birds were aged and sexed, just like in the banding lab.
- Any other relevant comments, such as description of the preceding night's weather.

For example:

Sept. 26-27, 1988. Collected by E. Dunn, analysed by D. Hussell and E. Dunn. All birds aged by skulling. 26 Blackpoll Warbler: 5 AHY male, 3 AHY female, 2 AHY unknown sex, 6 HY male, 2 HY female, 8 HY unknown sex (sex by internal examination). 2 American Redstart: 2 AHY female (sexed by plumage). Total = 28 Birds killed, 2 species. 3 more birds unidentifiable because were partially eaten, and about 5 more were inaccessible and not included in the total counted.

Narrative: Observations of other animals, especially herptiles, butterflies, and dragonflies are to be noted in the narrative portion of the log sheets. The narrative should also note any checklist highlights (e.g., new additions, extreme early and late records, first observation of the season, etc.), notes on any colour-banded birds seen in the area, notes about station maintenance, personnel switches, general highlights of the day, etc. Naturally, it is most important that you also include a summary description of the kind of migration day it was in general (i.e., the progression of events, principal migrants, etc.). Please **underline** all species names - this makes it much easier to find details of unusual or interesting species when just skimming through the logs. Additionally, **make sure you record who observed any unusual species**, so

that they can be given the proper credit in our published migration summary reports. Long and informative narratives are much more valuable than short ones, so don't be afraid to use up the space, or to append an additional sheet. The narrative certainly doesn't need to be creative or literary, but feel free to express yourself however you like, as long as the appropriate information is conveyed.

For example:

We had good conditions for banding and birding all day. South winds overnight no doubt helped bring in the migrants. We had good numbers of Nashville Warblers, in particular, but there was a generally high diversity of warblers and vireos. The most notable migrant of the day was our first White-eyed Vireo of the season at Old Cut; it was found by Mark Conboy on census and was later captured in Net 5 and banded. A Cooper's Hawk was hanging around Nets 1 and 2 late in the morning, so we closed them one hour early to avoid any predation incidents. There were very few visitors today, which gave us time to complete a few chores during the slow last couple hours of the morning, including replacing some boards on the banding lab deck and washing the house windows. Kyle Cameron had a Northern Mockingbird on a supplementary census this afternoon and Ron Ridout had a Fish Crow calling in 'New' Long Point Provincial Park sometime during the banding period, but it never showed up at Old Cut (at least not that we heard). We finished off the day with a fantastic "traditional" British dinner, provided by our English contingent of banders.

Unusual Species: These include any species not listed on the log checklist. These species should be written in at the bottom of page 2, and **must** be included in all totals – don't forget to add these species to the totals at the bottom on the checklist. **Record who saw the unusual species in the narrative.** Do not include birds not identified to species in the unusual species section (e.g., jaeger sp.); these **must** instead be noted in the narrative. During your time at LPBO you will no doubt notice not some of the unusual species are not so unusual, but are actually rather common, at least at some stations at certain times of the year. When it all comes down to it, the checklist can only occupy so much space, so some species simply had to be left off.

Final Daily Totals: The Band, Rec, Cens, Obs (respectively: number of individuals **banded**, number of individuals **recaptured**, number of individuals counted on **census**, and number of individuals **observed** in any other way, including supplementary census) columns are straightforward. The sub-total rows can be used for helping with addition, but **are not required. The Total # and # of Species rows are required to be filled in.**

There are two special cases you need to be aware of in the Band column. First, because we don't band hummingbirds or gnatcatchers, but do catch them, we keep track of how many were caught during the day in the Band column (as if they were banded). Another special case is owls. Because an evening's owl-banding activities can span two dates, we pool the evening's owling results in the daily logs. This makes sense since the birds in question are really part of the same night's movement.

Census

Census Rules Them All! Census is the most important part of the day at LPBO and is the highest priority over all other monitoring activities. This is because it is the most standardized component of our protocol. Because census is conducted at virtually the same time every day, along the same route, using the same counting methods, by LPBO's best birders, it represents the most reliable data for generating

population trends. ETs cannot be completed without a census, thus census must be done every day, even if it is raining or snowing.

If the station does not have enough skilled cooperators to complete the banding protocol and census, then census wins! Nets will have to be shut with enough time to start census unimpeded, and remain shut until census is completed. Figuring out how census is going to be completed should be on the BICs mind first thing in the morning and not leave their attention until it is completed.

Routes: Maps of the Tip (Map 1), Breakwater (Map 2), and Old Cut (Map 3) census routes are included in this protocol and are posted at each research station. All censuses start and end at the respective house at each station. When conducting the census, stay on the standardized route. At the Tip and Breakwater every bird that is seen or heard from the census area is counted. That includes waterbirds far out over the lake, or raptors soaring in the distance. At Old Cut there are additional rules about what species you can count and where:

- **All non-passerines** (waterfowl, gallinaceous birds, loons, grebes, cormorants, herons, vultures, raptors, shorebirds, gulls, terns, doves, pigeons, owls, nightjars, swifts, kingfishers, woodpeckers, and falcons) **must** be counted whether they are inside or outside the boundaries of the census area.
- **Passerines are counted only if they occur inside the boundaries of the census area**, including flyovers. If you find an unusual species outside the census area at Old Cut, it should be recorded in the narrative section of the daily log datasheet, and reported through other means.

Time: Census begins exactly one hour after sunrise. Census can be delayed until later in the morning because of heavy rain or heavy snow, but it must be completed as soon as possible thereafter. Record the start and end times on the daily log datasheet. Census at Breakwater and Old Cut should take exactly one hour to complete. Because the route at the Tip is longer, census at the Tip should take exactly 1.25 hours. **Do not exceed these times.** On days when there are large numbers of birds present, you must be careful not to spend too long on census. You should try to count as many birds as possible, but on very busy days you may have to miss some, but that's acceptable because you are conforming to the standardized protocol.

Observers: **Census is always conducted by the most skilled birder(s) at each station.** Census can be done as a group, but normally one person is sufficient to give good coverage. During group census the most skilled birder will be the leader. **Record only the lead observer's initials on the daily log datasheet.** Other observers will not be entered into the database, so there is no point in writing them down on the margins of the datasheet, but you can include this info in the narrative if you like.

Single Unit: Census should always be done as a single unit on any given day. For example, if it starts to rain, abort the census and start it over again when the rain stops. Do not complete half the census at one time and the other half later on. At Old Cut you may find that neighbours, or birders, will want to stop and talk to you while you are on census. You can either politely tell them that you are doing a standard count that requires your full attention and you should be on your way, but you'll be happy to talk to them afterwards, or you can subtract the time spent talking from your total census time.

Spotting Scopes: A scope should either be carried around the Tip census route for use in scanning the lake and the sandspit at the end of the point. At Breakwater, a scope can be used to scan the marsh and the lake from the cabin. At Old Cut a scope should be left on the platform for scanning the bay and the marsh. Binoculars are of course mandatory on a census.

Weather Data: At the beginning of census record the air temperature (°C), precipitation, wind speed using the Beaufort Scale (Table 1), and cloud cover, on the daily log datasheet. Follow the same rules and use the same codes as outlined in the weather section, above.

Counting Data: When counting birds on census keep these points in mind:

- Count all birds that are identified by sight and sound: count flyovers, birds at feeders, and even very distant birds over the lake or soaring farther down the point (keeping in mind the restrictions of counting passerines at Old Cut).
- Bird normally. Don't ignore common birds and don't concentrate on finding rarities. Be an objective, scientific observer and take the rules seriously.
- Do not get distracted by texting or other things. Concentrate on birding.
- Do not count the same bird more than once.
- Estimate numbers in large flocks rather than trying to count every single bird before the flock gets out of sight; do this by counting all the birds in one section of the flock, then extrapolate by counting the number of similarly sized sections in the whole flock. Practice this skill (it requires significant practice) when not on census.
- Seek agreement about identifications and numbers of individuals among observers if you are in a group.
- Record every single bird that you count on a notepad or put it directly into your eBird Canada app.
- There is no such thing as an unidentified species on census. Every bird needs to be counted and assigned to a species – see instructions on ETs above. Skilled observers will always be able to assign unidentified species to groups and then extrapolate what the likelihood of identification was. This is most common for diurnal migrants, or high flying warblers. Many can be identified in flight, but sometimes there are simply too many to identify and count at the same time. At the end of census, unidentified species can be divided up proportionately among the species that were identified.
- If you can't identify a species, do not guess. However, try to identify it as closely as possible (e.g., dowitcher species or *Empidonax* species). A census of the species you do know is better than no census at all, but write a note in the narrative section of the daily log sheet if you feel that you missed identifying a large proportion of the birds.

Reporting Census Results: Reporting census results, a general summary of migration, and any other important information is required following census each morning from all stations. **Census is not complete until the BIC has submitted this report to the LPBO Operations WhatsApp Group.**

Other Observations

Throughout the day (even in bad weather) you should be looking for and seeing many birds in the station area **in addition to the ones you've already counted on census or captured during banding**

operations. It is important that the whole area is covered on foot more often than just on census — supplementary birding treks around the census area are an important part of the day's activities.

A brief count of visibly migrating birds ("vis mig") should be done close to dawn each day to determine if there is a movement; otherwise you might miss it. Of course, some movements (e.g., hawks) may not be seen until later. In any case, on days when numbers of birds are observed actually moving through an area (i.e., they are engaged in diurnal migration), pick a good observation spot and record this passage for a fixed-period of time (e.g., 15 minutes), preferably at hourly intervals through the morning. Record the species involved, the numbers, weather conditions that might be prompting the flight, direction of the flight, and the amount of time you spent recording.

In early spring and late fall, particularly at the Tip, it is always a good idea to devote a half-hour, or much more early in the morning to do a lake watch. This is best done from a close to the very tip, or on top of the block building, and is best done with the aid of a spotting scope. Count or estimate all waterbirds observed — don't be surprised to count hundreds or even thousands of birds. Believe your eyes, there really are that many birds! It is also standard procedure to conduct lake watches at Breakwater. Bad, on-shore weather is often a great time to conduct a lake watch, since it is apt to push birds near shore and bring in a rarity!

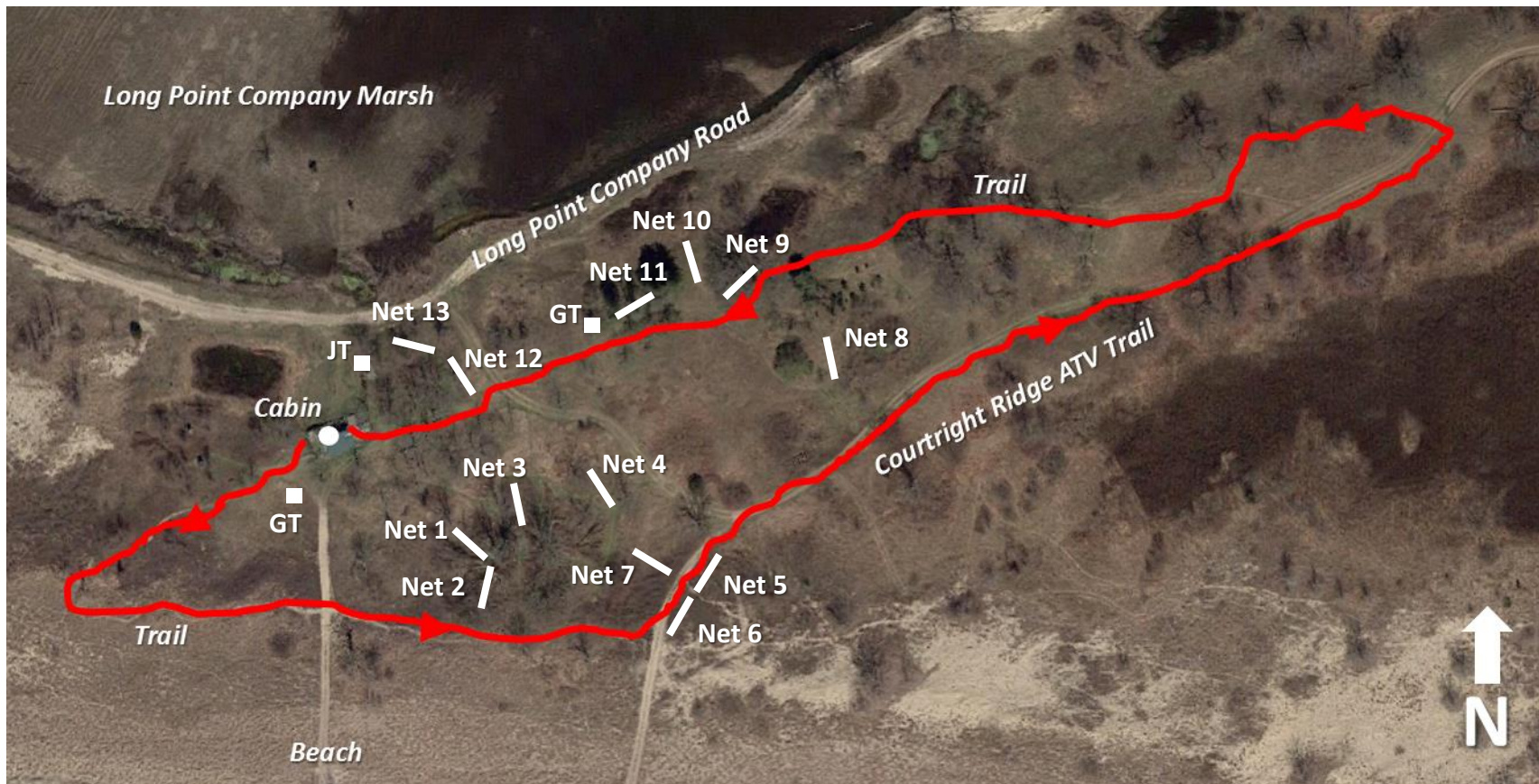
Don't rely on mental notes for these other observations. Write them down! If you leave a station before ETs take place, be sure to leave a copy of your records behind for those compiling the daily log.

Supplementary Census

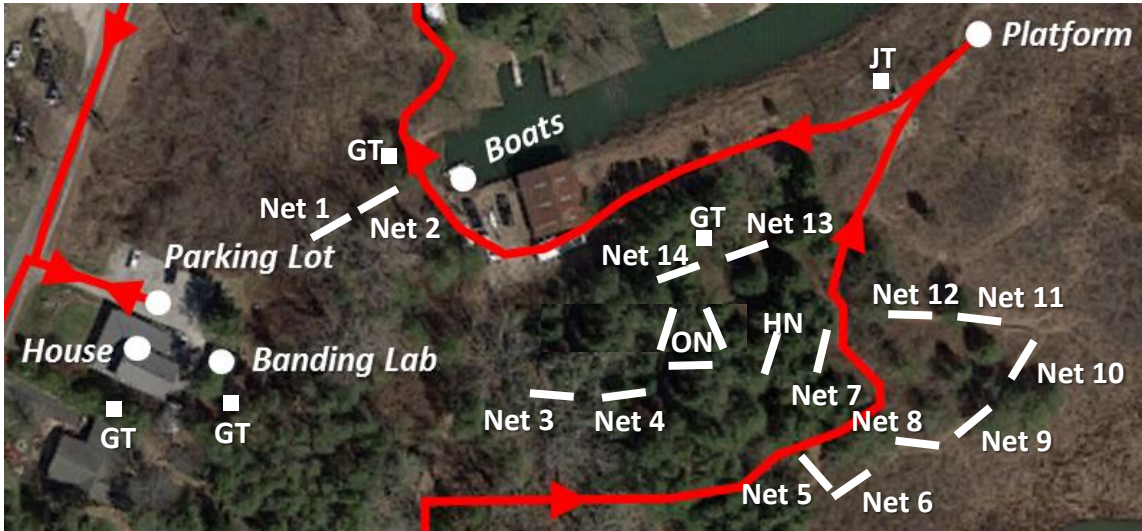
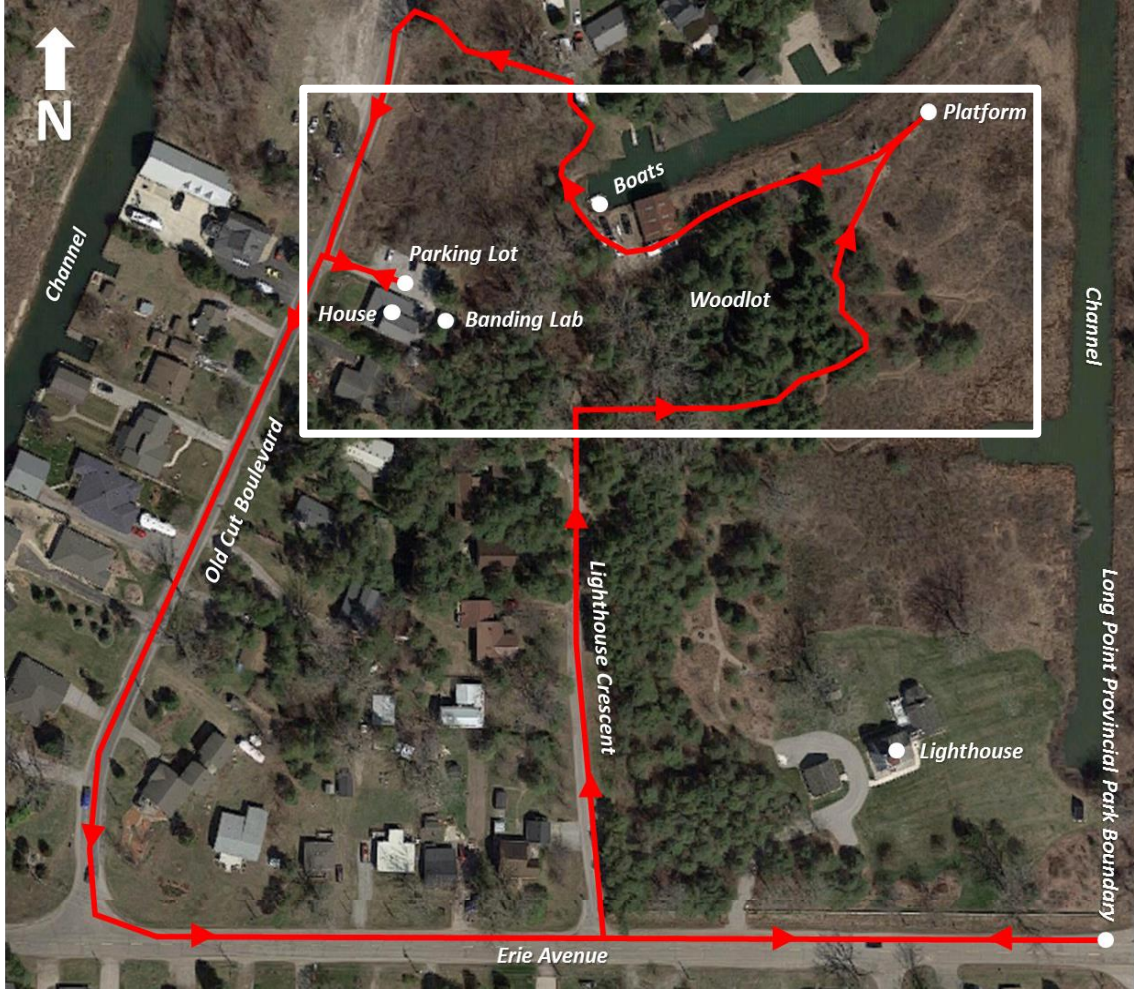
A supplementary census can be done any time during the day, including in the morning before or after the official census, but it is usually done in the afternoon. Supplementary censuses are not standardized, like the official census is. You can walk the route backwards or take more or less time. Beyond that though, most other rules apply, such as which types of birds you can count and where (at Old Cut), or that you must count all the birds you observe. Supplementary census results are recorded as obs on the daily log datasheet, and are reported during ETs at the end of the day (i.e., they don't have their own column on the daily log datasheet). Supplementary censuses can often be combined with other station activities such as Monarch census. Therefore, supplementary census is completed every day during fall migration at the Tip and Breakwater.



Map 1. Census route at the Tip. The census route is outlined in red. The arrows show the direction of travel. As of 2019 the Heligoland Trap and Shanty are no longer extant – both have been washed away by Lake Erie in recent floods. Also because of flooding and erosion over the past few years, all of the former net lanes and trap locations at the Tip have been lost. Thus, there are no net or trap locations given for the Tip on this map as LPBO staff continue to establish a new permanent arrangement there over subsequent seasons.



Map 2. Census route, mist net lane, and trap locations at Breakwater. The census route is outlined in red. The arrows show the direction of travel. GT = ground trap and JT = J-trap.



Map 3. Census route, mist net lane, and trap locations at Old Cut. The census route is outlined in red. The arrows show the direction of travel. GT = ground trap, JT = J-trap, ON = Owl nets, and HN = hawk net.

Monarch Census

In fall, tens of thousands of Monarch butterflies pass through Long Point. At the Tip and Breakwater stations, Monarchs are counted daily during a special mid-afternoon census. Monarch Butterfly population trends in Canada are then derived in a similar fashion to birds, but we do so exclusively with data from a daily census. Use the comment section to elaborate on other butterfly sightings or what the monarch activity was like during the entire day. Feel free to include further summary in the narrative. The Monarch census follows the same route as the bird census, so it should be combined with a supplementary bird census. The census takes place between 14:00 and 17:00. Record the total Monarchs seen on census on the daily log datasheet.

Identification of Monarchs is straight forward. The Viceroy is the only other Ontario butterfly that is very similar. Viceroys have a black line across the hindwing, a feature that Monarchs lack (Figure 7). Sometimes Viceroy numbers can be impressively large, particularly in June or August as they migrate, but usually they are far less common than Monarchs at the Tip and Breakwater. Other large orange butterflies like common Great Spangled Fritillary and Aphrodite Fritillary, and the very uncommon Variegated Fritillary, all lack the strong black venation of Monarchs and Viceroys.



Figure 7. The Monarch (left) has no line across the hindwing. The Viceroy (right) has a line across the hindwing. There are three other large orange butterfly species at Long Point: Great Spangled, Aphrodite and Variegated (rare) fritillaries; none of these species have the strong black venation of the Monarch or Viceroy.

Daily Estimated Totals

Daily Estimated Totals (ETs) have been mentioned several times already in the protocol, but what exactly are they and how are they derived? ETs are our best estimate of the total number of each species present at each station each day, and combine banding, recapture, census and additional observation data. Although ETs are estimates, they are more realistic than banding totals or census counts alone. Because we use these data to estimate population size and ultimately generate invaluable population trends (see above), **ETs must be done carefully. ETs should be educated estimates based on careful consideration of all data and other evidence; they must not be guesses.**

ETs **must** be completed every day during the migration monitoring season, and on any other day on which reasonably representative observations were made (a census plus several hours of observation and/or banding) outside of the migration monitoring season. **Note that a census is a prerequisite for ETs; they**

cannot be derived without a census. With the exception of owls, ETs are for daylight hours only. Nocturnal observations (e.g., calling thrushes migrating at night, deaths at the lighthouse) **must not** be included in the ETs. These kinds of observations should however be noted thoroughly in the narrative on the daily log datasheet. ETs should be compiled after all other record-keeping for the day has been completed, and should be done with **all** personnel present. Try to arrive at a consensus. If you have real difficulties with a decision, write the details in the narrative. This job makes a pleasant after-dinner occupation, and allows everyone to catch up on what was seen during the day. It is also important training for new personnel.

How to Arrive at ETs:

1. On the daily log datasheet, first record the numbers of each species banded, recaptured, and seen on census in the appropriate spaces (see above).
2. Read down the list of species, summarizing the observations for each species that day. Skilled observers can quickly breeze through groups of birds that are less likely to have occurred that day. When species already have data present, banding, recaptures, or census, the BIC shares this information with the entire team. For example, "American Robin — 8 banded, 2 retrapped, 20 censused — any additional observations?". The daily estimated total (ET) is derived from data that appear in the columns of the daily log sheet (number banded, number recaptured, number censused, and other observations). Inspect all of these numbers together, and along with all of the other participants, try to derive the best **estimate** of the number of birds that were **known** to be present in the area on that day. On days when there is very limited migration, or for species that are uncommon or rare, the ET will often simply be a sum of the other columns. Otherwise, if you have good evidence that birds were not accounted for in the other columns, then the ET **must** be adjusted upwards. For example, if there was a steady movement of hawks overhead for an hour in the afternoon and you conducted two 15 minute long counts during this period, then the actual count totals would be inserted into the Obs column, while you'd add a corresponding number into the ET column to reflect the half hour period when you weren't actually out there counting the traffic.
3. Some judgments must be made, and these should be conservative (but not too conservative). Again, it is important to keep in mind that **the Obs column is a count of birds (seen or heard) that are most likely different from those detected during the census and banding operations.** These can include good estimates of flock size, but **not** extrapolations (i.e., just because you saw one cuckoo, you really have no evidence to think that there must be more around). Nor can it include repeated counts of what were probably the same birds, whether seen by you repeatedly or by someone else. Take bird behaviour, time of day, and any other relevant circumstances into account. Keep in mind that birds do fly from place to place, so the cuckoo that you saw at the outhouse at 09:00 could easily be the same one that someone else saw near the J-trap at 13:30.
4. The ET column cannot be less than the banded + recaptured + other observed columns **or** less than the censused + other observed columns. **Thus, you cannot ET fewer birds than were observed.**
5. Do not count broods of dependent young (e.g., Canada Geese) in the ETs.

Additional Helpful Hints for Deriving ETs:

- If you are netting all day and none or very few of the birds are same-day recaptures, then this is a strong indication that there are probably a lot of birds present. Conversely, if the day's repeats start accounting for a sizeable fraction of the birds being caught, then you can assume that you

are indeed banding a high percentage of the birds present in the area (i.e., new birds are not arriving or moving through the area).

- ETs should be conservative, but you should not be afraid of arriving at high numbers. It is just as bad to grossly underestimate as to grossly overestimate. Remember too that the nets cover only a small portion of the sample area. They catch only a fraction of all birds present, particularly if birds are moving through the area. Don't forget that the nets do not adequately sample species that tend to forage in the tree-tops, or that tend to be fly-bys.
- While it is important that the ETs be firmly based upon observations, and therefore reliable estimates, it is not important that a lot of time is spent arguing over whether there were 22 Dunlin or 26. It is extremely important that the ETs are reliable at least to the nearest natural logarithm (i.e., 1, 3, 10, 20, 50, 150, 400, etc). In most cases, however, ETs should be more accurate than this.
- It is often helpful to cross-check the day's ET for a particular species against those derived for other species for the same day as well as those derived for previous days. Such comparisons can be quite useful for fine-tuning your ETs so that they reflect your general impressions about relative bird numbers. For example, you should ask yourself whether there are more White-throated Sparrows today than there were yesterday? Or the day before that? Are there fewer White-throated Sparrow than White-crowned Sparrows today?
- In most cases, particularly for less common birds, it will be easy to come up with ETs. Special cases are as follows:
 - If every time you looked out, birds were passing through the area in one direction, but you did not observe continuously, you may extrapolate from your observations to cover periods when you were not watching closely, but were aware that a sustained movement was in fact occurring. Be conservative. Remember that many birds may mill around the same area all day, rather than pass through. And consider that most species' movements peak at a certain period of the day; seldom is there ever a sustained passage all day long. Also, keep in mind that migrating hawks and many other diurnal migrants at the Tip station may fly east off the tip over the lake for a few hundred meters and then promptly turn around and fly back west. Don't count them twice!
 - In the event that you saw birds you could not identify, but could classify to group (e.g., "warbler"), you could try to assign them to actual species in the ETs, based on other data. For example: there were 12 unidentified warblers on the census. Of 8 warblers banded, 6 were Bay-breasted Warblers and 2 were Blackpolls. The 12 unidentified could therefore be assumed to have been 3/4 Bay-breasted, and could appear as such in the ETs. There should be no unidentified birds in the ETs. On the other hand, **if you cannot comfortably assign the unknowns to a species, it is best to leave them out of the ETs entirely**, since the procedure described above prejudices things towards catchable species. With warblers, you have to be especially cautious during the passage of Myrtle Warblers, since this is often a diurnal migrant that migrates through at tree-top level, while other species are being captured in your nets/traps.

In spite of the difficulties you occasionally have in coming up with ETs, you'll find you quickly get the hang of them, and your ETs will be similar to those derived independently by other observers. One of the reasons for all of the personnel being involved in deriving ETs is to encourage discussion and uniformity of approach. Ultimately though, the final judgement is up to the BIC.

Even if you're an inexperienced birder, please don't excuse yourself from the ET process. It's important that everyone feels involved and contributes, so please sit in, if only to hear how the day panned out. You'll also learn a lot - there is no better way to develop expertise in ornithology than working alongside experience birders and banders.

Last but not least, derivation of ETs is **not** a competitive process. There's sometimes a temptation to maintain that "your" birds were different from someone else's, or that you saw a species that others didn't, just so that your observations can be included. Let your ego go! If you don't have good reason to believe that 100% of the blackbirds you saw have been accounted for by other people, keep quiet. It really isn't necessary for everyone to chime in their "other obs" as each and every species is called out. Only chime in if you can **add** anything to the total. That way ETs will go much quicker and the process will be less confused. At the same time, don't feel that your "redundant" observations aren't appreciated. They are! They help confirm what took place in the field, and that's important.

The Banding Routine

Banding at LPBO is for the most part conducted in a highly standardized fashion. The goal is not to break records for the number of birds banded in a day or a season. Instead, banding is meant to be one avenue of data collection for tabulating ETs and ultimately, generating population trends. Because of day-to-day limitations imposed by weather, bird volume, staffing, and visitor traffic, it can be challenging to operate a completely standardized banding operation at LPBO but we do our best. The birds' health and welfare take precedence over everything else (except for the safety of personnel and visitors). LPBO operates within a well-developed ethical framework, which has been adopted by the NABC. All LPBO cooperators **must read** and adhere to the guidelines within [The North American Banders' Manual for Banding Passerines and Near Passerines](#) and [The North American Banders' Study Guide](#).

Dead and Injured Birds

Each year we strive for zero casualties, but given that LPBO bands 20,000 to 30,000 birds annually, there are inevitably a few injuries and mortalities (usually less than 0.01% of all birds handled).

Any birds that are injured or die during the trapping or banding process **must** be noted on the *Casualty Reporting Form* by the BIC (Appendix D). All injuries and casualties **must** be reported to the BIC immediately. The BIC will then decide the best course of action for caring for or euthanizing a casualty in accordance with the *LPBO Animal Care Protocol*. Do not band a sick or injured bird (unless the injury is old and healed). Never subject a bird to any more stress than is absolutely necessary (e.g., see photography guidelines).

Refer to the [The North American Banders' Study Guide](#) for a more thorough treatment of this topic. For injured birds, evaluate the bird's condition and determine a likely prognosis. Is it likely to die? Is it just stunned or suffering wing strain? Is a limb broken? There are no easy decisions to make about what steps should be taken. Decisions to employ euthanasia are always difficult but it should be kept in mind that it is often the most humane step to take, especially when dealing with hopelessly mutilated birds. Bear in mind that most birds brought into rehab centres will be euthanized anyway if they can't be released back into the wild. We shouldn't pass birds onto rehab clinics unless survival to release looks like a realistic possibility.

If the bird appears to be reasonably healthy (e.g., stunned), keep it in a warm, dark, quiet place for at least a half hour and periodically monitor its condition. Wing-strained and stunned birds often make amazing recoveries under such circumstances.

For obvious reasons, euthanasia is always done well away from the public eye. The best method used for larger birds is to suddenly separate the spinal cord by grabbing the head and body and sharply pulling the head away. As gruesome as it sounds, if the head happens to come off in the process, rest assured that the bird died instantly, which is always the most humane objective. The thoracic squeeze method was once widely employed. It prevents breathing while at the same time stops the heart from beating. While reasonably effective, death is not instantaneous (and birds sometimes revive if you make a half-hearted attempt) and so it is no longer advocated by animal care committees.

Common Injuries: White-throated and White-crowned sparrows are prone to leg "dislocation", for no apparent reason. Sometimes, the leg will pop back in if you straighten it. In other situations the leg may not relocate. Either way, the bird should be released unbanded. Some birds experience "wing strain" due to the netting operation. In this condition, one wing is slightly bruised or strained. The bird may or may not let it droop or obviously favour it. In any case, the bird will not fly more than a couple of feet, presumably because the wing is sensitive. These birds should be retrieved and held in a quiet, very warm dark place for up to an hour or more depending on fat level, before being released. The condition is seldom serious, and nearly always corrects itself fairly quickly. **Always** hand release any bird suspected of having wing strain from ground level (i.e., as low as possible), so that it doesn't come crashing down, injuring itself more seriously.

If a limb is broken and the bird is sufficiently large, healthy and likely to respond to professional treatment, the bird can be brought to any one of the following centres, but phone ahead:

- [Hobbitstee Wildlife Refuge](#) (55 minutes from Old Cut)
1226 Concession Road 4 Walpole
Jarvis, Ontario
519-587-2980
chantal@hobbitstee.com
- [The Owl Foundation](#) (for owls only; 2 hours from Old Cut)
4117 21st Street
R.R. #1
Vineland Station, Ontario
416-562-5986
owlmail@sympatico.ca

The general public frequently brings in dead or injured birds that they have picked up on the road or in their yards. **We are not a rehabilitation centre and will not accept injured or abandoned birds.** "Orphaned" birds should simply be left alone unless they are faced with imminent destruction. Parents will care for many birds on the ground so, unless you are sure the young bird is abandoned, its chances are better if left alone. Pass this information on to people who call in about an "orphan". Fledglings may be carefully placed in a tree to get them beyond the reach of predators. Contrary to popular lore, the parents can't "smell" human scent and will not desert a bird that has been handled by humans. If LPBO cooperators choose to do so, they accept personal responsibility for the animal. See the list of nearby animal rehabilitators that visitors or guests can be referred to (above).

Whatever their source, **never leave dead birds lying in public view**. Perfect specimens may be kept for educational purposes and **must** be stored in the small chest freezer at Old Cut. Do not store dead birds in food freezers. Specimens should include a note indicating the date, location, finder, cause of death, and species. LPBO is permitted by the federal government to keep dead birds and use them for educational purposes. Dispose of less than perfect specimens in the garbage. Always be discrete; we don't want to give the public the wrong idea when they see a dead bird in our possession.

Too Many Birds

During the standard banding period we try to catch as many birds as we can safely handle. If you can safely run all traps and all nets at the site, then do it. On some days it will not be possible to run all nets and traps because of weather, predators, limited personnel, or too many birds to deal with in a safe and timely manner. On these days, keep in mind that the goal is to make sure that we catch a good representative sample of what species are passing through. Because the nets and Heligoland trap (HT) are less biased in what species they catch compared to the J-traps (JTs) and ground traps (GTs), priority should always be given to nets and HTs (i.e., JT and GT effort should be scaled back or closed on big bird days if they are interfering with running the nets and HT trap). If you're exceptionally bogged down with too many birds, don't hesitate to remove birds from nets and release them unbanded (except for rarities and recaptures which should always be processed). If you're letting birds go, make sure you write down the species and numbers involved to be incorporated into ET's. Moreover, all birds you decide to band should be properly processed — avoid "ringing and flinging" (putting bands on, but not recording all the measurements, age, or sex) whenever possible. We are not trying to set records at LPBO, especially if data quality or bird welfare are compromised. Remember, LPBO is a migration monitoring station, meaning that banding is only one component of what we do! **All cooperators, especially BICs, must read the [Guidelines for Prioritizing Bird Safety during High Capture Events](#).**

A Clean and Orderly Lab

The banding lab needs to be thoroughly cleaned after every bird banding session. All surfaces and equipment must be wiped with bleach sanitizing wipes. All floors must be swept, all items and resources organized and, generally, the laboratories are to be left in immaculate condition – no exceptions. At all times work spaces are to be free of clutter, personal belongings, or anything that is not needed for the banding activities. There is no tolerance for clutter or disorganization in any laboratory, and a banding lab is no exception. **Food and drink are strictly prohibited from the banding lab and BICs will indiscriminately remove them if present.**

Standard and Non-Standard Banding

Standard banding is any banding that uses only the standard compliment of nets and traps, takes place during a prescribed migration monitoring season, and occurs from 0.5 hours before sunrise until six hours after that. **Any other banding is considered non-standard banding (NSB)**. It is possible for NSB to happen during standard banding hours, such as when House Wren nestlings are banded from a box in the Old Cut yard. Although this banding took place during the standard season and during the standard six hour period, the birds were captured in a nest box, which is not one of the standard nets or traps so it is NSB. There is a column on the banding datasheet (used at the Tip and Breakwater) and the banding

database (in use at Old Cut only) for marking all NSB birds. The BIC must give explicit permission before any non-standard banding can take place. Permission may be given to conduct NSB if personnel would like additional practice time, if there is a significant migration event that extends beyond the standard six hour period, or for other reasons at the discretion of the BIC.

Mist Net Etiquette

Operating mist nets and traps is by far the most dangerous part of LPBO operations with respect to bird safety. Nets and traps have to be operated with an exceptional level of attention, scrutiny, and thoroughness. Nets are always to be in **perfect** operating conditions: tied back with brightly-coloured guy lines set at correct angles, proper tension, proper height, proper distance between trammel lines, and free of holes. When closed, nets should be furled tight and tied at three points (both ends and the dead centre) using a slip knot. During stormy weather, particularly at the Tip, it may be necessary to tie the nets closed using a non-slipping knot because slip knots can work free in extremely windy conditions.

Each time the nets and traps are checked, it is called a net round. A net round is not just about extracting birds from nets and traps. They are also an opportunity to perform a detailed inspection of the entire netting area. The condition of each net needs to be meticulously examined, every little piece of debris removed, and any imperfection in nets, or net lanes needs to be corrected. **There is zero tolerance for imperfect nets or traps as they increase the chance of bird injury or potential biases to data.** An imperfectly set net or trap might as well stay closed!

Bird Bags: When birds are extracted from nets and traps they are placed in a bird bag, with some exceptions (e.g., raptors). Bird bags are light weight cotton or polyester bags with draw strings. Never carry birds that can fit into a bird bag back to the lab in your hands – bag them! Birds must be inserted into bags using the bander's grip. Make sure the bag is held tight to your wrist so the bird doesn't escape when you let it go inside the bag. Secure the bag shut with a simple sack knot. Large birds that cannot fit into bird bags may be carried in hand. Small raptors, such as Sharp-shinned Hawks, male Cooper's Hawks, Merlins, and American Kestrels can be transported in Pringles chip containers. During net rounds, all cooperators should always take a shoulder bag **full** of bird bags. Always take more bird bags than you think you'll need. Every member of the net round crew **must** have their own bags. Bags are used twice before washing them: once right-side out, once-inside out. Bags are washed by hand at the Tip and Breakwater, and at the laundromat in Port Rowan at Old Cut. Use a capful of bleach with every bag wash! Once a month, the Tip and Breakwater should exchange their bags for machine-washed bags. Keep dirty, once-used, and clean bags separate; this is important to limit the potential spread of disease between birds. Bags are to be flipped between uses during the day, and flipped, and organized at the end of every banding session. When flipping bird bags, look carefully for loose threads that could become wrapped around birds, or holes that could allow birds to escape. Discard ruined bags or mend serviceable ones. Untangle knots from drawstrings.

Net Sticks: Net sticks are short poles that have a hook at one end. We use them to lower and raise net shelves. Always carry a net stick with you on a net round. **Never lower a net without a net stick.** Pulling nets down using trammel strings will eventually break something.

Be Quiet! Every time someone walks past or makes noise near a net, it effectively reduces the catch rate at that net for a certain period of time. Therefore every effort needs to be made to minimize traffic around the nets. Only the minimum number of people required should ever be on net rounds, and those

on net rounds should refrain from conversation, chit-chat, or shenanigans of any kind. You are extracting birds, inspecting nets, and monitoring the passage of migrants - that is the only thing you should be thinking about. You should never have more people than birds captured on a net round. If it's a slow day and each round only needs 1 or 2 people, than that's how many people should go on a net round.

Immediately after the nets are closed at the end of the banding session, the BIC should inspect them to look for birds, bags and net sticks that may have been left behind, traps that were accidentally left set, or vandalism. Banding in the morning is not complete until this is done. The BIC should also inspect nets from time to time throughout the day to ensure that the nets haven't been opened (sometimes members of the public actually do this!) and that they have remained properly furled. Immediately report any instances of vandalism to the Program Manager.

Mist Net and Trap Operation

On a typical standard operating day, all nets **must** be opened 20 minutes before sunrise. That means all nets open and ready to go which means starting to setup nets 10-20 minutes before that. After which, net checks start at sunrise and are repeated **every 20 minutes** for the next six hours. Frequency of net checks can be increased depending on weather conditions and bird activity but nets or traps are never to be left unattended for more than 30 minutes.

Nets are always checked in the same order, numerically at Breakwater (1 to 13) and Old Cut (1 to 14). Net rounds at the Tip tend to be less orderly but they should always be checked in the same order as not to duplicate effort and traffic around the nets. Splitting net rounds for efficiency is not acceptable except during extreme circumstances during very busy days or when a group has been gone for a long time.

The types of nets and traps that are opened change depending on the time of year (see below). Nets may need to open late or close early depending on weather, bats, insects, personnel available, and station logistics. As long as net hours are properly listed on the daily log datasheet then any deviation from standard net hours can be statistically accounted for. Make sure to record net hours accurately to the nearest net round (20 minute interval).

Weather Conditions: The netting effort should always be maximized according to the conditions of the day. There are no definitive rules as to when nets should or should not be open and conditions need to be assessed continually. Opinions will often differ between BICs but the final decision about when nets should or should not be operated is up to the BIC at the time. Mist nets should not be used in rain or heavy/wet snow. Very light precipitation may be acceptable for short periods of time (such as a brief but very light rain shower or snow flurry), but in general, nets should be closed before rain begins. With modern day radar there is no excuse to be caught off-guard. Keep an eye on the clouds, the distant horizon and the radar. Mist nets can be used safely in light to moderate winds, but constant strong winds and gusts are dangerous for the birds. Because Long Point is an inherently windy place, there will almost always be some breeze to consider when operating nets. The best way to assess whether a net is too windy, is to open it. It's easy to close nets if necessary. The default should be to open first, then assess whether or not it's too windy. Generally, mist nets should not be used when the temperature, or wind-chill is below 0°C but this depends on the conditions at the time and the birds that are present or being captured. For instance, hardy sparrows and over-wintering birds can handle much colder

conditions than migrants and small kinglets and flycatchers that depend on constant movement and feeding to stay alive. Sheltered nets on a sunny day can be perfectly safe in sub-zero temperatures, just as a damp, cold, or slightly windy net may not be safe on a warmer day. Conditions are often most borderline before sunrise. Waiting for the sun to be up before opening nets under these conditions is often a smart compromise. If it's too cold for you to extract birds without getting cold fingers, it's probably too cold to be mist-netting. The frequency of net checks can always be increased to every 5, 10, 15 minutes, or having nets under constant supervision in order to maximize capture effort depending on weather conditions.

Bats: LPBO regularly captures bats as a part of the regular monitoring program, especially in fall, or as part of special collaborative research projects. **BICs must be notified immediately of all bat captures. Only personnel with up-to-date rabies titres and that have been expressly designated by the Program Manager can handle and extract bats from mist nets.** All LPBO BICs will have up to date rabies vaccinations. If a BIC is not available for some reason (a rare but possible circumstance), thick leather gloves, or otherwise impenetrable gloves must be worn when extracting a bat. If you are bitten, or scratched by a bat, and are not inoculated it is strongly advised that you seek medical attention for post-exposure treatment for rabies.

Extraction: Extraction is the act of removing birds from mist nets. At LPBO we train banders in a variety of extraction techniques. Trainees will learn the “feet first method” first, and then advance to the “body grasp” method. The body grasp is most efficient extraction technique, but cannot be used on all birds. The most efficient use of this method requires dexterity and experience handling a wide variety of birds in different scenarios. The nuances of extracting birds from mist nets are too numerous to describe practically here. New banders will receive exhaustive training by BICs during their first weeks at Long Point. Experienced extractors will be observed by BICs before they are allowed to extract on their own. Please do not be offended by this if you are an experienced bander. As experienced banders know, bird safety is paramount, and it is only doing our due diligence to evaluate you in this way.

Net Triage: When approaching a mist net, first assess all the birds in it. Look for birds that are in the most distress, or causing the most distress to others and extract them first. Any bird that is dangling by a leg, wing or tongue should be extracted first. If all the birds are safely caught in the net, then remove the easy to extract birds first (so that they don't get more badly tangled), then move to the more difficult ones. **Do not cut a net to extract a bird unless you have no other recourse, and even in that case it can only be done by the BIC.** If a net must be cut make sure to cut only as few strings as necessary to minimize the size of the hole you create in the net.

Mist net and Trap Locations: Locations of mist nets at the Tip are currently in a constant state of flux due to high rates of flooding and erosion in recent years. Several HTs and JTs have been washed away or swallowed by sand dunes over the years, including as recently as 2019. Therefore we do not currently have a map of net locations for the Tip. Net locations for Breakwater and Old Cut are found on Maps 2 & 3, respectively.

Passerine Nets

LPBO focuses its banding efforts on near-passerines and passerines, using 12 m long, 32 mm (1.25 in), 5 panel mist nets. Mist net set up should follow the example given in the *Long Point Technical Series* [video](#). Each net is numbered to allow us to track variation in capture rate between nets and seasons (see

Maps 2 & 3). Each bird extracted should be assigned to a specific net with a numbered clothes peg. This also allows for better tracking of birds and net rounds through the banding lab.

Each station has a different compliment of nets:

- Tip = usually 12 standard nets, plus 2-4 additional non-standard nets.
- Breakwater = 13 standard nets.
- Old Cut = 14 standard nets.

Ground Traps

As part of the standard protocol, JT and GT are only run for part of the spring and fall migration monitoring seasons (Table 2). Standard GT operation is intended for passerines only, with occasional captures of Mourning Doves and woodpeckers. GTs for shorebirds or waterbirds are considered non-standard banding and requires the permission of the BIC and must be noted on the banding datasheet as NSB.

Operation: GTs are usually left overnight from the previous day's banding session. They should be **lying upside-down and perfectly flat on the ground when not in use**. They must not be leaned against trees or other objects from which they could fall over, becoming inadvertently set and resulting in accidental captures of birds. During the opening net round GTs must be flipped over and baiting with a modest amount of cracked corn poured through the roof mesh down the centre of the trap. A small amount of cracked corn should also be sprinkled just inside the doors to help birds find the entrance. During this and every subsequent net round check to make sure that the trap door on top of the GTs are shut so no birds escape. GTs need to be checked on each net round, as you go around the net lanes. Do not do a separate round just for GTs. Extracting birds from traps is generally easier than from mist nets but there is still a chance for injuring a bird during the process. Like with mist nets, traps should first be triaged: remove distressed birds first, or small birds that could be injured by larger birds. To remove birds carefully open the trap door on top of the GT and reach inside. Try to cover as much of the open space around your wrist with your free hand so no birds fly up your arm and escape. Corner the trapped bird in the GT using the bander's grip. Remove the bird, close the trap door and bag your capture. Repeat this process until the trap is emptied. Note that you require both hands to properly operate a GT so as to ensure there are no escapes. Beside each GT is a stake with hooks on it. Use this stake to hang your bird bags on so that you don't have to hold them and can operate the trap properly without them getting in the way - make sure you don't forget any bags when you leave the trap. In fact, it is dangerous for any bagged birds if you try to empty a GT with them hanging from your wrist. They will hit the ground or the cage and you may even kneel on a bird bag by accident! Keep both hands free for emptying GTs. Another possible source of mortality in GTs are predators. If Eastern Chipmunks, American Red Squirrels, weasels or American Mink are trying to access traps with birds inside them alert the BIC; GTs may have to be closed if the risk of depredation is too high. Some birds experience superficial abrasions on their foreheads as they attempt to force their way out of the GT through the mesh. These birds can generally be banded because their injury is very minor.

J-Traps

Operation: JTs have a large door that banders can open to walk into the trap. This door is left propped open overnight from the previous day’s banding session. The door must be propped with a very heavy object that cannot be dislodged by the wind (e.g., a cinder block). If the door closes then the trap has become inadvertently set and will result in the accidental captures of birds. During the opening net round JT doors must be closed and the floor of the trap baited with a modest amount of cracked corn. A small amount of cracked corn should also be sprinkled just inside the doors to help birds find the entrance. During this and every subsequent net round check to make sure that the door is shut so no birds escape. JTs need to be checked on each net round, as you go around the net lanes. Do not do a separate round just for JTs. Extracting birds from traps is generally easier than from mist nets and GTs but there is still a chance for injuring a bird during the process. It is not really necessary to triaged a JT at first glance because of the way the birds are extracted from it. To remove birds from the JT it is necessary to herd the birds from the main cage to the small collection box at the end of the ramp. The collection box is covered by a trap door which is operated by a string that runs the length of the trap to the door. Leave the door closed and pull the string carefully open the collection box trap door. Your presence at one end of the JT will scare the birds to the other end, where the collection box sits. They will see a chance to escape the cage by way of the collection box window, and will fly into the box. If not all the birds go into the box you may have to enter the cage through the door and scare them into the collection box that way. If there is a large flock of birds in the trap, it may be necessary to do more than one flush of birds into the collection box. Once you have the birds in the collection box, walk around the JT to the collection box and begin removing the birds. The collection box is designed so that large birds are contained at the top of the box, while small birds find their way into the lower sections. This helps eliminate injuries. Remove the small birds first and then the big birds. As with the GTs, corner the trapped birds in the collection box using the bander’s grip. Remove the bird and bag your capture. Repeat this process until the collection box is emptied. If you utilize the hooks on the JT to hang up your bird bags make sure you don’t forget any of them when you leave the trap. Like with GTs a possible source of mortality in JTs are predators. If Eastern Chipmunks, American Red Squirrels, weasels or American Mink are trying to access traps with birds inside them alert the BIC; JTs may have to be closed if the risk of depredation is too high.

Table 2: J-trap and ground trap schedules:

Trap	Station	Number of Traps	Spring	Fall
JT	Tip	2	Apr 10 -May 21	Sep 15 - Nov 15
GT	Tip	4	Apr 10 -May 21	Sep 15 - Nov 15
JT	Breakwater	2	Apr 10 -May 21	NA
GT	Breakwater	4	Apr 10 -May 21	NA
JT	Old Cut	1	Apr 10 -May 21	Oct 1 - Nov 15
GT	Old Cut	4	Apr 10 -May 21	Oct 1 - Nov 15

Speciality Trapping

All speciality trapping is a form of NSB and can be done only at the discretion of the BIC. It should never interfere with the standardized protocol. You must have supervision, or special training beyond what LPBO normally provides in order to safely capture and accurately age and sex waterfowl, large raptors, and shorebirds. Hummingbirds (and Blue-grey Gnatcatchers) are not currently banded at LPBO. All cooperators **must** read the related [NABC manuals](#) pertaining to the taxa of birds they wish to band.

Northern Saw-whet Owl Nets

During the fall (September 25 to November 15, and sometimes extending to December 31), a special effort is made to monitor the migration of Northern Saw-whet Owls, and the occasional Long-eared Owl, at the Tip and Old Cut. This consists of netting the birds at night, using special lure tapes. The regular nets are often used too, but they are supplemented by a special array of owl nets. Details of this operation are covered in the *LPBO Northern Saw-whet Owl Protocol*.

Hawk Nets

LPBO uses passive hawk nets (mesh size of 60, 80 or 100 mm) in the fall to capture migrating raptors. They are raised as high as practical both to keep heavy-bodied hawks off the ground and to intercept low flying birds. There are typically four hawk nets at the Tip and one at Old Cut in the fall. The operation of hawk nets must not interfere with normal migration monitoring. Hawk nets can be operated in slightly windier conditions than passerine mist nets, because raptors tend to be more robust and less prone to injury. Pay very close attention to hawk nets as smaller birds can become extremely tangled in the large mesh size, and hawk nets can even capture birds as small as Brown Creepers.

Shorebirds

Shorebirds are usually caught using mist nets or GTs. Shorebird nets must be monitored constantly as shorebirds are much more prone to exhaustion and injury than almost any other kind of bird. Extract birds as soon as they hit the net. Always keep the feet supported to avoid capture myopathy. Be especially careful removing netting from around the carpal joint. Also, make very certain that your lowest panel will not dip into the water when a bird gets caught. All shorebirds (excluding American Woodcock) are banded above the tarsal joint, as indicated on the chart in the banding lab. GTs can also be effective for shorebirds. A good shorebird GT has stiff wire leads which help guide the birds inside. They are typically placed right on the shoreline, but not submerged. Do not leave shorebird GTs on the beach unattended: they will wash away or birds will become stressed in them if left too long. This same trap design can also work well to catch shoreline foraging passerines such as Snow Buntings, and American Pipits. Any shorebird banding of this kind is NSB.

The Banding Operation

LPBO strongly adheres, and actively contributes to the guidelines set by the [North American Banding Council](#). This protocol does not elaborate on all the details of all aspects of banding. For that information, read [The North American Banders' Manual for Banding Passerines and Near Passerines](#), [The North American Banders' Study Guide](#) and the introduction and special sections of *Identification Guide to North American Birds, Part I* (hereafter, *Pyle*). Some elaboration on banding methods is found below, but the details must be taken from those documents and from instruction by LPBO BICs. You may not

participate in any banding until it is clear that you have read and understand the information in those documents. Here is the basic method for banding a bird at LPBO:

1. Remove the bird from the bag using the bander's grip (or other acceptable grip depending on the species).
2. **Check for a band.** If there is no band present then proceed to 3. If a band is present, the bird is a recapture and must be handled differently (see below).
3. Identify the species.
4. Select the appropriate band size based on species chart in the lab, reference to *Pyle*, or by measuring with the leg gauge.
5. Read the band number to the scribe. Wait for the scribe to confirm the band number is correct.
6. Open, apply and, close the band.
7. Ensure the band fits properly.
8. Age the bird first (**always skull in fall**), and then attempt to sex the bird where appropriate.
9. Measure fat, measure wing and other metrics. You may also need to inspect the face and ears for ticks.
10. Put the bird in the weighing tube and weigh it.
11. The scribe will release the bird and the bander can proceed to the next bird.

Recording Banding Data

During any banding operation, the following essential information **must** be recorded: band number, species, age, sex, location, and date. At LPBO, we also routinely record wing chord, weight, fat, time trapped and time released, and trapping device. Brief notes on plumage aberrations, parasites, age, infections, etc. are also recorded. For birds that are in active moult, a full description of the moult pattern is **must** be recorded on a moult card (see below) or in the banding database (see Appendices E and F).

Banding datasheets or the banding database are filled in as you band. Codes are given on the back of each banding datasheet and are posted in the banding lab. Black ball-point pen is **only** acceptable ink for use on datasheets and moult cards. White-out **must** be used to correct mistakes. Print everything legibly! Right-justify all data in the spaces provided. Record the full band number at the top of the sheet and underline the prefix.

Do **not** use ditto marks on the banding sheets when information is repeated on successive data lines (they can be misinterpreted as the number "11"). Instead, denote repeated entries with a solid horizontal line. This greatly facilitates computer entry later on. 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** (i.e., re-enter the data as if you were starting a new sheet), with no ditto lines.

Note that the species names and [four-letter species codes](#) used in the banding operation are not always the same as those conventionally used by birders, or in field guides, etc. Only the codes provided by the

bird banding office are acceptable. These match up with the codes that are imbedded in the data entry program, and are also the same as those used for ET computerization. It is important that all banders use the same codes! All banding data must be added to the daily log datasheet at the end of the morning's banding session. Banding is not complete until this is done.

Bird Identification

Never band or release a bird if the species is in doubt – let the BIC know immediately if you can't identify something. Do not release a bird that you can't identify without permission from the BIC – it could be a rarity! For most birds we identify them to the species level, but for a handful it is done differently. In some cases we identify them to subspecies (or subspecies group), for example, Northern Flickers are banded as either Yellow-shafted Flicker (YSFL), Intergrade Flicker (INFL), or Red-shafted Flicker (RSFL; not yet recorded at LPBO). In other cases, two cryptic species are combined into one for banding purposes. For example, Willow Flycatcher and Alder Flycatcher are banded as Traill's Flycatcher (TRFL). In unusual cases, hybrids are given their own codes. The only species for which this commonly occurs at LPBO are hybrids and backcrosses of Golden-winged Warbler x Blue-winged Warbler: Brewster's Warbler (BRWA) and Lawrence's Warbler (LAWA; Table 3). Communicate any rare birds to the BIC immediately. The BIC will then spread the word more widely through official LPBO channels.

Table 3. Unusual banding codes commonly used at LPBO:

Typical Species Name	Bander's "Species Name" (Banding Code)
Golden-winged Warbler x Blue-winged Warbler hybrid	Brewster's Warbler (BRWA)
	Lawrence's Warbler (LAWA)
Yellow-rumped Warbler	Audubon's Warbler (AUWA)
	Myrtle Warbler (MYWA)
White-crowned Sparrow	Eastern White-crowned Sparrow (EWCS)
	Gambel's White-crowned Sparrow (EWCS)
Dark-eyed Junco	Slate-coloured Junco (SCJU)
	Oregon Junco (ORJU)
Alder Flycatcher	Traill's Flycatcher (TRFL)
Willow Flycatcher	
Palm Warbler	Western Palm Warbler (WPWA)
	Yellow Palm Warbler (YPWA)
Northern Flicker	Yellow-shafted Flicker (YSFL)
	Intergrade Flicker (INFL)
	Red-shafted Flicker (RSFL)

Band Sizes

Band sizes for all of the commonly encountered species at LPBO are listed on a chart in the lab. The first size listed on the chart is the preferred size, the one that will fit most members of that species. Some species can take a wide range of band sizes. Sex may also influence band size. If the chart indicates a sex difference in band size, then make sure you determine the sex before selecting the band. Use the leg gauge if needed and indicate its use in the remark column on the banding datasheet or in the banding

database (use remark 25). Because Northern Cardinals require a difficult to use stainless steel band, only the BIC may band them, or authorize others to do so. If you use an incorrect band size you must notify the BIC immediately so they can assess and rectify the situation if needed. Note all incorrectly used bands in the remark column of the banding datasheet or banding database (use remark 02). Band sizes can be confusing because they are labeled in perhaps unexpected way. In ascending order, the common band sizes LPBO uses are: 0A, 0, 1, 1B, 1A, 1ASS, 2, 3, 3B, and 3A.

Band Numbers

Most LPBO bands have nine numbers (some have eight or seven digits). For most birds, the bander only needs to read the final two digits on the band to the scribe. The scribe will then confirm if the number follows in the sequence required on the datasheet/program. If the number isn't correct, the scribe will ask the bander to double check the number. At the beginning and end of each banding datasheet, the bander is required to read the entire band number. Sometimes bands go missing or are not actually placed on the previous bird. In these cases, confusion will usually follow; notify the BIC immediately to help sort out the discrepancy. It's important to figure out what the problem is before making it worse by using more bands in the wrong order. Indicate lost or destroyed bands on the banding datasheet by writing "band lost" or "band destroyed" in the species name column.

Ageing

All birds that are banded are also aged. Most birds cannot be properly aged without a complete understanding of moult. In addition to the aforementioned documents, all LPBO cooperators that want to become independent and competent banders must read and understand the moult and special sections of *Pyle and Modifications to a molt-based ageing system proposed by Wolfe et al. (2010)* by Erik Johnson et al. It is also highly recommended that aspiring experts read:

- [Ageing North American Landbirds by Molt Limits](#) by Dan Froehlich
- [Birding by Feather: A Molt Primer](#) by Peter Pyle
- [Finding Order Amid the Chaos](#) by Steve Howell
- [The Variety of Molt Strategies](#) by Steve Howell
- [Peterson Reference Guide to Molt in North American Birds](#) by Steve Howell

These resources will provide the best treatment of the topic of aging birds by plumage and moult that you can find. Currently, LPBO uses the Howell system (i.e., Modified Humphrey-Parks system) because it is straightforward and easily applied to the majority of birds we encounter (Table 4). However, the Wolfe-Ryder-Pyle cycle-based system is a more comprehensive approach to ageing that requires a more in depth understanding of moult. The Howell system (i.e., Modified Humphrey-Parkes system) is the one used in Volume 2 of Pyle, and is the one most widely employed by banders today. The original Humphrey-Parkes system is the one that is used in Volume 1 of Pyle, but is now considered by many ornithologists to be outdated. LPBO cooperators are expected to know both and use them interchangeably. The Life Year system is the one commonly found in field guides. See below for a comprehensive summary of all the moult and aging systems that you may encounter at LPBO (Tables 6A and 6B).

Table 4. All birds that are banded **must** be aged (following the Modified Humphrey-Parkes system) as one of the following:

Age	Abbreviation	Code	Definition
Unknown	U	0	Cannot determine age; usually only used in the fall.
Local	L	4	Nestling.
Hatch Year	HY	2	Hatched in the current calendar year.
After Hatch Year	AHY	1	Did not hatch in current calendar year.
Second Year	SY	5	Hatched in the previous calendar year.
After Second Year	ASY	6	Hatched before the previous calendar year.
Third Year	TY	7	Hatched three calendar years ago.
After Third Year	ATY	8	Hatched at least four calendar years ago.

In addition to being assigned an age, **each banded bird must be assigned one or two criteria** that explain how the bander arrived at their aging decision. See below for a list of accepted criteria and their codes. Read *Pyle* carefully for each species – aging is a complex and challenging skill to develop. It is impossible to go into aging in much detail in this protocol but you will receive exhaustive training on aging birds at LPBO, and a review of all the recommended resources will certainly help prepare you for the challenges that lay ahead. Do not guess at a bird's sex; if you're not certain ask the BIC.

Unknown (code 0) and after hatch year (code 1): An age of unknown is normally not used from January 1 to the nesting season. At this time of year, birds of an unknown age are by default after hatch year (code 1) because no young have been produced in the current calendar year. A bird hatched in May will be after hatch year in January, but it is still only about 8 months old. After hatch year is effectively a catchall code to designate birds that are at least second years (code 5), but for which the age could not be more precisely determined. If you have to use the unknown or after hatch year codes for a bird's age, you can use probable age column on the banding datasheet or in the banding database to record an educated guess at a more precise age.

Sexing

All birds that are banded **must** be sexed as unknown (code 0), male (code 4), or female (code 5). Do not guess at a bird's sex; if you're not certain ask the BIC. If no one can decide on the bird's sex, record it as unknown. Use the probable sex column on the banding datasheet or in the banding database to record an educated guess at the sex. **Each banded bird must also be assigned one or two criteria** that explain how the bander arrived at their sexing decision. See below for a list of accepted criteria and their codes. The most common criteria for sexing are plumage, cloacal protuberance, brood patch, and wing cord. Read *Pyle* carefully for each species. Females of some species can be surprisingly colourful (e.g., Magnolia Warbler), while males of some species can have brood patches (e.g., Blue Jay). LPBO allows banders to use wing length or other measurements to sex birds, but this applies only to selected species. The wing measurements in *Pyle* are not considered reliable enough for accurate sexing in most species.

Aging and Sexing Criteria

Table 5. The codes for which criteria were used when assigning an age or sex to a bird are:

How Aged or Sexed	Code	Definition
Plumage	1	Can include: colours, feather wear, feather shape, emargination or notching, rachis colour, fault and growth bars, active moult, etc. For a measured tail length use other (code 9).
Skull	2	Primarily used in fall but see the <i>Skull Pneumatization Dates</i> and <i>Skulling Selected Near-Passerines and Passerines</i> sheets in the banding lab, as well as the skulling section below for more information.
Eye Colour	3	See the <i>Aging by Eye Colour</i> sheet in the banding lab for more information.
Wing Cord	4	Use unflattened wing cord. Note if flattened wing cord (e.g., shorebirds) is used in the comments section of the banding datasheet or banding database. See the <i>Aging and Sexing Measurements</i> sheet in the banding lab, and below for more information.
Cloacal Protuberance	5	See <i>Pyle</i> for more information. For waterfowl cloacal examinations use other (code 9).
Brood Patch	6	See <i>Pyle</i> for more information. Beware of males with brood patches.
Mouth or Bill Colour	7	See <i>Pyle</i> for more information.
Culmen Length	8	Note which measurement is used (e.g., exposed culmen, total culmen or nares to tip) as well as the actual measurement in the comments section of the banding datasheet or banding database.
Other	9	Can include: measured tail length, waterfowl cloacal examination, gonadal examination of deceased birds (e.g., lighthouse kills), etc.

If the species you are banding can only be sexed by cloacal protuberance or a brood patch and neither are evident, the bird should be recorded as sex unknown (code 0) with criteria other (code 9) on the banding datasheet or in the banding database. If the species can usually be sexed by plumage but the individual is intermediate it should be recorded as sex unknown (code 0) with criteria plumage (code 1). This is the same for species that can be sexed by wing length (code 4).

Table 6A. Moults and ageing systems for birds with a **Complex Alternate Moults Strategy**.

Moults
 Plumage

CYCLE	FIRST						DEFINITIVE			
HOWELL	First Prebasic or Prejuvinal	First Basic or Juvenal	Preformative	Formative	First Prealternate	First Alternate	Definitive Prebasic	Definitive Basic	Definitive Prealternate	Definitive Alternate
WOLFE-RYDER-PYLE	Prejuvinal (FPJ)	First-cycle Juvenal (FCJ)	Preformative (FPF)	First-cycle Formative (FCF)	First Prealternate (FPA)	First-cycle Alternate (FCA)	Definitive Prebasic (DPB)	Definitive-cycle Basic (DCB)	Definitive Prealternate (DPA)	Definitive-cycle Alternate (DCA)
HUMPHREY-PARKES	Prejuvinal	Juvenal	First Prebasic	First Basic	First Prealternate	First Alternate	Definitive Prebasic	Definitive Basic	Definitive Prealternate	Definitive Alternate
LIFE YEAR		Juvenal		Immature		First Summer Breeding		Adult Non-breeding		Adult Breeding
BBO BANDING CODES		Local (L) or Hatch Year (HY)		Hatch Year (HY)		Second Year (SY)		After Hatch Year (AHY) or After Second Year (ASY)		After Hatch Year (AHY) or After Second Year (ASY)

Table 6B. Molt and ageing systems for birds with a **Complex Basic Molt Strategy**.

Molt
 Plumage

CYCLE	FIRST				DEFINITIVE	
HOWELL	First Prebasic or Prejuvinal	First Basic or Juvenal	Preformative	Formative	Definitive Prebasic	Definitve Basic
WOLFE-RYDER-PYLE	Prejuvinal (FPJ)	First-cycle Juvenal (FCJ)	Preformative (FPF)	First-cycle Formative (FCF)	Definitive Prebasic (DPB)	Definitive-cycle Basic (DCB)
HUMPHREY-PARKES	Prejuvinal	Juvenal	First Prebasic	First Basic	Definitive Prebasic	Definitve Basic
LIFE YEAR		Juvenal		Immature		Adult Non-breeding
BBO BANDING CODES		Local (L) or Hatch Year (HY)		Hatch Year (HY)		After Hatch Year (AHY) or After Second Year (ASY)

Fat

Birds use fat as fuel to sustain migratory flight, stay warm during the cold, or to survive for short periods when food isn't available. A visual assessment of fat can indicate whether a particular bird has just completed a migratory flight (has little or no fat) or is about to depart on one (has a large amount of fat). To measure fat, hold the bird in the customary grip and part the feathers by blowing on the furcular hollow in front of the breast-bone, under the wing, and at the base of the belly. The feathers will part along their natural tracts. Look at the amount of distinct yellow or orange fat deposits, contrasting with the adjacent red muscle tissue. Compare what you see with the chart in the banding lab to determine a fat score (0 to 7; Figure 8). One has not properly assessed fat level if the entire bird has not been inspected.


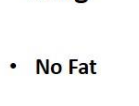

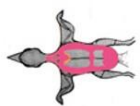
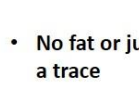


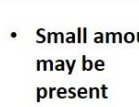

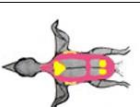


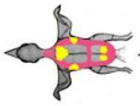


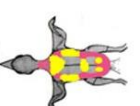





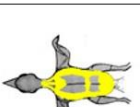
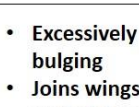

Score	Abdomen	Wing	Furcular Hollow
0	 <ul style="list-style-type: none"> No fat 	 <ul style="list-style-type: none"> No Fat 	 <ul style="list-style-type: none"> No fat
1	 <ul style="list-style-type: none"> No fat or just a trace 	 <ul style="list-style-type: none"> No fat or just a trace 	 <ul style="list-style-type: none"> <5% full Bottom not covered
2	 <ul style="list-style-type: none"> Small amount may be present 	 <ul style="list-style-type: none"> Small amount may be present 	 <ul style="list-style-type: none"> <30% full Bottom covered
3	 <ul style="list-style-type: none"> Usually present 	 <ul style="list-style-type: none"> Thin layer 	 <ul style="list-style-type: none"> 30-60% full
4	 <ul style="list-style-type: none"> Thick layer 	 <ul style="list-style-type: none"> Thick layer 	 <ul style="list-style-type: none"> 60-100% full
5	 <ul style="list-style-type: none"> Bulging layer 	 <ul style="list-style-type: none"> Bulging layer 	 <ul style="list-style-type: none"> Bulging above the furculum
6	 <ul style="list-style-type: none"> Greatly bulging layer 	 <ul style="list-style-type: none"> Greatly bulging layer 	 <ul style="list-style-type: none"> Greatly bulging above the furculum
7	 <ul style="list-style-type: none"> Excessively bulging Joins wings and abdomen 	 <ul style="list-style-type: none"> Excessively bulging Joins wings and abdomen 	 <ul style="list-style-type: none"> Excessively bulging Joins wings and abdomen

Figure 8. Fat scoring.

Wing Chord

Wing chord measurements can be useful for identifying some cryptic species (e.g., *Empidonax* flycatchers), and for separating the sexes in selected species. See Table 7, of accepted wing cut-offs posted in each laboratory. The wing chord measurements in *Pyle* are generally not considered reliable for sexing birds, but can be used as helpful guidelines. Wing chord is measured using un-flattened wing, as opposed to the flattened wing used in Europe. At LPBO, the only exceptions when flattened wing is used is for shorebirds, and when identifying *Geothlypis* (formerly *Oporornis*) warblers (e.g., Connecticut, MacGillivray's, and Mourning warblers). Tail and other measurements may be taken for special species. See the NABC manuals and *Pyle* for more information on those techniques.

Table 7. Accepted species for sexing by wing cord.

Species	Male (mm)	Female (mm)	Note
American Woodcock	≤ 128	≥ 130	Combine with exposed culmen
Bay-breasted Warbler	≥ 76	≤ 68	Not HY
Brown-headed Cowbird	≥ 103	≤ 96	
Blackpoll Warbler	≥ 76	≤ 69	Not HY
Common Grackle	≥ 136	≤ 134	AHY/U only
Least Flycatcher	≥ 63	HY/SY ≤ 61 AHY/ASY ≤ 59	
Magnolia Warbler	≥ 62	≤ 55	Not HY
Myrtle Warbler	≥ 77	≤ 66	Not HY
Ovenbird	≥ 77	≤ 69	
Pine Siskin	≥ 75	≤ 68	
Red-eyed Vireo	HY/SY ≥ 81 AHY/ASY ≥ 82	HY/SY ≤ 75 AHY/ASY ≤ 76	
Rusty Blackbird	≥ 113	≤ 111	Combine with tail length
Red-winged Blackbird	≥ 105	≤ 104	
Slate-coloured Junco	≥ 78	≤ 72	
Sharp-shinned Hawk	≤ 184	185-215	
Swainson's Thrush	≥ 99	≤ 90	
Tennessee Warbler	≥ 65	≤ 60	
Wilson's Warbler	≥ 53	≤ 52	Combine with cap length
White-throated Sparrow	≥ 74	≤ 67	
Yellow-bellied Flycatcher	≥ 68	≤ 63	

Skulling

Skulling takes practice, but once you get it, you'll be able to age virtually every passerine in the fall with complete confidence. The degree of skull development (pneumatization) is scored between 0 and 6. Sometimes skull and plumage or moult don't match up. In these cases, skull should take precedence over plumage or moult, because skull is generally considered to be a more reliable and less plastic characteristic. See *Pyle* for a more through explanation skulling. Irrespective of other ageing criteria, LPBO strives for a minimum of 75% of birds skulled during fall. See the *Skull Pneumatization Dates* and *Skulling Selected Near-Passerines and Passerines* sheets in the banding lab, as well as the skulling chart below for more information.



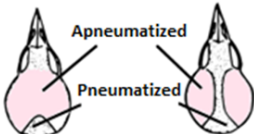




Score		% Pneumatized	Description
0		0%	<ul style="list-style-type: none"> No pneumatization Entire skull pink Nestlings (L) and sometimes very recently or prematurely fledged HY.
1		1-5%	<ul style="list-style-type: none"> Very small triangle of stippled grey bone at the rear Almost entirely pink Characteristic of HY
2		6-33%	<ul style="list-style-type: none"> Large triangle of stippled grey bone at the rear, or a line of stippled grey bone running down the centre ≥ 2/3 pink Characteristic of HY
3		34-66%	<ul style="list-style-type: none"> Extensive stippled grey bone at the rear and/or along the midline, as well as along the sides 1/3 to 2/3 pink Characteristic of HY
4		67-94%	<ul style="list-style-type: none"> Mostly stippled grey bone except for one or two small apneumatized areas on top ≤ 1/3 pink Characteristic of HY Caution: some SY and AHY/ASY may have this pattern
5		95-99%	<ul style="list-style-type: none"> Mostly stippled grey bone except for one or two very small apneumatized areas on top Almost no pink Characteristic of HY Caution: some SY and AHY/ASY may have this pattern
6		100%	<ul style="list-style-type: none"> Pneumatization complete No pink Characteristic of HY that have completed their ossification and AHY/ASY
8	Skull not visible	Unknown	<ul style="list-style-type: none"> Skull examined, but no score could be assigned because skull could not be clearly seen.

Figure 9. Skulling.

Measuring Weight

LPBO weighs all birds in a specially-made tube on an electronic balance with a maximum capacity of 1200 g; **do not weigh birds that are heavier than this on the balance**. Birds are weighed with the band on. After the band is on, put the bird in the appropriate-sized tube upside down, making sure that its feet are tucked in. With the bird in the tube and on the scale, tare the balance, and when it reads 0, then release the bird. Placing the empty tube back on the scale will reveal the exact “negative” weight. Weighing the birds this way will ensure that a weight is never lost accidentally if not recorded, and puts the tube back on the scale ready for the next bird. Cavity-nesters and Winter Wrens are prone to escaping from the tubes, so keep one hand over the top to catch them if they wiggle out. Weigh the bird as the last step in the banding process so it can be released out of the banding lab's hatch directly from the tube. Large birds such as Common Grackles, Mourning Doves, and Yellow-shafted Flickers need to be released by hand. If it is necessary to remove a bird from a tube manually, **do not pull on its tail** - you'll pull it off. Be gentle and shake the bird down far enough out of the tube for you to get a grip on the legs or body. If this doesn't work, try dumping it into a bird bag. If a bird escapes before being weighed (or otherwise measured), make a note in the comments column on the banding datasheet or in the banding database. Electronic balances are very delicate and very expensive, please be gentle with them. Turn balances off at the end of the day.

Recaptured Birds

Recaptured birds (recaps) are birds that are captured but already have a band. They are treated similarly to newly banded birds (above) but with a few important distinctions; the first being that they're more important than an unbanded bird. The phrase 'just a recap' is never to be uttered at LPBO. Recaptured birds fall into three categories:

- Repeats
- Returns
- Foreign recoveries

A repeat bird is one that has been caught for at least a second time at the same location at which it was originally banded. It describes birds that that have apparently not left the neighbourhood in the past 90 days. A return bird is a bird which has been captured at the same location it was originally banded at after more than 90 days. A foreign recovery refers to a bird that was originally banded elsewhere and was subsequently recovered at Long Point.

Processing Recaptures: Even when a captured bird is already banded, it must always be brought back to the banding lab to be processed. Never release an already banded bird unless you are 100% sure that it is a same-day repeat. Foreign recoveries are extremely rare and we can't afford to have them accidentally released because of an erroneous assumption. The most organized banders will have a list of the day's first banded birds in the lab or, on their person, so that numbers can be consulted in the field and same-day recaptures can be released at the net. The basic method for processing recaptures at LPBO is exactly the same as for newly banded birds except for the following:

- Check for a band. If there is a band then proceed, below;
- Read the entire band number twice (forward and backward) to the scribe (who will write it on a note pad);
- The scribe will determine if the bird is a same-day repeat. If it is a same day repeat, it can usually be released immediately. However, it is always a good idea to make sure there is no data missing

for same-day repeats that could be filled in now that the bird is back in hand.

- If it is not a same day repeat, the scribe will create a new record for the bird on the recapture datasheet or in the banding database.
- Make sure the existing band fits properly and adjust as required;
- Photograph the bird if it is a rare species, unusual plumage or if thought to be a foreign recapture;

Reading Band Numbers: Unlike with newly banded birds, where often only the last two digits on the band need to be read, with recaptures the whole band number must be read, twice. Read it left to right and right to left, forward, and backward, and if time permits, the scribe should repeat the number to the bander. Do not make a mistake reading the band number on a recaptured bird. Ask for help or utilize a magnifier if you are having trouble reading the numbers. Missing a foreign recapture because of a misread band number is unacceptable.

Recapture Records: Recaptures are a perfect opportunity to double-check the ID, age, sex and measurements. Banders should not reference original capture data or let it influence their decision until after all the data has been recorded. If there is a discrepancy between the original banding data and recapture data, make the best assessment given the information you have at the time but do not correct original data without authorization of the BIC. If a banded bird is found dead or is brought to the observatory by a member of the public, create a recapture record for the bird. Record all the usual information, plus how the bird died and the name and address of the person who brought it in (if it was a member of the public). LPBO will submit the record on the finder's behalf.

Checking for Ticks

LPBO collaborates on a number of projects tracking the spread of ticks and related infectious diseases through birds. This is usually of greatest interest in spring and on Neotropical migrants. Checking for ticks is easiest while inspecting the feet on birds. Ticks are most commonly found around the bills, eyes, and in and around the ear cavity. If one or more ticks are discovered, remove them by grabbing the tick as close to the skin as possible and pulling firmly. Do not remove ticks from inside the ear as you may cause more damage than you intended. Once removed you can store the tick following the instructions and receptacles provided in each banding lab.

Basic Bander Training

The following serves only as a very brief summary of our training program. It is not meant to supplement the banders' study guides or practical experience in the banding lab and net lanes. Some people are natural-born bird-banders, while others are "all thumbs". If you happen to fall into the latter category, please try to be satisfied at learning at even a slower pace than outlined, or maximizing your contributions to the observatory in other ways. Few people can learn the fine art of bird-banding in a week. It takes a minimum of one intense month of training to learn to become a competent, independent, bander and it takes years to become proficient. Please take the time to develop the necessary skills.

At LPBO, your training is almost always conducted by two or three BICs who will regularly share details about an individual's training progress and their current skill level with one another. Please don't be

offended by this: no BIC will ever run an operation blind or without receiving a detailed report from the previous BIC about the entire team's skill level, strengths, weaknesses, and how well they work together.

Day 1: Learn to "scribe" and watch banders in action. Learn the basics of how to set nets properly and how to close them properly, **before** handling any birds! Read over the entire *LPBO Migration Monitoring Protocol*, *LPBO Cooperators Fact Sheet*, [The North American Banders' Manual for Banding Passerines and Near Passerines](#), [The North American Banders' Study Guide](#), [Guidelines for Prioritizing Bird Safety during High Capture Events](#), and the introduction and special sections of *Pyle*.

Day 2: Continue to scribe and watch others in action. Try reading the band numbers on the small band sizes. If your eye-sight and/or coordination is poor, perhaps you should consider staying at day #1? Bird-banding takes great hand/eye coordination as well as good eyesight. Never fear though, a good scribe is a wonderful asset and much appreciated. Assuming you and the trainer feel comfortable, this is the first day you'll be permitted to handle (not band) some "easy" birds using the all-important standard "banders grip". You might also be introduced to the "photographer's grip", if not today, then certainly tomorrow.

Day 3: Continue with scribing, practice holding easy birds in various grips, and watching the pros in action. Now it's time to try your skill at actually banding an "easy" bird and attempting some ageing, sexing and measuring.

Day 4: You've displayed your proficiency at handling birds in various grips, and so now you're given the opportunity to have a crack at extracting some easy birds from mist nets! It's not so hard after all, but aren't you glad you got the basics down first before reaching this step?

Day 5: Like Day #4, except your trainer might have you try your hand at extracting progressively more difficult birds **with** continued supervision. You'll see how each bird gets tangled in slightly unique (and initially baffling) ways.

Day 6: So let's put them all together now—mist-net maintenance, recording data, holding, extracting, banding, measuring, etc. You should be starting to feel fairly confident by now. The whole process only becomes an "assembly line" after you've banded several hundred birds. Within a month or two, you'll have become a skilled bird bander.

Day 7: You should not "solo" until you've mastered all of the above and only in consultation with the person in charge. Even then, you must always seek and get help from more experienced banders whenever you run into difficulties. And be sure to stick around and watch how the difficulty is resolved, so you'll know how to handle it next time. Over the following weeks (and perhaps months) of practice, you'll suddenly find that the bird that you once thought was "absolutely impossibly" tangled in a net, will be magically extracted in a matter of a minute or two.

Appendix A: The Daily Routine

Daily migration monitoring schedule at the Tip:

	Spring	Fall
0.5 hr before sunrise	Open mist nets and set traps <ul style="list-style-type: none"> 15 mist nets 4 ground traps and 2 J-traps (April 10-May 21 only) 	Open mist nets and set traps <ul style="list-style-type: none"> 15 mist nests 4 hawk nets 4 ground traps and 2 J-traps (Sep 15-Nov 15 only)
Sunrise	Morning watch <ul style="list-style-type: none"> Block building for 1 hr Shanty for 30 min 	Morning watch <ul style="list-style-type: none"> Block building for 1 hr Shanty for 30 min
1 hr after sunrise	Census <ul style="list-style-type: none"> 1.25 hr maximum 1-3 people Add data to daily log sheet Report census results to Old Cut and Breakwater 	Census <ul style="list-style-type: none"> 1.25 hr maximum 1-3 people Add data to daily log sheet Report census results to Old Cut and Breakwater
5.5 hr after sunrise	Close all nets and flip open all traps <ul style="list-style-type: none"> Clean banding lab Flip bird bags Record banding and recapture totals, and effort data on daily log sheet Double check nets 	Close all nets and flip open all traps <ul style="list-style-type: none"> Clean banding lab Flip bird bags Record banding and recapture totals, and effort data on daily log sheet Double check nets
2 PM to 5PM	Supplementary census <ul style="list-style-type: none"> No limits on time or observers Data entry <ul style="list-style-type: none"> Enter completed and proofed banding datasheets and today's recapture cards in Band Manager Birding <ul style="list-style-type: none"> Lake watch at Shanty Raptor watch at Cabin Shorebird Survey in NWA TRES grid monitoring Additional Chores	Supplementary/Monarch census <ul style="list-style-type: none"> No limits on time or observers Record all Monarch data on daily log sheet Data entry <ul style="list-style-type: none"> Enter completed and proofed banding datasheets and today's recapture cards in Band Manager Birding <ul style="list-style-type: none"> Lake watch at Shanty Raptor watch at Cabin or BB Shorebird Survey in NWA TRES grid monitoring Additional Chores
1 hr before sunset	Evening watch <ul style="list-style-type: none"> Block building or Tip for 1 hr 	Evening watch <ul style="list-style-type: none"> Block building or Tip for 1 hr
0.5 hr after sunset	Daily wrap-up <ul style="list-style-type: none"> Radio call Listen for nocturnal birds ETs 	Begin standard owl banding protocol <ul style="list-style-type: none"> 3 owl nets Mist nets 2, 3, 7, 13, 14 1 hawk net
4.5 hr after sunset		Daily wrap-up <ul style="list-style-type: none"> Radio call Listen for nocturnal birds ET's End standard owl banding protocol <ul style="list-style-type: none"> Close nets or continue banding until up to 1 hr before sunrise Recharge MP3 player/batteries

Daily migration monitoring schedule at **Breakwater**:

	Spring	Fall
0.5 hr before sunrise	Open mist nets and set traps <ul style="list-style-type: none"> • 13 mist nets • 2 ground traps and J-trap (April 10-May 21 only) 	Open mist nets and set traps <ul style="list-style-type: none"> • 14 mist nests • 1 hawk net • No ground traps or J-trap
Sunrise	Morning watch <ul style="list-style-type: none"> • Deck and/or lake for 1 hr 	Morning watch <ul style="list-style-type: none"> • Deck and/or lake for 1 hr
1 hr after sunrise	Census <ul style="list-style-type: none"> • 1 hr maximum • 1-2 people • Add data to daily log sheet • Report census results to the Tip and Old Cut 	Census <ul style="list-style-type: none"> • 1 hr maximum • 1-2 people • Add data to daily log sheet • Report census results to the Tip and Old Cut
5.5 hr after sunrise	Close all nets and flip open all traps <ul style="list-style-type: none"> • Clean banding lab • Flip bird bags • Record banding and recapture totals, and effort data on daily log sheet • Double check nets 	Close all nets and flip open all traps <ul style="list-style-type: none"> • Clean banding lab • Flip bird bags • Record banding and recapture totals, and effort data on daily log sheet • Double check nets
2 PM to 5PM	Supplementary census <ul style="list-style-type: none"> • No limits on time or observers Data proofing <ul style="list-style-type: none"> • Proof completed banding datasheets, retrap cards and past daily log sheets Additional Chores	Supplementary/Monarch census <ul style="list-style-type: none"> • No limits on time or observers • Record all Monarchs on daily log sheet Data proofing <ul style="list-style-type: none"> • Proof completed banding datasheets, retrap cards and past daily log sheets Additional Chores
1 hr before sunset	Evening watch <ul style="list-style-type: none"> • Deck for 1 hr 	Evening watch <ul style="list-style-type: none"> • Deck for 1 hr
0.5 hr after sunset	Daily wrap-up <ul style="list-style-type: none"> • Radio call • Listen for nocturnal birds • ETs 	Daily wrap-up <ul style="list-style-type: none"> • Radio call • Listen for nocturnal birds • ETs

Daily migration monitoring schedule for **Old Cut**:

		Spring	Fall
0.5 hr before sunrise	Banding (20 min net rounds) and birding	Open mist nets and set traps <ul style="list-style-type: none"> 14 mist nets 4 ground traps and J-trap (April 10-May 21 only) 	Open mist nets and set traps <ul style="list-style-type: none"> 14 mist nests 1 hawk net 4 ground traps and J-trap (October 1-Nov 15 only)
Sunrise		Morning watch* <ul style="list-style-type: none"> Platform for 1 hr 	Morning watch* <ul style="list-style-type: none"> Platform for 1 hr
1 hr after sunrise		Census <ul style="list-style-type: none"> 1 hr maximum 1-3 people Add data to daily log sheet Report census results to the Tip and Breakwater 	Census <ul style="list-style-type: none"> 1 hr maximum 1-3 people Add data to daily log sheet Report census results to the Tip and Breakwater
5.5 hr after sunrise		Close all nets and flip open all traps <ul style="list-style-type: none"> Clean banding lab Flip bird bags Record banding and recapture totals, and effort data on daily log sheet Double check nets 	Close all nets and flip open all traps <ul style="list-style-type: none"> Clean banding lab Flip bird bags Record banding and recapture totals, and effort data on daily log sheet Double check nets
2 PM to 5PM	Chores and additional birding	Supplementary census <ul style="list-style-type: none"> No limits on time or observers 	Supplementary census <ul style="list-style-type: none"> No limits on time or observers
		Data entry <ul style="list-style-type: none"> Enter completed and proofed banding datasheets and today's recapture cards in Band Manager 	Data entry <ul style="list-style-type: none"> Enter completed and proofed banding datasheets and today's recapture cards in Band Manager
		Additional Chores	Additional Chores
1 hr before sunset		Evening watch <ul style="list-style-type: none"> Platform for 1 hr 	Evening watch <ul style="list-style-type: none"> Platform for 1 hr
0.5 hr after sunset		Daily wrap-up <ul style="list-style-type: none"> Lock buildings and check nets Radio call Listen for nocturnal birds ETs 	Begin standard owl banding protocol <ul style="list-style-type: none"> 3 owl nets Mist nets 2, 3, 7, 13, 14 1 hawk net
4.5 hr after sunset		*Monday is garbage day: Put all garbage and recycling at the bottom of the driveway immediately after opening nets.	Daily wrap-up <ul style="list-style-type: none"> Lock buildings and check nets Radio call Listen for nocturnal birds ET's
			End standard owl banding protocol <ul style="list-style-type: none"> Close nets or continue banding until up to 1 hr before sunrise Recharge MP3 player

Appendix B: LPBO Rarity Reporting

List of rare and uncommon bird species recorded at LPBO. A complete checklist is available as a separate document. Species listed in **red bold** are red list species (extreme rarities). Species listed in normal black text are considered to be uncommon. Both rarities and uncommon species should be reported to the BIC immediately upon discovery. The checklist indicates which species require that an LPBO Rare Bird Report (available from BICs) and/or an [Ontario Bird Records Committee](#) (OBRC) form be submitted. Submission of these forms is mandatory. Any species not on this list will also require similar documentation.

Species	LPBO	OBRC
Acadian Flycatcher	NO	NO
American Avocet	YES	YES
American Golden-Plover	NO	NO
American Oystercatcher	YES	YES
American Three-toed Woodpecker	YES	NO
American White Pelican	YES	NO
Arctic Tern	YES	YES
Ash-throated Flycatcher	YES	YES
Bachman's Sparrow	YES	YES
Band-rumped Storm-Petrel	YES	YES
Band-tailed Pigeon	YES	YES
Barn Owl	YES	YES
Barred Owl	NO	NO
Barrow's Goldeneye	YES	NO
Bell's Vireo	YES	YES
Bewick's Wren	YES	YES
Black Rail	YES	YES
Black Swift	YES	YES
Black Vulture	YES	NO
Black-backed Woodpecker	YES	NO
Black-billed Magpie	YES	YES
Black-capped Petrel	YES	YES
Black-capped Vireo	YES	YES
Black-crowned Night-Heron	NO	NO
Black-headed Gull	YES	YES
Black-legged Kittiwake	YES	NO
Black-necked Stilt	YES	YES
Black-tailed Gull	YES	YES
Black-throated Gray Warbler	YES	YES
Blue Grosbeak	YES	YES

Species	LPBO	OBRC
Bohemian Waxwing	NO	NO
Boreal Chickadee	YES	NO
Boreal Owl	YES	NO
Brant	NO	NO
Brewer's Blackbird	NO	NO
Brown Booby	YES	YES
Brown Pelican	YES	YES
Buff-breasted Sandpiper	NO	NO
Bullock's Oriole	YES	YES
Cackling Goose	NO	NO
California Gull	YES	YES
Canada Jay	YES	NO
Carolina Chickadee	YES	YES
Cassin's Finch	YES	YES
Cassin's Kingbird	YES	YES
Cassin's Sparrow	YES	YES
Cattle Egret	NO	NO
Cave Swallow	YES	YES
Cerulean Warbler	NO	NO
Chihuahuan Raven	YES	YES
Chuck-will's-widow	YES	YES
Cinnamon Teal	YES	YES
Clay-colored Sparrow	NO	NO
Common Eider	YES	YES
Common Ground Dove	YES	YES
Common Raven	YES	NO
Common Redpoll	NO	NO
Connecticut Warbler	NO	NO
Curlew Sandpiper	YES	YES
Dickcissel	NO	NO

Species	LPBO	OBRC
Eared Grebe	NO	NO
Eurasian Collared-Dove	YES	NO
Eurasian Tree Sparrow	YES	YES
Eurasian Wigeon	YES	NO
Evening Grosbeak	NO	NO
Fieldfare	YES	YES
Fish Crow	YES	NO
Fork-tailed Flycatcher	YES	YES
Franklin's Gull	NO	NO
Glossy Ibis	YES	NO
Golden Eagle	NO	NO
Golden-crowned Sparrow	YES	YES
Gray Flycatcher	YES	YES
Gray Kingbird	YES	YES
Gray Partridge	NO	NO
Gray-crowned Rosy-Finch	YES	YES
Greater White-fronted Goose	YES	NO
Great-tailed Grackle	YES	YES
Green-tailed Towhee	YES	YES
Gyr Falcon	YES	NO
Harlequin Duck	YES	NO
Harris's Sparrow	YES	NO
Henslow's Sparrow	YES	YES
Hoary Redpoll	YES	NO
Hooded Oriole	YES	YES
Hudsonian Godwit	NO	NO
Iceland Gull	NO	NO
Ivory Gull	YES	YES
Kentucky Warbler	NO	NO
King Eider	YES	NO
King Rail	YES	NO
Kirtland's Warbler	YES	NO
Lapland Longspur	NO	NO
Lark Bunting	YES	YES
Lark Sparrow	YES	NO
Laughing Gull	NO	NO
Least Tern	YES	YES
LeConte's Sparrow	YES	NO
Lesser Nighthawk	YES	YES
Little Blue Heron	YES	YES

Species	LPBO	OBRC
Loggerhead Shrike	YES	NO
Long-tailed Jaeger	YES	NO
Louisiana Waterthrush	NO	NO
Magnificent Frigatebird	YES	YES
Marbled Godwit	NO	NO
Mississippi Kite	YES	YES
Mountain Bluebird	YES	YES
Nelson's Sparrow	YES	NO
Neotropic Cormorant	YES	YES
Northern Bobwhite	NO	NO
Northern Gannet	YES	YES
Northern Goshawk	NO	NO
Northern Hawk Owl	YES	NO
Northern Mockingbird	NO	NO
Northern Shrike	NO	NO
Northern Wheatear	YES	YES
Pacific Loon	YES	NO
Painted Bunting	YES	YES
Parasitic Jaeger	NO	NO
Passenger Pigeon	Extinct	
Pileated Woodpecker	NO	NO
Pine Grosbeak	NO	NO
Piping Plover	YES	NO
Pomarine Jaeger	NO	NO
Prairie Falcon	YES	YES
Prairie Warbler	NO	NO
Prothonotary Warbler	NO	NO
Purple Gallinule	YES	YES
Purple Sandpiper	NO	NO
Red Crossbill	NO	NO
Red Knot	NO	NO
Red Phalarope	NO	NO
Red-headed Woodpecker	NO	NO
Red-necked Grebe	NO	NO
Red-necked Phalarope	NO	NO
Ring-necked Pheasant	NO	NO
Ross's Goose	YES	NO
Ross's Gull	YES	YES
Ruff	YES	YES
Sabine's Gull	YES	NO

Species	LPBO	OBRC
Sage Thrasher	YES	YES
Sandwich Tern	YES	YES
Say's Phoebe	YES	YES
Scissor-tailed Flycatcher	YES	YES
Sedge Wren	NO	NO
Short-eared Owl	NO	NO
Smew	YES	YES
Smith's Longspur	YES	YES
Snow Goose	NO	NO
Snowy Egret	YES	NO
Snowy Owl	NO	NO
Snowy Plover	YES	YES
Sooty Tern	YES	YES
Spotted Towhee	YES	YES
Stilt Sandpiper	NO	NO
Summer Tanager	NO	NO
Swainson's Hawk	YES	NO
Swainson's Warbler	YES	YES
Swallow-tailed Kite	YES	YES
Thick-billed Murre	YES	YES
Townsend's Solitaire	YES	NO
Tricolored Heron	YES	YES
Trumpeter Swan	NO	NO
Upland Sandpiper	NO	NO
Varied Bunting	YES	YES
Varied Thrush	YES	NO
Vermilion Flycatcher	YES	YES
Violet-green Swallow	YES	YES
Virginia's Warbler	YES	YES
Western Grebe	YES	YES
Western Kingbird	YES	NO
Western Meadowlark	YES	YES
Western Sandpiper	NO	NO
Western Tanager	YES	YES
Western Wood-Pewee	YES	YES
White Ibis	YES	YES
White-eyed Vireo	NO	NO
White-faced Ibis	YES	YES
White-winged Crossbill	NO	NO
White-winged Dove	YES	NO

Species	LPBO	OBRC
White-winged Tern	YES	YES
Whooping Crane	YES	YES
Willet	NO	NO
Wilson's Phalarope	NO	NO
Wood Stork	YES	YES
Worm-eating Warbler	NO	NO
Yellow Rail	YES	NO
Yellow-breasted Chat	NO	NO
Yellow-crowned Night-Heron	YES	YES
Yellow-headed Blackbird	NO	NO
Yellow-throated Vireo	NO	NO
Yellow-throated Warbler	YES	NO

Appendix C: Daily Log Datasheet

An example of a properly filled out daily log datasheet:

1575562685	LPBO Daily Log	Day	Month	Year	Area
		10	10	2004	01

Volunteer Effort			
Vol Initials	Observers(Migration Program)	Field hrs	cd
CAF	BIC: Christian Fris	8	01
RWW	Ross Wood	8	01
D.R.R	Dave Restivo	6	02
EAW	Anne Wynn	5	02
D.J.G	Derek Grnar	6	01
TAB	Tiffany Beachy	5	02
Other Station Personnel (swallows, BBC, etc)			

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)	12	11	16	16
Precipitation				
Synopsis:				

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

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

Extra Nets	# of Nets	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			
15,37			

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

LPBO Daily Log

Day Month Year Area
 10/10/2004 01

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 lonely 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 isles

Facilities & Site Changes/Activities:

of Española... ~~so~~ 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: *Tiffany Beachy*

Unusual Species						
Species Code	Species Name	Band	Rec	Cens	Obs	ET
RWBK	Rusty Blackbird			12	15	22
CCSP	Clay-Coloured Sparrow			1		1
OLWA	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
Common Loon				6	6
Pied-billed Grebe					
Double-cr. Cormorant			9500	15600	20000
American Bittern					
Great Blue Heron			1		1
Green Heron					
Tundra Swan					
Mute Swan					
Canada Goose				2	2
Wood Duck					
Green-winged Teal					
American Black Duck					
Mallard			3	1	4
Northern Pintail					
Blue-winged Teal					
Gadwall					
American Wigeon					
Canvasback					
Redhead				6	6
Ring-necked Duck					
Greater Scaup			650	100	250
Lesser Scaup				1	1
Unid. Scaup				18	18
White-winged Scoter					
Common Goldeneye					
Bufflehead					
Common Merganser					
Red-br. Merganser					
Unid. Merganser				40	40
Ruddy Duck					
Turkey Vulture				1	1
Osprey					
Northern Harrier					
Sharp-shinned Hawk				12	12
Cooper's Hawk					
Broad-winged Hawk					
Red-tailed Hawk				1	1
American Kestrel				1	1
Merlin				1	1
Black-bellied Plover			4		4
Semipalmated Plover					
Killdeer					
Greater Yellowlegs					
Lesser Yellowlegs					
Sub-total (1)					

Species	Band	Rec.	Cens	Obs	ET
Unid. Yellowlegs					
Solitary Sandpiper					
Spotted Sandpiper					
Ruddy Turnstone					
Sanderling				9	9
Semipalmated Sandpiper					
Least Sandpiper					
Pectoral Sandpiper					
Dunlin			4	1	5
Short-billed Dowitcher					
Unid. Dowitcher					
Common Snipe				4	4
American Woodcock				1	1
Bonaparte's Gull					
Ring-billed Gull			1200		1200
Herring Gull			10	40	50
Gr. Black-backed Gull			4	1	5
Caspian Tern				1	1
Common Tern					
Forster's Tern					
Black Tern					
Rock Dove					
Mourning Dove				6	6
Black-billed Cuckoo					
Yellow-billed Cuckoo					
Great Horned Owl					
N. Saw-whet Owl					
Common Nighthawk					
Chimney Swift					
Ruby-thr. Hummingbird					
Belted Kingfisher				1	1
Red-headed Wdpr					
Yellow-bd. Sapsucker			1	3	4
Downy Woodpecker				1	1
Yellow-sh. Flicker			1	2	3
Eastern Wood-Pewee					
Yellow-bd. Flycatcher					
Alder Flycatcher					
Willow Flycatcher					
Trail's Flycatcher					
Least Flycatcher					
Eastern Phoebe	1		4	2	7
Gr. Crested Flycatcher					
Eastern Kingbird					
Sub-total (2)					

Species Totals

Day 10 / Month 10 / Year 2004 / Area 01

Species	Band	Rec.	Cens	Obs	ET
Purple Martin					
Tree Swallow				8	8
N. Rough-w Swallow					
Bank Swallow					
Cliff Swallow					
Barn Swallow					
Blue Jay			3	3	6
American Crow					
Black-cp. Chickadee					
Red-br. Nuthatch			1	3	4
White-br. Nuthatch				1	1
Brown Creeper	3			5	8
House Wren				2	2
Winter Wren				6	6
Carolina Wren					
Marsh Wren				5	5
Golden-cr. Kinglet	1		5	10	16
Ruby-crowned Kinglet	2		2	6	10
Blue-gray Gnatcatcher					
Veery					
Gray-cheeked Thrush				1	1
Swainson's Thrush				1	1
Hermit Thrush	1	1	4	10	16
Wood Thrush					
American Robin			3	12	15
Gray Catbird	1			1	2
Brown Thrasher					
American Pipit					
Cedar Waxwing			4	10	14
European Starling			7	5	12
Blue-headed Vireo				1	1
Warbling Vireo					
Philadelphia Vireo					
Red-eyed Vireo					
Tennessee Wa					
Nashville Wa	1			2	3
Yellow Wa					
Chestnut-sided Wa					
Magnolia Wa					
Cape May Wa				1	1
Black-thr Blue Wa					
Myrtle Wa	6		45	69	120
Black-thr Green Wa	1		1	1	3
Blackburnian Wa					
Sub-total (3)					

Species	Band	Rec.	Cens	Obs	ET
Western Palm Wa	3		2	20	25
Bay-breasted Wa					
Blackpoll Wa					
Black-and-white Wa					
American Redstart					
Ovenbird					
Northern Waterthrush	1				1
Mourning Warbler					
Common Yellowthroat				1	1
Wilson's Wa					
Canada Wa					
Scarlet Tanager					
Northern Cardinal					
Rose-br Grosbeak					
Indigo Bunting					
Eastern Towhee			1	2	3
Am Tree Sparrow					
Chipping Sparrow			2	7	9
Field Sparrow	1		1	6	8
Vesper Sparrow				1	1
Savannah Sparrow	1			2	3
Fox Sparrow					
Song Sparrow	2		2	7	11
Lincoln's Sparrow					
Swamp Sparrow	1			8	9
White-thr Sparrow	4		12	25	41
White-cr Sparrow	2		2	10	14
Slate-colored Junco	2		3	5	10
Bobolink					
Red-winged Blackbird			70	220	290
Eastern Meadowlark			1		1
Common Grackle				4	4
Brown-hd Cowbird					
Baltimore Oriole					
Purple Finch					
House Finch				7	7
Pine Siskin				31	31
American Goldfinch	13		55	122	180
House Sparrow					
Sub-total (4)					
Total #	47				
# of Species	19		35		24

Appendix D: Casualty Report Form



Long Point Bird Observatory
Casualty Reports

Location: Tip Year: _____
Breakwater
Old Cut

Date	Species			Describe Circumstances	Describe Actions Taken
		<input type="checkbox"/> Injury <input type="checkbox"/> Mortality	<input type="checkbox"/> MN/HN/ON <input type="checkbox"/> GT <input type="checkbox"/> JT <input type="checkbox"/> Lab <input type="checkbox"/> Bird Bag <input type="checkbox"/> Other		
		<input type="checkbox"/> Injury <input type="checkbox"/> Mortality	<input type="checkbox"/> MN/HN/ON <input type="checkbox"/> GT <input type="checkbox"/> JT <input type="checkbox"/> Lab <input type="checkbox"/> Bird Bag <input type="checkbox"/> Other		
		<input type="checkbox"/> Injury <input type="checkbox"/> Mortality	<input type="checkbox"/> MN/HN/ON <input type="checkbox"/> GT <input type="checkbox"/> JT <input type="checkbox"/> Lab <input type="checkbox"/> Bird Bag <input type="checkbox"/> Other		
		<input type="checkbox"/> Injury <input type="checkbox"/> Mortality	<input type="checkbox"/> MN/HN/ON <input type="checkbox"/> GT <input type="checkbox"/> JT <input type="checkbox"/> Lab <input type="checkbox"/> Bird Bag <input type="checkbox"/> Other		
		<input type="checkbox"/> Injury <input type="checkbox"/> Mortality	<input type="checkbox"/> MN/HN/ON <input type="checkbox"/> GT <input type="checkbox"/> JT <input type="checkbox"/> Lab <input type="checkbox"/> Bird Bag <input type="checkbox"/> Other		

Appendix E: Banding Datasheet

An example of a properly filled out daily log datasheet:

LPBO Field Station Banding Data Form

Bird Studies Canada
Long Point Bird Observatory

First Band Number:

Prefix	Suffix	Permit No.	Year
19161	87087	101882	064

Bander: HEAVILY BEARDED MAN Initials: HBM

PETER N. PIPER Initials: PNP

STRONG MAN Initials: SAM

CHARMING FRIEND Initials: CAF

18

Band Size

Band Last 2 Digits	Species	Sp. Code	A G E	How Aged	S e x	How Sexed	Wing	F A L T	S K U L L	Weight	Status	Date		Time Weighed	Bander Initials	Area	Time Trapped	Trap Type	Trap No.	Prob A S e x	Remark Code	N o t e s			
												Mo.	Day												
USED PREVIOUSLY																									
87	HERMIT THRUSH	HETH	2	10	9		953			323	300	10	26	09	0	HBM	13085	0	MN	14			TICK REMOVED		
88		HETH	1	2	1		975			319					0									SMALL WINDOWS RETAINED 4.3MM	
89		HETH	2	1			945			327					0									09	
90	BAND LOST	BALD																						BAND LOST	
91	DOWNY WOODP.	DOWNO	2	15	1		930			286	300	11	07	09	2	PNP	13085	0	MN	11					
92	WH. THR. SPARROW	WITSP	0	14	4		760			259				09	3	0									HEAD IN PIN - UNSKULLABLE
93		WITSP	2	12	0	4	693								0	SAM									TAIL NARROW & TAPERED + EYE BROWN
94	BAND DESTROYED	BADE													0										BAND DESTROYED
95	SONG SPARROW	SOSP	1	20	9		627			200	300	11	15	11	0	SAM	13110	0	MN	16				P	9=DATE
96	BALTIMORE ORIOLE	BATOR	2	15	1		883			293			09	06	0	CAF	13060	0	MN	02			DD	BAND SIZE O.K. & DATE O.K.	
97	CAROLINA WREN	CARN	2	20	9		13			232				06	4	0								DD	9=1
98	LARK SPARROW	LASP					854			49	300	300	11	16	10	2	HBM	13095	0		10				DOCUMENTATION IN LPBO FILES
99	FOX SPARROW	FOSP					77			4	345			11	7	0	PNP								25
100	XXXXXX						END																		XXXXXX

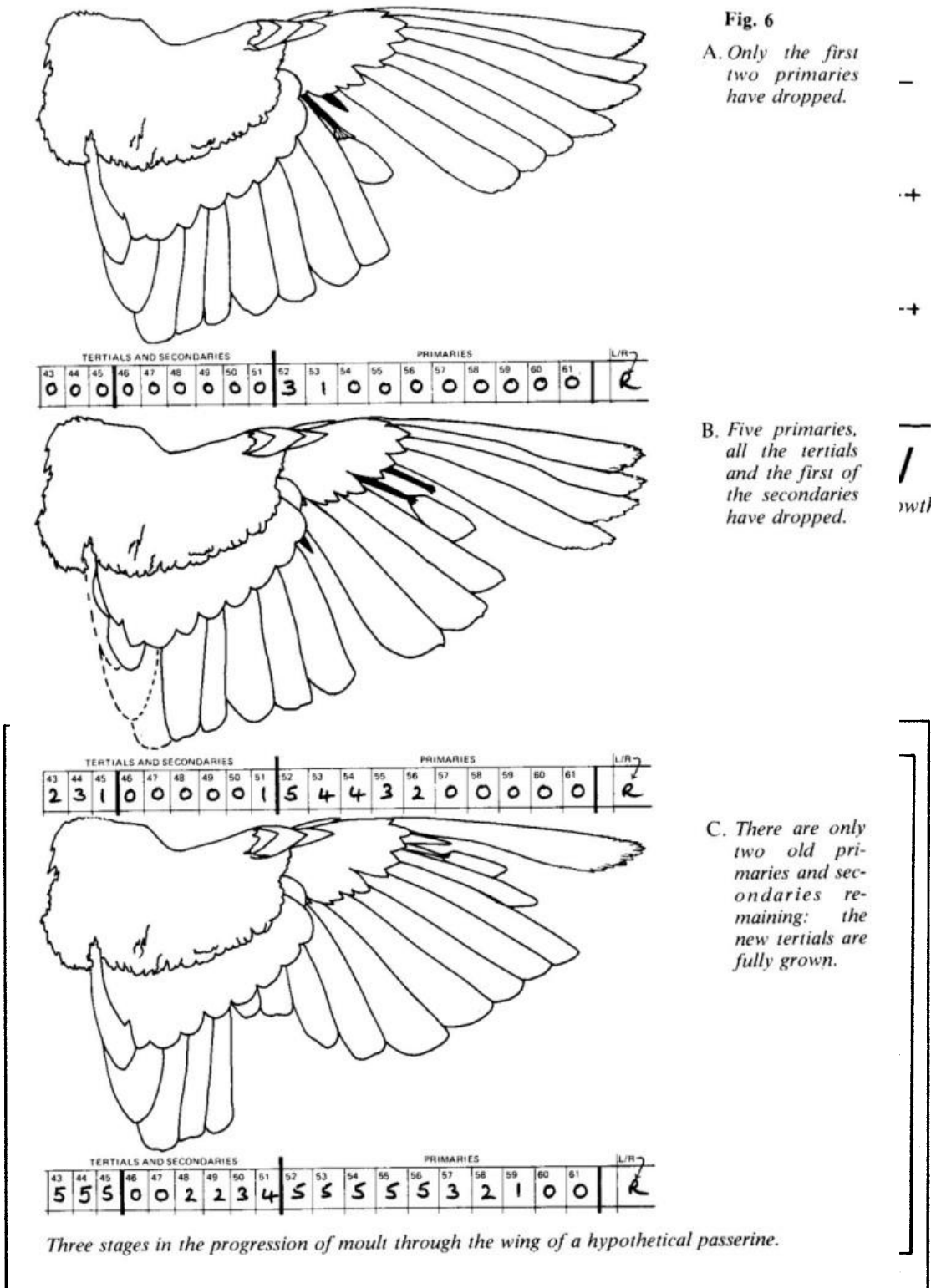
Last Band Number:

Prefix	Suffix
19161	87100

Datasheet: Proofed Initials Entered

Appendix F: Moults Card Instructions

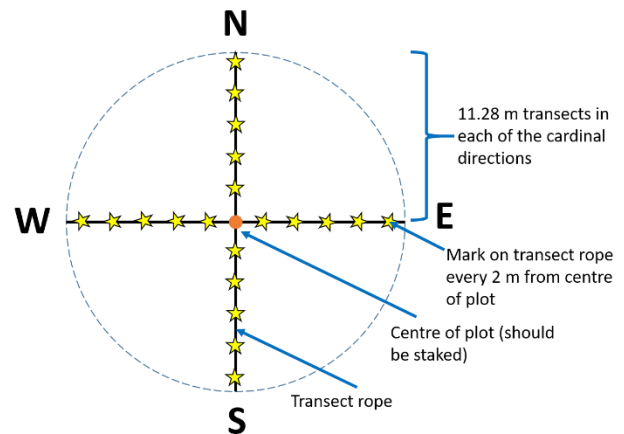
An example of a properly filled out moults card:



Appendix G: Habitat Monitoring and Management

LPBO conducts regular habitat monitoring at permanent sample plots in and around our net lanes. Habitat monitoring gives quantitative and qualitative data which we require when making decisions regarding habitat management and vegetation control. At LPBO we try to have as minimal an impact on the point's fragile ecosystems as possible, but in order to ensure that excessive vegetation growth does not adversely affect our standard migration monitoring protocol from year to year, it is sometimes necessary to manage our study sites in order to maintain the long-term integrity of our data. LPBO began quantitative habitat monitoring in 1994 with the intention of conducting detailed surveys **once every 5 years**. Methodology for LPBO's habitat monitoring follows [James and Shugart \(1970\)](#). Habitat monitoring must take place in August, as other station duties allow.

Sample Plots: There are 10 plots established at each of the three stations. Plots are named TIP1 through TIP10, BW1 through BW10, and OC1 through OC10. Each plot is circular, with a fixed radius of 11.28 m (0.04 ha) centred on the midpoint of a mist net lane (GPS locations for all plots are available). When re-establishing a plot for sampling, navigate to the GPS location and find the permanent stake (if it is still present) that marks the centre of each plot. If the stake is missing use the GPS to get as close as possible to the coordinates. Make this location the centre of your plot. If needed, put a new clearly labelled (e.g., *Veg Sampling OC1*) stake at this location. Lay out four transects 11.28 m long with rope outwards from the centre of the plot, in the four cardinal directions, to break the circle into quarters. Each of these ropes must be marked at 2 m intervals from the centre point.



Field Guides: These are the best plant field guides for our region:

- *Trees in Canada* by John Farrar
- *Shrubs of Ontario* by James Soper
- *The ROM Field Guide to Wildflowers of Ontario* by Richard Dickinson et al.
- *Wetland Plants of Ontario* by Steven Newmaster et al.
- *Plants of Southern Ontario* by Richard Dickinson and France Royer

Density Board: A density board is required to measure % shrub density (see below). Build a density board out of a sheet of cloth 3 m high and 0.5 m wide, marked with alternating 10 x 10 cm black and white squares. The board must be marked into four strata:

- 0-0.3 m (15 squares)
- 0.3-1 m (32 squares)
- 1-2 m (50 squares)
- 2-3 m (50 squares)

Photographs: Photographs of each plot must be taken from the centre stake. Take one photo from eye level in each of the cardinal directions. **Clearly record which photo is from which plot and which**

direction. For example, label the photos from plot OC1 like this: *OC1 N*, *OC1 S*, *OC1 E*, and *OC1 W*.

What to Measure in the Field:

Step	Sample	Instructions
1	Identify all tree species	See field guides.
2	Size class for all living and dead standing trees	Using a reach stick, determine the size class for all trees > 2m tall and > 3 cm diameter at breast height (dbh). Any trees shorter or thinner than this are shrubs. Bin the trees into size classes: S (sapling) = 3-8 cm A = 8-15 cm B = 15-23 cm C = 23-38 cm D = 38-53 cm E = 53-69 cm F = 69-84 cm G = 84-102 cm H = > 102 cm <i>Total basal area will be calculated later (see below).</i>
3	Average tree height	Measure the height of four trees that appear representative of the overall canopy height using a Suunto clinometer. <i>Average tree height will be calculated later (see below).</i>
4	% canopy cover	Along each transect, stop at the 2 m interval markers and use an ocular tube to record the % of canopy leaf cover directly overhead. <i>% canopy cover can be calculated later (see below).</i>
5	Size class for all tip-up logs and cut stumps	Follow the same procedure as for living and dead standing trees.
6	Identify all shrub species	See field guides.
7	Shrub stem count	Walk with outstretched arms along each transect and count all woody stems < 2 m tall and < 3 cm dbh .
8	% shrub density	Hold the LPBO density board (see above for construction parameters) at the end of each transect. Count the number of squares with > 50% leaf cover in each of the four strata. <i>% shrub density will be calculated later.</i>
9	Dominant shrub species	Determine which shrub species (can be more than one) occupies at least 1/3 to 1/2 of each quadrant of the plot.
10	% ground cover	Along each transect, stop at the 2 m interval markers and use an ocular tube to record the % of herbaceous ground cover at your feet. <i>% ground cover can be calculated later (see below).</i>
11	Dominant ground cover species	Determine which herbaceous species (can be more than one) occupies at least 1/3 to 1/2 of each quadrant of the plot.

Calculating Total Basal Area of Trees: Use the following equation, in which the letters corresponds to the tree size classes that were recorded in the field (see step 2 of the table):

$$\text{Basal Area} = S(0.002) + A(0.0093) + B(0.0279) + C(0.0744) + D(0.1674) + E(0.2883) + F(0.4557) + G(0.6603) + H(0.744)$$

Calculating Average Tree Height: Average the four tree heights recorded in the field.

Calculating % Canopy Cover: Average the 20 canopy cover percentages recorded in the field across the entire plot.

Calculating % Shrub Density: The number of squares with > 50% leaf cover are converted to a percentage and averaged for each of the four transects to give a percent coverage within each of the four strata across the entire plot.

Calculating % Ground Cover: Average the 20 ground cover percentages recorded in the field across the entire plot.

Final Analysis: The data are averaged across all 10 plots at each station and compared to baseline data from *Vegetation Summary of Long Point Bird Observatory Field Stations (1994-2001)* by Jody Allair and Jon McCracken. Any statistically significant derivation from the baseline data may trigger habitat management. Careful qualitative comparisons of photographs should also be done before any management activities are undertaken.

Habitat Management: In addition to regular maintenance of net lanes and path ways, as well as yard vegetation, additional measures may need to be taken following habitat monitoring, depending on the data and photo comparisons. Habitat management may include trimming down vegetation that has grown too high, eliminating invasive species that have changed a station's biodiversity, or perhaps even replanting vegetation that has been lost to flooding or erosion. Any habitat management that may impact standardization of the migration monitoring protocol will be discussed by the Migration Ecology Director, Program Manager, and in extreme circumstances may require consultation with CMMN members or Birds Canada scientists.

Data Storage: All habitat monitoring data and photographs will be stored in the I Drive at Birds Canada's headquarters in the Habitat Monitoring Folder. There will be a separate folder for each year's data, photographs, analyses outputs, and reports.