

LONG POINT BIRD OBSERVATORY

2017 PROGRAM REPORT



FEBRUARY 2018

MARK CONBOY, MATT ILES AND STU MACKENZIE



BIRD STUDIES
ÉTUDES D'OISEAUX **CANADA**

Canadian Migration
Monitoring Network



Réseau canadien
de surveillance
des migrations

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Long Point Bird Observatory

P.O. Box 160, 115 Front St. Port Rowan ON, Canada. N0E 1M0.

www.birdscanada.org/lpbo | lpbo@birdscanada.org

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INTRODUCTION

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 was born. Subsequently, LPBO is the oldest bird observatory in the Western Hemisphere and houses one of the largest data sets on migratory birds in the world.

LPBO quickly grew beyond the borders of Long Point, implementing regional and provincial research and monitoring programs, and initiating North America's first sponsored bird count fundraiser, the Baillie Birdathon, now Great Canadian Birdathon. Remarkable growth occurred in the following decades with the initiation and coordination of a wide range of national and international programs and initiatives. In 1998, in recognition of the organization's breadth and future aspirations, LPBO membership voted to create Bird Studies Canada (BSC). LPBO was then reinvented as a program of BSC operating research, education, and training programs that focus on ornithology, conservation, and other aspects of natural history at Long Point. 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.

You can follow our weekly [sightings board](#) during the migration monitoring seasons, or find us on [Facebook](#) or [Twitter](#).

BIRD STUDIES CANADA

[Bird Studies Canada](#) is the country's leading science-based bird conservation organization. BSC'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.

BSC 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.

ACKNOWLEDGEMENTS

LPBO programs are supported by BSC, the LPBO Endowment Fund, the Doug Tarry Natural History Fund, the Great Canadian Birdathon, a variety of organizations, agencies, and many individuals. We are particularly grateful to the Ontario Ministry of Natural Resources and Forestry (Aylmer District Office) and Wildlife Assessment Program, and to Environment and Climate Change Canada for their support of the Latin American Training Program and migration monitoring as a contribution to the Canadian Migration Monitoring Network. LPBO is also grateful for the support of the Bradstreet Family Foundation, the Ontario Trillium Foundation, TD Friends of the Environment Foundation, the Norfolk Land Stewardship Council, Norfolk County, James and Betty Runnings, and numerous anonymous donors. We wish to acknowledge the support and collaborative research carried out with numerous institutions (see collaborative research below). LPBO is also grateful for the permission it receives to operate its programs on properties owned by: Norfolk County, Fisheries and Oceans Canada, Transport Canada, Environment and Climate Change Canada, Long Point Company, Ontario Ministry of Natural Resources and Forestry, Ontario Ministry of the Environment, and Connie and Vernon Smith.

MIGRATION MONITORING PROGRAM

LPBO has been collecting standardized data on bird migration at Long Point since 1960. In 1986, LPBO coined the term *migration monitoring* to describe the use of standardized daily counts of migrating birds as a method of monitoring populations of selected migratory species. Each spring and fall, staff and volunteers perform daily censuses, banding, and observations at each of three research stations on Long Point: Old Cut, Breakwater, and the Tip. The migration count data assembled at LPBO are used to derive daily estimated totals for each species recorded throughout the year. Ultimately, estimated total data are used to generate [population trends](#) for over 200 species. Migration monitoring is a particularly valuable method as it enables the monitoring of species that breed in northern Canada, or other inaccessible areas, which can be difficult to assess with more conventional monitoring methods such as the North American Breeding Bird Survey. There are now about 30 migration monitoring stations across Canada which form the [Canadian Migration Monitoring Network](#).

In 2017 LPBO banded 23,216 birds. An additional 5,691 recaptures of previously banded birds were processed. Notable banding records included:

- Green Heron: first since 2007;
- Common Nighthawk: first since 1985 and only the fifth ever;
- Red-bellied Woodpecker: 55 banded, second highest total (highest, 155 in 2013);
- Cave Swallow: 2 (only the fifth year that this species has been banded);
- Blue Jay: 1120, record high (previous high, 985 in 2010);
- Winter Wren: 241, record high (previous high, 193 in 1998);
- Philadelphia Vireo: 105, record high (previous high, 104 in 2011);
- Lawrence's Warbler: first since 2011;
- Northern Parula: 64, record high (previous high, 40 in 2014);
- Yellow-throated Warbler: sixth since 2011;
- Dickcissel: first since 2012;
- Cassin's Sparrow: second ever banded (first in 1987).

LPBO also reached a major milestone on May 29 with the banding of its one millionth landbird. The bird was a hatch-year female Tennessee Warbler. A small ceremony was held at Old Cut for the assembled visitors, volunteers, as well as BSC and LPBO staff. The official count of all birds (including collaborative research projects at other locations) banded under the LPBO permit is 1,028,225.

Despite these highlights, LPBO had its lowest number of birds banded since 2004, 20% (5,891 individuals) fewer birds than the previous 10-year average. The story was no better for the number of species and forms, with 2017 again being the lowest total since 2004. The 134 species and forms captured in 2017 was about 15% (23 species) below the previous 10-year average.

Ten birds that were banded at LPBO were reported to the Bird Banding Office (BBO) as encountered elsewhere in 2017 (Table 1). The farthest afield encounter was of a Hermit Thrush captured on October 26, 2016 (not reported to LPBO until 2017) in North Carolina.

In addition to banded and recaptured birds, LPBO counted 2,747,260 birds during 6,582 person-hours of migration monitoring.

Table 1. Encounters of LPBO banded birds reported from elsewhere in 2017.

Species	Age at Banding	Banding Date	Encounter Date	Encounter Location
Northern Saw-whet Owl	Hatch Year	10/9/2016	10/27/2017	Berkshire Co., MA
Northern Saw-whet Owl	Hatch Year	10/26/2016	10/24/2017	Steven's Point, WI
Northern Saw-whet Owl	Hatch Year	10/26/2016	2/17/2017	Oakland Co., MI
Northern Saw-whet Owl	After Second Year	11/2/2015	10/19/2017	Ballydown Beach, ON
Northern Saw-whet Owl	After Third Year	10/30/2015	11/4/2016	Queen Anne's Co., MD
Northern Saw-whet Owl	Hatch Year	11/2/2016	10/25/2017	Caroline, NY
Northern Saw-whet Owl	Hatch Year	10/24/2016	10/24/2017	Youngsville, NY
Hermit Thrush	Hatch Year	10/11/2016	10/26/2016	Burke Co., NC
Common Grackle	After Hatch Year	5/10/2016	6/23/2017	Dolgeville, NY

SPRING MIGRATION MONITORING

LPBO's 57th spring migration monitoring season ran at Old Cut from April 1 to June 6 (67 days), at Breakwater from April 10 to May 27 (47 days), and at the Tip from April 8 to June 6 (59 days). Because migration was very slow by the end of May, monitoring operations at all three stations were truncated so personnel could concentrate on the Breeding Bird Census and the Tree Swallow Project. The 53 volunteers who helped run operations during the spring season came from Canada, the United States and the United Kingdom. Staff and volunteers logged 2,806 person-hours collecting migration data on over 167 species and forms. Summary statistics of seasonal effort are summarized in Table 2. In total, 10,816 birds of 120 species and forms were banded (Table 3 and Appendix 1). LPBO had 173 station-days of coverage, yielding 8,233 net-hours. About 20 volunteer Friends of LPBO helped to welcome 1,512 visitors to the Old Cut Field Station and Visitor Centre.

Table 2. Effort summary statistics for the spring migration monitoring season.

Person-hours	2,806
Total species and forms observed	167
Individuals banded	10,816
Species and forms banded	120
Total station-days of migration monitoring	173
<i>Old Cut</i>	67
<i>Breakwater</i>	47
<i>Tip</i>	59
Total net-hours	8,065
<i>Mist net</i>	8,065
<i>Hawk net</i>	0
<i>Owl net</i>	0
Overall catch rate	131 birds/100 hours
% of catch in mist nets	70
% of catch in traps	30
Visitors to Old Cut	1,512

Long-term Volunteers (One month or more): Isabel Apkarian (Toronto, ON); Andrew Beauchamp (London, ON); Sarah Bonnett (Waterford, ON); Kathryn Boothby (Norfolk County, ON); Francis Bordeleau-Martin (Sherbrooke, QC); Kyle Cameron (Hamilton, ON); April Dejong (Lindsay, ON); Peter Denyer (Newhaven, UK); Laetitia Desborde (Saint-Ferreol-les-Neiges, QC); Margaret Eng (Saskatoon, SK); Jean-Daniel Fiset (Quebec City, QC); Blaine Landsborough (Windsor, ON); Audree Morin (Quebec City, QC); Nathalie Paquette (Ottawa, ON); Alain Parada (Peterborough, ON); Jillian Slater (Laval, QC); Grace Thronton (Guelph, ON); and Casey Wright (Missouri).

Short-term Volunteers (Less than one month): Jody Allair (Port Rowan, ON); Amanda Bichel (Port Rowan, ON); Brendan Boyd (Toronto, ON); Taylor Brown (Toronto, ON); Olivia Colling (Ontario); Peter Coo (Toronto, ON); Zoe Crysler (Vancouver, BC); Luke Currin (Ontario); Brooke Gagnon (Port Rowan, ON); Nickolas Galluta; Ben Holmes (Walsall, UK); Alex Israel (Kingston, ON); Sean Jenniskens (Sarnia, ON); Ted Maddeford (Ingersoll, ON); Colin McShane (Stafford, UK); Dawn Miles (Toronto, ON); Ellie Milnes (Toronto, ON); Ana Morales; Margeret Munro (Vancouver, BC); Bruce Murphy (Hillardton Marsh Bird Observatory, ON); Ben Oldfield (Hamilton, ON); Eleanor Page (London, UK); Ethan Quintin (New Liskeard, ON); Bill Read (Cambridge, ON); Ron Ridout (St. Williams, ON); Charlie Sargent (Carmarthen, UK); Seema Shenoy (Toronto, ON); Chris Sukha (New Liskeard, ON); Will van Hemessen; Heidi van Vliet; Angela Watts (Oakville, ON); Barrie Watts (Oakville, ON); Amy Wilson (Straffordville, ON); Ross Wood (Hamilton, ON); and Anthony Zerafa.

Birding highlights from the spring migration monitoring season:

Eurasian Wigeon - One was at Lee Brown Wildlife Management Area almost daily April 1-8. Presumably the same bird was seen from the overlook at the Bird Studies Canada headquarters April 8.

Pacific Loon - An impressive seven birds were seen from Hastings Drive May 21. Another bird was seen flying over `New` Long Point Provincial Park May 22. Spring observations of Pacific Loons in both 2016 and 2017 suggest that more effort should be made to locate this rare species, especially in mid to late May.

Piping Plover - A banded bird was on the beach in Port Dover April 12. This bird hatched in 2002 at Sleeping Bear Dunes National Lakeshore in Michigan.

Long-billed Dowitcher - This species is very rare in spring; one was at Dedrick Creek on Concession Road 1, north of Port Rowan May 4.

Willet - A movement of Willets took place April 29 with 36 at Big Creek National Wildlife Area, and flyovers of 16 at Old Cut and seven at the Tip. Two were at Port Dover May 18.

Laughing Gull - One was at Port Dover Harbour June 15-18.

Little Gull - Excellent counts for much of April around Inner Long Point Bay, including a high of 56 from the end of County Road 16, south of St. Williams April 6.

Franklin's Gull - One flew past the Tip April 10.

Iceland Gull - One was at the Tip April 2.

Eurasian Collared-Dove - One was at the Tip May 9-10.

Western Kingbird - One was at the Tip June 1.

Gray Kingbird - One was found at the Tip July 21. If accepted by the Ontario Rare Birds Committee, this will be species 401 on the Long Point checklist.

White-eyed Vireo - Aside from the usual small number of apparent migratory overshoots, one pair was on territory at the Tamarack Slough Breeding Bird Census site for the second consecutive year.

Common Raven - This species is now permanently established in very low numbers in southern Norfolk County. Observations from across the area, including on Long Point.

Fish Crow - One was found at Marina Shores (the base of Long Point) April 14. It remained in the area (including Old Cut) until at least April 29. One was reported from Port Dover April 30.

Gray Catbird - One banded bird successfully overwintered at Old Cut.

Sedge Wren - One was at the Tip May 9. Two were in `New` Long Point Provincial Park May 22. Two were at the Port Rowan Wetland May 27.

Golden-winged Warbler - Single birds were at Old Cut May 10, 12, 13, 16 and 23. Another was at `New` Long Point Provincial Park May 14. A male took up territory, at least temporarily, at Backus Heritage Conservation Area June 14-23.

Kentucky Warbler - One was at `New` Long Point Provincial Park April 27.

Yellow-throated Warbler - In addition to the bird that was banded at Breakwater May 20, one was photographed at the Tip May 27.

Prairie Warbler - Single birds were at `New` Long Point Provincial Park May 17, Breakwater May 19 and Old Cut May 28-29.

Blue Grosbeak - A second-year male was seen in `New` Long Point Provincial Park April 27.

Cassin's Sparrow - Long Point's third ever Cassin's Sparrow was found at the Tip April 24. It was banded April 28 and remained at the Tip until at least May 16.

Harris's Sparrow - One was on Hastings Drive May 14.

Yellow-breasted Chat - One was at the Tip May 18 and at `New` Long Point Provincial Park May 23.

Summer Tanager - One was at Old Cut May 15. Single birds were at the Tip April 27, May 1, 9 and 10.

Dickcissel - Numerous flyovers at Old Cut throughout the spring season. A pair nested along County Road 23, between Concession Roads 1 and 2; they were present throughout June.

Yellow-headed Blackbird - One was at Dedrick Creek on Concession Road 1, north of Port Rowan May 6.

Table 3. Ten most abundant species banded at Old Cut, Breakwater and the Tip during the spring migration monitoring season.

Species	Number Banded	% Second Year	% After Second Year	% After Hatch Year
Blue Jay	1092	70	26	4
White-throated Sparrow	1059	71	18	11
Red-winged Blackbird	632	59	39	2
Slate-coloured Junco	476	77	22	1
Ruby-crowned Kinglet	410	55	35	9
Brown-headed Cowbird	389	33	0	67
Yellow Warbler	357	70	26	4
Chipping Sparrow	349	68	21	11
American Goldfinch	343	57	36	8
Myrtle Warbler	331	71	24	4

FALL MIGRATION MONITORING

LPBO's 57th fall migration monitoring season ran at Old Cut from August 6 to November 14 (101 days), at Breakwater from August 25 to September 18 (24 days), and at the Tip from August 16 to November 12 (88 days). As in usual, Breakwater closed before Old Cut and the Tip because of Long Point Company land use restrictions associated with waterfowl hunting near the field station.

The 47 volunteers who helped run operations during the fall season came from Canada, Mexico, Peru, Switzerland, the United Kingdom, and the United States. Staff and volunteers logged 3,831 person-hours collecting migration data on 170 species and forms. About 20 volunteer Friends of LPBO helped to welcome 2,335 visitors to Old Cut.

Summary statistics of seasonal effort are summarized in Table 4. In total, 14,010 birds of 119 species and forms were banded (Table 5 and Appendix 1). LPBO had 213 station-days of coverage, yielding 12,429 net-hours.

Long Point is recognized as one of three International Monarch Butterfly Reserves in Canada due to its large concentrations of butterflies during fall migration. In 2017, daily afternoon Monarch censuses were conducted at Breakwater from August 25 to September 17, and at the Tip from August 16 to November 12. The total count of Monarchs was 4,337, with only 75 at Breakwater and 4,254 at the Tip. The largest single-day count at the Tip with 2,057 on September 14. One of the few Cloudless Sulphurs found in Ontario in 2017 was at the Tip in early September.

Table 4. Effort summary statistics for the fall migration monitoring season.

Person-hours	3,831
Total species and forms observed	170
Individuals banded	14,010
Species and forms banded	119
Total station-days of migration monitoring	213
<i>Old Cut</i>	101
<i>Breakwater</i>	24
<i>Tip</i>	88
Total net-hours	12,429
<i>Mist net</i>	12,131
<i>Hawk net</i>	58
<i>Owl net</i>	240
Overall catch rate	56 birds/100 hours
% of catch in mist nets	94
% of catch in traps	6
Visitors to Old Cut	2,335

Long-term Volunteers (One month or more): Kevin Chumpitaz (Lima, Peru); Peter Denyer (Newhaven, UK); Connor Hawey (Guelph, ON); Lucerno Horna (Piura, Peru); Zach Kahn (Guelph, ON); Courtney Larson (Seattle, US); Audree Morin (Quebec City, QC); Samreen Munim (Mississauga, ON); Miranda Sawyer (London, ON); Roger Short (UK); Jillian Slater (Laval, QC); Daniela Souza (Cuernavaca, Mexico); Sue Suess (Mississauga, ON); Stefanny Villagomez (San Miguel de Allende, Mexico); and Helen Williams (UK).

Short-term Volunteers (Less than one month): Jody Allair (Port Rowan, ON); Christian Artuso (Winnipeg, MB); Liza Barney (Sackville, NB); Amanda Bichel (Port Rowan, ON); Brendan Boyd (Toronto, ON); David Brewer (Toronto, ON); Taylor Brown (Toronto, ON); Dominic Cormier (Canada); Dave Coulson (Toronto, ON); Zoe Crysler (Vancouver, BC); Maddie Davis (ON); Willow English (Victoria, BC); Brett Fried (Cambridge, ON); Brooke Gagnon (Port Rowan, ON); Bill Read (Cambridge, ON); Rose Haiber (US); Alex Israel (Kingston, ON); Catherine Jardine (Vancouver, BC); Sean Jenniskins (Sarnia, ON); Sophie Jaquier (Switzerland); Ted Maddeford (Ingersoll, ON); Ben Oldfield (Hamilton, ON); Eleanor Page (London, ON); Nathalie Paquette (Ottawa, ON); Duncan Schanz (US); Hannah Stockford (Stayner, ON); Andrew Tungue; Angela Watts (Oakville, ON); Barrie Watts (Oakville, ON); Alessandra Wilcox (Cambridge, ON); Amy Wilson (Straffordville, ON); and Ross Wood (Hamilton, ON).

Birding highlights from the fall migration monitoring season:

Brant - One was at the Tip November 3. A flock of 30 was on Bluff Bar in Outer Long Point Bay November 8.

Cackling Goose - One was at the Crown Marsh Trail September 24. One was observed from the Bird Studies Canada headquarters October 11. Six were seen at the Tip October 12. Four were just outside of Port Dover October 30.

Cattle Egret - One was at the Tip October 18-23. Another was along Concession Road 1 at Dedrick Creek, north of Port Rowan November 8.

Pacific Loon - It was a good fall for Pacific Loons at the Tip: one October 19-21, two October 31, and one November 3-8.

King Rail - It was an amazing year for King Rails at Long Point. Single birds were found at along the Port Rowan shoreline August 3, the Tip August 20-21 and September 17, Old Cut August 21-September 24, Big Creek National Wildlife Area September 11, 'New' Long Point Provincial Park September 17 and Sep 23, and Big Creek National Wildlife Area October 1. Two were along the Long Point causeway September 18. Five were at Big Creek National Wildlife Area Sep 23-27.

Red-necked Phalarope - One was observed west of the Tip July 25. One was photographed near the Big Creek bridge on the causeway September 1.

Black-legged Kittiwake - One was flying off 'New' Long Point Provincial Park October 13.

Sabine's Gull - One was observed at the Tip October 12.

Pomarine Jaeger - One was at the Tip October 23.

Parasitic Jaeger - One flew past Breakwater September 4. One was observed off the 'New' Long Point Provincial Park October 13. Two more were observed there October 15. The remaining sightings were all from the Tip: two October 23, and one each October 24, November 1, 5 and 12.

Short-eared Owl - One was at the Tip October 8-10, 20, 26, 31, and November 3. One was flushed from a soy field along Lakeshore Road October 19.

Snowy Owl - There were at least six different reports in the Long Point region Nov 17-30.

Ruby-throated Hummingbird - A very late bird was captured at Old Cut October 27.

White-eyed Vireo - A late bird was at Southcoast Gardens October 29.

Cave Swallow - One was at the Tip October 28. Five were at the Tip October 30; at least one continued at the Tip to October 31. Two flew over Old Cut November 6.

Varied Thrush - One was at 'Old' Long Point Provincial Park October 8-9.

Bewick's Wren - One was at the Tip August 9-10.

Blue-winged Warbler - A very late bird was at Southcoast Gardens October 29.

Golden-winged Warbler - One was at Old Cut August 24. One was at 'Old' Long Point Provincial Park September 9.

Kentucky Warbler - A hatch-year male was banded at Old Cut August 15; it remained until August 21.

Prairie Warbler - One was at the Tip August 19-20. Another was at Old Cut September 5.

Yellow Palm Warbler - One was banded at the Tip September 26.

Yellow-breasted Chat - One was at Breakwater September 5. One was at 'New' Long Point Provincial Park September 22-24.

Dickcissel - At least 10 different observations over the course of fall migration at Long Point including one banded at the Tip September 16.

Nelson's Sparrow - One was at Old Cut September 28; another was at 'New' Long Point Provincial Park that same day. Two were at Turkey Point October 8.

Yellow-headed Blackbird - One was at the Tip August 21.

Evening Grosbeak - Four flew over the Port Rowan Wetlands November 1. Three flew over Old Cut November 4 and November 7.

Common Redpoll - Four were at the Tip October 20. Four flew over Old Cut and 'New' Long Point Provincial Park November 7.

Table 5. Ten most abundant species banded at Old Cut, Breakwater and the Tip during the fall migration monitoring season.

Species	Number Banded	% Hatch Year	% After Hatch Year	% Unknown
Ruby-crowned Kinglet	1711	86	12	2
Golden-crowned Kinglet	1172	87	11	3
White-throated Sparrow	1105	95	5	0
Blackpoll Warbler	1086	82	18	1
Myrtle Warbler	1050	93	7	0
Swainson's Thrush	575	87	13	0
Magnolia Warbler	519	94	6	0
Northern Saw-whet Owl	393	48	51	0
Slate-coloured Junco	383	80	19	0
American Redstart	355	92	8	0

THE FRIENDS OF LONG POINT BIRD OBSERVATORY

The Friends of LPBO continued in 2017 as a group of 20+, mostly local, volunteers who greet and inform visitors to the Old Cut Research Station while running the LPBO Shop and helping with a myriad of other tasks around the station, including scribing, extracting and making migration observations. Revenue from the shop provides critical support to LPBO programs. The presence of the Friends has dramatically increased the quality of our visitor and education services at Old Cut and takes a great deal of pressure off of the LPBO staff and our volunteers.

Friends: Hugh McArthur (coordinator), Gail Adams, Joe Gabriel, Paula Gent, Ted Gent, Len Grincevivijs, Barb Hourigan, Gail Larsen, Otto Larsen, Geoff Lilley, Ruth Ann Logan, Ted Maddeford, Sandra Maxwell, Diane Salter, and Evelyn Stone. Apologies to anyone who may have been missed.

NORTH AMERICAN BANDING COUNCIL - BANDER CERTIFICATION

On November 2-3, LPBO hosted a [North American Banding Council](#) certification session in collaboration with the Ontario Bird Banding Association. Two new banders were certified.

Participants: Kevin Chumpitaz and Lucerno Horna.

NABC trainers: Mark Conboy, Audrey Heagey, David Okines, and Ross Wood.

Tree Swallow Project

This comprehensive long-term research program was initiated in 1963 at the eastern Tip of Long Point, under the direction of David Hussell and Geoff Holroyd. While the initial work at the Tip provided valuable detailed data on breeding biology, the need for a broader geographic scope prompted expansion of this project to include two mainland sites in the mid-1970s, presently at Mud Creek and the Port Rowan Sewage Lagoons. Across these sites, the current project consists of 206 nest boxes with differing geography, food abundance, and micro-climates. The objectives of this project are (1) to provide a long-term record of breeding performance of Tree Swallows in relation to their food supply and local climate; (2) to provide other opportunities for research on breeding swallows; and (3) to provide training in field ornithology for students and other volunteers.

Since its inception, the project has annually supported post-graduate, graduate and undergraduate students, has involved the training of more than 200 volunteer fieldworkers, and has resulted in over 20 peer-reviewed publications and numerous theses and presentations. David Hussell ran the project until 2009. Ryan Norris and David Bradley ran the project until 2014 when BSC resumed management of the project while a new principle investigator is sought.

The project completed its 47th year in 2017. As in 2015 and 2016, the project was significantly scaled back from pre-2014 levels because a full time coordinator was not involved. Limited volunteer staff availability at the end of the spring migration monitoring season and a major depredation event at the Tip grid further reduced Tree Swallow monitoring and banding. Nest box occupancy was 90% across all three sites. In total 50 new adults were banded and 85 adults were recaptured with bands. An additional 351 nestlings were also banded (Table 1).

Volunteers: Tehmeena Chaudry, Mark Conboy, Peter Denyer, Sean Jenniskens, Samantha Knight, Eleanor Page, Nathalie Paquette, Bill Read, Seema Shenoy and Heidi van Vliet.

Table 6. Summary of Tree Swallow Project banding in 2017.

Location	Total Boxes	Active Nest Boxes	% Active Nest Boxes	New Adults Banded	Recaptured Adults	Nestlings Banded
Tip	64	61	95	0	0	0
Sewage Lagoon	60	55	92	23	40	246
Mud Creek	78	65	83	27	45	105
Total	202	181	90	50	85	351

BREEDING BIRD CENSUS

The Breeding Bird Census was established by LPBO in 1991. Fifteen 10 ha breeding bird census plots were installed across representative habitats on Long Point to monitor the response of vegetation and breeding bird communities after a deer cull. Following acquisition of Long Point in 1866, the Long Point Company reintroduced previously extirpated White-tailed Deer to the point. A lack of natural predators subsequently resulted in a deer population explosion that, by 1989, was demonstrating negative impacts on the fragile ecology of Long Point. In 1989-90 the Canadian Wildlife Service organized a cull of nearly 500 White-tailed Deer on Long Point to keep the herd at a sustainable level. Smaller culls have been carried out since then.

In 2017, and thanks to support from the Nature Conservancy of Canada and Environment and Climate Change Canada, five Breeding Bird Census plots were surveyed from May 28 to June 30. The plots were: 1) White Pine-White Cedar Savannah; 2) Tamarack Slough; 3) Red Ash-Red Oak Savannah; 4) Red Oak-White Birch Savannah; and 5) Red Oak-White Pine Savannah. The censuses entailed surveying plots laid out in a 50 x 50 m staked-grid pattern and recording the location of all breeding birds. Each plot was visited eight times, including one evening visit. Vegetation surveys were also done on all plots by the Nature Conservancy of Canada and Environment and Climate Change Canada.

In total, 48 breeding species were detected across 483 territories. Red Oak-White Pine Savannah was the most diverse site with 38 species. Red Ash-Red Oak Savannah had the largest number of territories, 145.5. The most notable species detected on territory were Chimney Swift and Eastern Screech-Owl at Red Oak-White Pine Savannah, and White-eyed Vireo at Tamarack Slough. A complete report was prepared and submitted to the Nature Conservancy of Canada in December 2017.

Field Crew: Mark Conboy, Peter Denyer, and Matt Iles.

GREAT LAKES MARSH MONITORING PROGRAM

In 2017 LPBO conducted Great Lakes Marsh Monitoring Program (GLMMP) surveys on Courtright and Squires ridges as part of a project to compare the diversity and abundance of wetland birds at sites that had ongoing *Phragmites australis* control to sites with no control in an effort to determine effects of those control measures. This was part of a larger effort to quantify the effects on wetland bird diversity and abundance at sites with varying degrees of *Phragmites* cover on Long Point and elsewhere in the Lake Erie ecosystem. For the purposes of this report we summarize only the bird survey data from 2017. A complete report was prepared and submitted to the Nature Conservancy of Canada in December 2017 with complete results from all aspects of the *Phragmites* study.

The historical and recent surveys on Courtright Ridge and Squires Ridge routes followed the GLMMP protocol of fixed-distance point counts (100 m semicircle) using playback to elicit responses from target species. Each route consisted of seven point count stations. In 2017, two point counts were conducted at each station: Courtright Ridge on June 8 and June 20; Squires Ridge on June 7 and June 19. A vegetation assessment was also conducted at each of the stations in accordance with the GLMMP protocol. Three amphibian surveys were also conducted along each route for the GLMMP.

Five of the nine GLMMP target wetland species were detected on the 2017 surveys: Pied-billed Grebe, Least Bittern, American Bittern, Virginia Rail, and Marsh Wren. The diversity per station (mean number of species observed per station) increased over data collected in 2016 at Courtright North and Courtright South, but declined slightly at Squires Ridge. The 2017 results for Courtright North and Courtright South fit the trend of increasing abundance and density of wetland bird species along those routes over the past 21 years. Because there were only three years of data for Squires Ridge a long-term trend was not apparent; additional years of surveying are required. The abundance of wetland bird species on Courtright Ridge was highly variable, often deviating from historical trends. Courtright North had an increase in the number of stations occupied by Pied-billed Grebe above historical levels. Conversely, there was a decline in the number of Sora and Virginia Rail. Least Bittern numbers remained similar to recent years, while American Bittern numbers were slightly higher. Overall diversity of species was lower on Courtright South than Courtright North. Pied-billed Grebe and American Bittern counts were above the historical levels on Courtright South, while Virginia Rails and Marsh Wrens were lower. On Squires Ridge Least Bittern numbers were above both 2002 (the only historic data available for that route) and 2016 levels. American Bittern numbers were similar to 2016 but higher than 2002. Virginia Rail numbers were lower compared to 2016, returning to 2002 levels. Marsh Wren numbers appeared to remain stable between 2002 and 2016 but declined in 2017. Black Tern declined to zero at Squires Ridge between the 2002 and 2016, and were also absent in 2017.

Field Crew: Mark Conboy, Kyle Cameron, and Casey Wright.

DOUG TARRY NATURAL HISTORY FUND

LPBO began the Young Ornithologists' Workshop in 1975, as the Bird Study Workshop. The project received major support in 1994 thanks to the generosity and foresight of the late Doug Tarry, who allowed for the establishment of the Doug Tarry Natural History Fund to support educational activities for young Canadians at LPBO. The fund supports the Young Ornithologists' Workshop and Student Internship.

Since 1991, the program has trained 157 teens, many of whom are now some of the best and brightest naturalists and scientists in the country. These programs are aimed at providing pre-university level students with an opportunity to experience nature and ornithology hands-on in a research oriented setting. Six teens from across Canada participated in the 2017 workshop, August 5 to August 13.

Young Ornithologists: Madelaine Davies (ON), Josiah Van Egmond (MB), Nathan Hood (ON), Logan Lalonde (BC), Owen Ridgen (ON), and Alessandra Wilcox (ON).

Young Ornithologist Interns: Hannah Stockford (Stayner, ON).

Project Assistants: Jody Allair (BSC), Liza Barney (BSC), Mark Conboy (LPBO - Leader), James Cowan (Canadian Raptor Centre), Mary Gartshore, Matt Iles (LPBO - Leader), David Okines (Ontario Bird Banding Association), Megan Wilcox, and Amy Wilson.

LATIN AMERICAN TRAINING PROGRAM

LPBO has been operating a series of Latin American training initiatives since 1987. In 1995, LPBO began bringing trainees north to Long Point for a formal month-long (or longer) training stint immersing them in the Migration Monitoring Program. Participants receive the most up-to-date training in bird banding, migration monitoring, and data management. To date LPBO has trained over 100 individuals from 15 countries throughout Central and South America. LPBO also contributes to the development of protocols, training opportunities abroad, and certification through the North American Banding Council and the Western Hemisphere Bird Banding Network.

Participants: Kevin Chumpitaz (Lima, Peru), Lucerno Horna (Piura, Peru), Daniela Souza (Cuernavaca, Mexico), and Stefanny Villagomez (San Miguel de Allende, Mexico).

COLLABORATIVE RESEARCH

The following is a brief summary of LPBO's collaborative research projects in 2017. All projects are conducted with appropriate permits and have been approved by animal care committees. Project summaries were provided by the researchers.

Natural Storm Exposure and the Effects of Food Availability

Andrea Boyer (M.Sc. candidate)

Dr. Scott MacDougall-Shackleton

University of Western Ontario

This project investigated the physiological and behavioural changes in white-throated sparrows as natural storms were occurring from mid-November to mid-December, when outdoor temperatures were above freezing. Twenty-four WTSP were housed in outdoor aviaries at the Advanced Facility for Avian Research at UWO during early winter. Half of the birds received food ad libitum, and the other half were on a restricted diet of 8 g per day, which was predetermined to be a sufficient amount to maintain healthy body condition. Natural storms were tracked as they were approaching London and birds were video recorded to track changes in behaviour resulting from changing weather patterns. During stormy conditions with drastic changes in barometric pressure, half of the birds (a mix of ad libitum and restricted diets) were scanned using the Quantitative Magnetic Resonance machine to obtain fat and lean mass content. The other half of the birds had a blood sample taken to obtain baseline corticosterone levels. A select few individuals with differing diets were fitted with heart rate transmitters to track heart rate. These procedures were also done on clear weather days when barometric pressure was consistent. By food restricting birds, we predicted birds would enter allostatic overload before birds given unlimited food amounts. Food-restricted birds should have higher fat reserves and overall body weight to cope with approaching storms and limited food availability. They should also show higher levels of corticosterone and increased heart rate, as they will likely be exhibiting signs of allostatic overload.

Exploring Knowledge Making Practices in Migratory Songbird Conservation

Seema Shenoy (M.Sc. candidate)

Dr. Anders Sandberg

York University

This research paper is located at the intersection of political ecology and science and technology studies to explore knowledge making practices in the conservation of migratory songbirds. It focuses on the science and conservation of the wood thrush, a fast declining species that has come to symbolize the fate of Neotropical migratory birds. Thinking with thrushes, the paper asks how knowledge for conservation is constructed in the field, and how that knowledge is used in conservation interventions. It draws from interview and participant observation material as it follows the efforts of field ecologists and conservationists in southern Canada (at the Long Point Bird Observatory) and central Costa Rica (at the Alexander Skutch Biological Corridor)—two end points of the migratory journey of these birds. It begins by tracing the affective and embodied practices in ecological fieldwork, and goes on to examine how individual birds as objects of scientific knowledge help frame, and come to speak for, the species as an object of conservation. By exploring these aspects, the paper shows how ecological science for conservation is constructed from a mix of scientific observations, technological capabilities, embodied work, material agencies (of both birds and their biologists), and normative values. It then locates these birds in new conservation networks in their non-breeding grounds, where narratives around conservation become linked to location-specific activities, such as ecotourism. The paper concludes with outlining some implications for considering these themes more carefully for knowledge making in, and the practice of, conservation.

Examining the Role of Flight Environment on Fuel Usage and Recovery in Migrating Birds

Derrick Groom (M.Sc. candidate)

Dr. Alexander Gerson

University of Massachusetts Amherst

The rate of migration and migration success are tied to the climate in which a bird flies. However, there is very little known about how differing environments (high temperature versus lower temperature, humid air versus dry air) influences the rate of fat and protein usage during migration, and the condition of the animal once it arrives to its destination. Our study examines the rate of fuel usage (fat and protein) during migratory flight under varying humidity conditions, and how this important climatic variable influences the rate of recovery from a single migratory bout. We do this by flying birds in a specialized climate-controlled wind tunnel to simulate migratory flight in different humidities. We also scan birds using Quantitative Magnetic Resonance, which allows us to non-invasively measure declines in fat and protein levels caused by our simulated migratory flight, as well as monitor the rate of recovery to their pre-migratory state following flight. We hope that this project will provide valuable insight into how migratory birds will respond to climate change, and allow us to predict which migratory species may be most at risk to future environmental variability.

Introduction of Southern Ticks by Migratory Songbirds

John Scott

Lyme Ontario

The aim of our study is to identify ticks parasitizing migratory songbirds during northward spring migration. Specifically, we want to get 25 live ticks from several southern temperate and Neotropical passerines collected from April 15 to June 10, 2016 at the Tip of Long Point, Ontario. In order to help with identification, we will retain live, engorged ticks to molt to the next development life stage. Current taxonomic keys will be employed for *Ixodes* and *Amblyomma* species. PCR amplification and DNA sequencing may be employed for certain ticks. Novel ticks will be catalogued in a biological museum.

Epidemiology of *Babesia odocoilei*, a Tick-Borne Emerging Disease of Cervids in Ontario

Ellie Milnes (D.V.Sc. candidate)

University of Guelph & Toronto Zoo

Babesia odocoilei is a tick-borne hemoparasite that has recently been identified as an emerging disease causing fatal babesiosis in captive and free-ranging deer species in Canada. The parasite is transmitted by the black-legged tick, *Ixodes scapularis*. This research aims to describe the prevalence of *B. odocoilei* in a variety of cervid species in Ontario in zoos, commercial deer farming enterprises, and free-ranging wildlife, as well as in the arthropods that can act as vectors (i.e., ticks). Migratory birds are a recognised source of tick introduction into new geographic regions, and may facilitate *B. odocoilei* spread, an aspect of *B. odocoilei* eco-epidemiology that has not been well investigated thus far. One of the research objectives is to investigate whether migratory birds may be involved in *B. odocoilei* translocation by surveying ticks removed from birds during routine banding activities.

Forest Fragmentation Effects on Survivorship and Dispersal in Juvenile Wood Thrush

Brendan Boyd (M.Sc. candidate)

York University

Wood thrush is one of the most well-known songbirds experiencing serious declines suspected to be related to several factors including loss of habitat and forest fragmentation, making it an ideal candidate for this project. The aim of this research is to test three main predictions: 1) juvenile mortality is negatively correlated with natal forest size, 2) dispersal distance from the natal site will be negatively correlated with the extent of the forest cover in the landscape matrix, and 3) initiation of autumn migration is negatively correlated with natal forest fragment size. In order to test these predictions, we are going to choose 10 pairs of study sites (large and small fragments)

for a total of 20 sites. The aim is to then radio tag two juveniles from separate nests from each site to have a total of forty that will be tracked both manually and using the MOTUS wildlife tracking system. Twenty adults will also be radio-tagged in order to compare their movements to those of the juveniles. The tracking will continue until long distance dispersal takes place.

An Analysis of Intra- and Interspecific Variation in the Nocturnal Flight Calls of Migratory Passerines

Blaine Landsborough (M.Sc. candidate)

Rachel Hasson (M.Sc. candidate)

Dr. Dan Mennill

University of Windsor

Dr. Jenn Foote

Algoma University

While several techniques facilitate research on the nocturnal movements of migratory songbirds, only the detection of nocturnal flight calls allows biologists to discern between species during active migration. Nocturnal flight calls are species-specific vocalizations produced by birds during migratory activity. Although there has been an increasing interest in the applications of nocturnal flight calls for migration research, many aspects of these vocalizations have received little attention and there is a dearth of information on inter- and intra-specific variation in nocturnal flight calls. The objective of our research is to quantify interspecific and intraspecific variation in the nocturnal flight calls of migratory passerines in eastern North America. We recorded flight calls from temporarily-captive passerines held for banding at Long Point Bird Observatory. After banding, birds were placed in a darkened and sound-dampened recording room where congeneric flight calls were played, using a loudspeaker, to the individual to induce calling. We also recorded flight calls from actively migrating birds using a microphone array that spanned the Great Lakes region, from Thunder Bay to Pelee Island. Using the acoustic recordings of flight calls produced by both temporarily-captive and actively-migrating individuals, we will generate spectrograms for thousands of calls per species and conduct spectrographic cross-correlation and principal coordinate ordination to compare flight-call recordings among species.

Behavioural Mechanisms Underlying the Differential Timing of Spring Migrating White-throated Sparrows

Andrew Beauchamp (M.Sc. candidate)

Dr. Yolanda Morbey

Dr. Chris Guglielmo

Western University

Differential migration timing is observed in many songbird species. Protandry, the arrival of males on the breeding ground prior to females, is the most common pattern of

differential migration. Migratory protandry may result from several key behavioural mechanisms that influence migration timing, however, the impact and relative importance of each mechanism remains uncertain. My project examines multiple behavioural mechanisms across the sexes and behaviourally distinct plumage morphs of the White-throated Sparrow. Field work was conducted during the 2017 spring migration at the Long Point Bird Observatory. Blood samples were taken to measure stopover refuelling rate. Feather samples were collected to determine wintering area latitude. Quantitative magnetic resonance was used to examine the body condition of captured birds. Radio telemetry was also employed to determine the length of stopover at Long Point, as well as local stopover movement and habitat usage. Migratory movement northward was tracked using the Motus Wildlife Tracking System. Data analysis is currently underway. This study will be one of the first to concurrently examine multiple behavioural mechanisms believed to underlie migratory protandry.

Tracking the Effects of Neonicotinoid Insecticides on Migratory Birds

Dr. Margaret Eng (Postdoctoral Fellow)

Dr. Christy Morrissey

University of Saskatchewan

Bridget Stutchbury

York University

Neonicotinoids are widely used insecticides that are commonly applied as seed treatments. Migratory seed-eating birds that use agricultural landscapes for refueling may be particularly susceptible to the neurotoxic effects of neonicotinoids. Effects on refueling or orientation behavior could have significant fitness consequences; however, the influence of neonicotinoids on migratory ability is poorly understood. To assess the effects of neonicotinoids on migration, we caught Eastern White-crowned Sparrows at the Long Point Bird Observatory during spring migratory stopover. Birds were exposed to sub-lethal environmentally realistic concentrations of a common neonicotinoid (equivalent to 0, 1 or 4 canola seeds treated with imidacloprid, n = 12 birds/treatment), then tagged with uniquely coded transmitters and released into the Motus Wildlife Tracking System to track their movements on a landscape scale. Using automated telemetry data, we will assess effects of neonicotinoids on stopover duration, speed of travel between points, and direction of migratory movements.

PUBLICATIONS 2014-2017

The following publications were made possible through the use of LPBO data, resources, volunteer, staff, or facilities. All LPBO and BSC publications are tracked here: <https://www.birdscanada.org/about/index.jsp?targetpg=publications>

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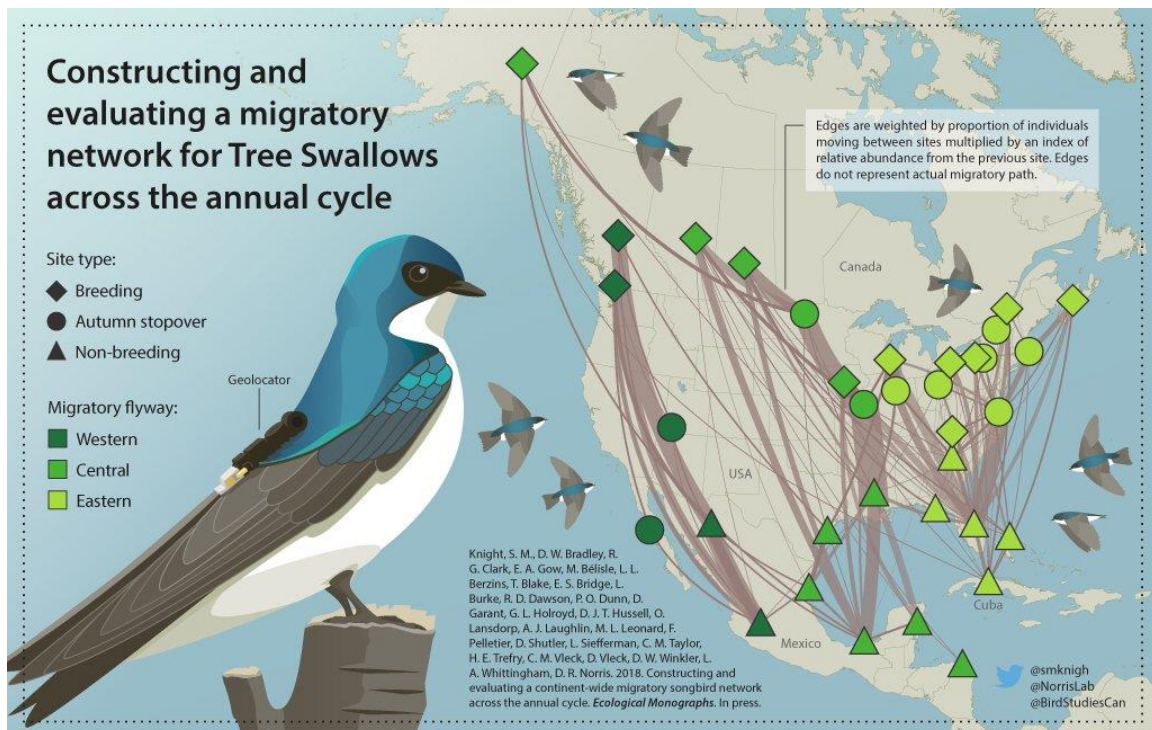
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APPENDIX 1.

LPBO's 2017 banding totals for the Old Cut, Breakwater, and the Tip, plus the Tree Swallow project.

Species & Forms	Spring				Fall				Tree Swallow Project	Grand Total
	Old Cut	Break-water	Tip	Sub Total	Old Cut	Break-water	Tip	Sub Total		
Acadian Flycatcher			1	1	1			1		2
American Goldfinch	23	73	247	343	23	2	18	43		386
American Redstart	36	4	13	53	166	109	47	322		375
American Robin	33	34	21	88	25		8	33		121
American Woodcock	1		1	2	4		1	5		7
American Tree Sparrow	48	9	2	59	28		5	33		92
Baltimore Oriole	20	16	77	113	13			13		126
Barn Swallow	1		1	2						2
Black-and-white Warbler	29	9	19	57	32	13	9	54		111
Black-billed Cuckoo	1			1		2		2		3
Bay-breasted Warbler	10		3	13	66	44	12	122		135
Black-capped Chickadee	19	2	8	29	24		7	31		60
Belted Kingfisher							1	1		1
Brown-headed Cowbird	8	151	230	389			2	2		391
Blue-headed Vireo	18	12	12	42	40	1	39	80		122
Blackburnian Warbler	9	2	4	15	6	8	8	22		37
Blue Jay	273	196	623	1,092	5		23	28		1,120
Blackpoll Warbler	3	13	4	20	139	568	357	1,064		1,084
Bobolink							1	1		1
Brown Creeper	150	16	20	186	97	1	139	237		423
Brown Thrasher	18	12	36	66	8	1	6	15		81
Brewster's Warbler	1			1						1

Species & Forms	Spring				Fall				Tree Swallow Project	Grand Total
	Old Cut	Break-water	Tip	Sub Total	Old Cut	Break-water	Tip	Sub Total		
Black-throated Blue Warbler	60	6	6	72	99	32	45	176		248
Black-throated Green Warbler	20	1	14	35	18	12	16	46		81
Blue-winged Warbler	2	5	3	10	1			1		11
Carolina Wren	4			4	8			8		12
Cassin's Sparrow			1	1						1
Cave Swallow							2	2		2
Canada Warbler	15	3	3	21	11	4	3	18		39
Clay-coloured Sparrow			1	1						1
Cedar Waxwing	29	14	23	66	36	1	24	61		127
Chipping Sparrow	13	184	152	349	1		13	14		363
Cape May Warbler	3		5	8	76	96	27	199		207
Common Grackle	102	22	139	263	24		1	25		288
Cooper's Hawk					2			2		2
Common Nighthawk							1	1		1
Connecticut Warbler					3		3	6		6
Common Yellowthroat	94	37	44	175	115	72	49	236		411
Chestnut-sided Warbler	38	5	20	63	32	38	12	82		145
Dickcissel							1	1		1
Downy Woodpecker	3	13	10	26	12	3	7	22		48
Dunlin							4	4		4
Eastern Bluebird		3		3						3
Eastern Kingbird	1	2	20	23	2		2	4		27
Eastern Phoebe	34		12	46	17		68	85		131
Eastern Screech-Owl					2		1	3		3
Eastern Towhee	12	4	10	26	3		1	4		30

Species & Forms	Spring				Fall				Tree Swallow Project	Grand Total
	Old Cut	Break-water	Tip	Sub Total	Old Cut	Break-water	Tip	Sub Total		
Eastern Wood-Pewee	8	2	6	16	12	3	14	29		45
Eurasian Starling	1	1	4	6			1	1		7
Eastern White-crowned Sparrow	19	135	142	296	2		8	10		306
Eastern Whip-Poor-Will					2			2		2
Field Sparrow	2	26	36	64	12		11	23		87
Fox Sparrow	7		1	8	13		3	16		24
Great Crested Flycatcher	1	1	2	4	5	1		6		10
Golden-crowned Kinglet	262	2	5	269	729		391	1,120		1,389
Grey-cheeked Thrush	19	4	2	25	95	22	51	168		193
Grey Catbird	138	49	54	241	147	31	16	194		435
Green Heron							1	1		1
Grasshopper Sparrow			1	1			1	1		2
Gamble's White-crowned Sparrow		5		5						5
Golden-winged Warbler	3			3	1			1		4
Hairy Woodpecker		1		1	1	2		3		4
Hermit Thrush	95	28	23	146	129		84	213		359
House Finch	4		1	5	3			3		8
House Sparrow	17	1	5	23	185		8	193		216
Hooded Warbler	2			2	1			1		3
House Wren	52	13	30	95	87	20	41	148		243
Indigo Bunting	8	13	10	31	3	2	2	7		38
Kentucky Warbler					1			1		1
Lawrence's Warbler	1			1						1
Least Flycatcher	32	11	63	106	41	11	47	99		205
Lincoln's Sparrow	36	9	76	121	14	1	17	32		153

Species & Forms	Spring				Fall				Tree Swallow Project	Grand Total
	Old Cut	Break-water	Tip	Sub Total	Old Cut	Break-water	Tip	Sub Total		
Louisiana Waterthrush		1	1	2						2
Magnolia Warbler	214	29	58	301	216	152	55	423		724
Marsh Wren					16	3	4	23		23
Merlin			1	1		1		1		2
Mourning Dove	11	1	3	15	4			4		19
Mourning Warbler	14		5	19	7		3	10		29
Myrtle Warbler	45	53	233	331	197	2	813	1,012		1,343
Nashville Warbler	16	7	14	37	61	29	32	122		159
Northern Cardinal	39	28	39	106	42	1	3	46		152
Northern Mockingbird			3	3						3
Northern Parula	4	2	3	9	24	26	5	55		64
Northern Waterthrush	14	14	16	44	16	13	21	50		94
Northern Rough-winged Swallow	1		4	5						5
Northern Saw-whet Owl					178		185	363		363
Orange-crowned Warbler	5		1	6	23		11	34		40
Orchard Oriole	1	1	7	9						9
Ovenbird	70	12	8	90	41	13	12	66		156
Philadelphia Vireo	22		10	32	47	20	6	73		105
Pine Siskin			1	1	1		3	4		5
Pine Warbler		2	1	3		1		1		4
Prairie Warbler		1		1						1
Purple Finch	1	3	40	44	1			1		45
Purple Martin			1	1						1
Rose-breasted Grosbeak	27	42	77	146	9	3		12		158
Red-breasted Nuthatch	8	8	40	56	6		5	11		67

Species & Forms	Spring				Fall				Tree Swallow Project	Grand Total
	Old Cut	Break-water	Tip	Sub Total	Old Cut	Break-water	Tip	Sub Total		
Red-bellied Woodpecker	6	22	25	53			2	2		55
Ruby-crowned Kinglet	225	95	90	410	1,237	2	321	1,560		1,970
Red-eyed Vireo	7	5	14	26	105	105	16	226		252
Red-headed Woodpecker		7	7	14						14
Rusty Blackbird		1	2	3	2		2	4		7
Red-winged Blackbird	224	150	258	632	15		18	33		665
Sanderling							3	3		3
Savannah Sparrow		4	34	38			3	3		41
Slate-coloured Junco	111	94	271	476	142		181	323		799
Scarlet Tanager	2	1	9	12	3			3		15
Song Sparrow	55	14	43	112	59	5	130	194		306
Spotted Sandpiper			2	2						2
Sharp-shinned Hawk					1	3	12	16		16
Swamp Sparrow	66	11	29	106	114	2	28	144		250
Swainson's Thrush	54	5	20	79	274	119	134	527		606
Tennessee Warbler	12	1	3	16	37	52	16	105		121
Tree Swallow	18	3		20					401	20
Trail's Flycatcher	21	15	35	71	41	4	16	61		132
Tufted Titmouse	3			3						3
Veery	47	7	1	55	30	8	6	44		99
Vesper Sparrow		1		1			1	1		2
Warbling Vireo	9	8	25	42	63	8	12	83		125
White-breasted Nuthatch	8	10	13	31						31
White-crowned Sparrow	1			1	5		11	16		17
White-eyed Vireo	3			3			1	1		4

Species & Forms	Spring				Fall				Tree Swallow Project	Grand Total
	Old Cut	Break-water	Tip	Sub Total	Old Cut	Break-water	Tip	Sub Total		
Wilson's Warbler	37	13	19	69	39	26	23	88		157
Winter Wren	45	7	7	59	94		88	182		241
Wood Thrush	37	5	4	46	6		2	8		54
Western Palm Warbler	10	17	37	64	15	7	43	65		129
White-throated Sparrow	574	210	275	1,059	584		199	783		1,842
Yellow-breasted Chat	2			2		1		1		3
Yellow-bellied Flycatcher	27		14	41	50	5	20	75		116
Yellow-bellied Sapsucker	2	5	12	19	2		20	22		41
Yellow Warbler	85	44	228	357	37	14	40	91		448
Yellow Palm Warbler					1		1	2		2
Yellow-shafted Flicker	4	6	17	27	5		3	8		35
Yellow-throated Vireo			4	4		1	2	3		7
Yellow-throated Warbler		1		1						1
Totals	4,022	2,115	4,310	10,844	6,472	1,726	4,171	12,369	401	23,614