LONG POINT BIRD OBSERVATORY

2015 PROGRAM REPORT

FEBRUARY 2016

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INTRODUCTION

LONG POINT BIRD OBSERVATORY

On Thanksgiving weekend 1959, six intrepid 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 and its flagship Migration Monitoring Program was born. As such, 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 initiated North America's first sponsored bird count fundraiser, the Baillie Birdathon. Remarkable growth occurred in the following decades with the initiation, coordination, and participation in 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 research institute operating research, education, and training programs that focus on ornithology, conservation, and other aspects of natural history at Long Point.

LPBO programs are comprised by the Migration Monitoring Program, the Doug Tarry Natural History Fund - Young Ornithologists` Workshop and Internship, Long-term Tree Swallow Research Project, Latin American Training Program, Vegetation Monitoring and Breeding Bird Census of Long Point, and an active and diverse program of public education, professional training, and collaborative research.

For more information about the work of LPBO, please visit:

www.birdscanada.org/lpbo

BIRD STUDIES CANADA

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

Bird Studies 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.

ACKNOWLEDGEMENTS

Staff

LPBO Program Manager: Stu Mackenzie
Program Coordinator: Mark Conboy
Assistant Coordinator: Matt Iles

Support Staff

Administration, Events, and Merchandise: Anne Marie Ridout
Birdathon: Kristine Dobney, Rosie Kirton
Technical Support and Design Specialist: Ron Ridout
CMMN Liaison: Audrey Heagy
Data Management and Analysis: Tracy Barber, Tara Crewe, Denis Lepage
Education Programming: Jody Allair and Liza Barney
BSC Management: Steven Price, Jon McCracken, and Liane Varga.

LPBO Committee

Salter, Diane (*Chair*); Dawn Burke (*Ontario Ministry of Natural Resources*); Eric Machell (*Ontario Bird Banding Association*); Hugh McArthur *(Friends of LPBO*); Jim Oliver (*Norfolk County Councillor*), Jeff Robinson (*Canadian Wildlife Service*); Jim Runnings; Louis Visentin (*Brandon* University); Julia Wever (*Friends of LPBO*).

Project Partners and Supporters

LPBO programs are supported by Bird Studies Canada, the LPBO Endowment Fund, the Doug Tarry Natural History Fund, the Baillie Birdathon, a variety of organizations and 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 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, The Norfolk Community Foundation, and Mr, James and Betty Runnings. 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: County of Norfolk, Fisheries and Oceans Canada, Transport Canada, Environment Canada, Long Point Company, Ontario Ministry of Natural Resources, Ontario Ministry of the Environment, and Connie and Vernon Smith.

MIGRATION MONITORING PROGRAM

Long Point Bird Observatory (LPBO) has been collecting standardized data on bird migration at Long Point, Ontario 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 many migratory species. Migration monitoring is a particularly valuable method in Canada 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 over 30 migration monitoring stations across Canada which form the Canadian Migration Monitoring Network. Each spring and fall, staff and volunteers perform daily censuses, banding, and observations at each of three research stations on Long Point - Tip, Breakwater, and Old Cut. These migration count data are used to derive daily "estimated totals" (ETs) for up to 400 species of birds recorded at Long Point. Population trends are derived for over 200 of these species and are available online along with other summary statistics at http://www.birdscanada.org/birdmon/default/popindices.jsp.

In 2015, LPBO banded 26,313 birds of 139 species and forms, bringing the grand total to 972,216 birds banded of 279 species and forms since 1960. More information about LPBO including weekly summaries of each migration season and seasonal summaries in LPBO E-news, can be found at www.birdscanada.org/lpbo, or join us on Facebook at www.facebook.com/lpbobs or follow us on Twitter @ LongPointBirdObs.

SPRING MIGRATION MONITORING PROGRAM

The Long Point Bird Observatory's (LPBO) 55th spring migration monitoring season ran at Old Cut from April 1 to June 10, at Breakwater from April 26 to June 1, and at the Tip from April 12 to June 7. Twenty-nine volunteers, representing five countries, logged over 8,900 hours collecting migration data on over 250 species, and banding 13,260 of 129 species. LPBO had 71 days of coverage, yielding 17,394 net hours with a catch rate of 133 birds/100 net hours. Twelve ground traps, four J-Traps and two Heligoland traps contributed approximately 25% of the catch, with the balance captured in mist nets. About 20 volunteer 'Friends' of LPBO helped to service over 2,000 visitors alongside an addition 1,000 students of all ages who enjoyed banding demonstrations among other marvels of the spring migration at Long Point.

The 2015 spring season was late to start at the Tip and Breakwater due to icy conditions in the Inner Bay and along the south shore into late April. Cold weather persisted throughout April, making for many days with relatively slow migration.

Birding Highlights from the spring season included: One male Eurasian Wigeon at a flooded field on East Quarter Line Road April 4-6. An American White Pelican was found at Long Point Provincial Park May 24 and was subsequently seen flying over the Bird Studies Canada Headquarters May 27. Two White-faced Ibises were near Port Royal on May 14 and remained there until May 23. Two *Plegadis* sp. flew past Breakwater May 21. A single banded Piping Plover was at the Tip June 11-15; this bird was banded in Michigan as a nestling in 2014. There was a Laughing Gull at the Tip on June 7, 10 and June 11. Two White-winged Doves were seen this spring: one was at the Tip May 10; another bird made a quick flyover of Long Point Provincial Park May 22. A Western Kingbird was present at the Tip May 21-25. The first ever Cassin's Kingbird for Long Point was found at the Tip on June 9; this was the 400th species for the Long Point checklist. A Kentucky Warbler was banded at Old Cut May 7 and another at the Tip May 11. One Worm-eating Warbler was banded at the Tip May 16. Single Yellow-breasted Chats were banded at the Tip: May 5 and May 25, respectively. There were a number of Summer Tanagers, including singletons at Old Cut May 9, May 10, May 20 and at Breakwater May 7 and 9; individuals were also at the Tip May 24, 25 and 27. A Clay-colored × Chipping Sparrow hybrid was banded at the Tip April 30. A single Harris's Sparrow was observed near Clear Creek May 9-12. One probable "Cassiar" Dark-eyed Junco was observed and photographed at Old Cut April 17. A Yellow-headed Blackbird was banded April 27 at the Tip; a second bird was observed there April 30. The springs' only Dickcissel flew over Old Cut May 27.

SPRING TRAINING PROGRAM:

Long-term Volunteers *(One month or more)*
Taylor Brown (Wolfville, NS), Richard Cope (London, UK), Richard Dobbins (Boncath, UK), Karl Heide (Mississauga, ON), Chris Lamsdell (South Bucks, UK), Denise Lamsdell (South Bucks, UK), Sarah Larocque (Burlington, ON), Matteo Latuada (Milan, Italy), Hugh McArthur (Vittoria, ON), Donna Talluto (Louvain, Belgium), Mick Townsend (Leicester, UK), and Evalynn Trumbo (St. Louis, US).

Short-term Volunteers *(Less than one month)*
Fiepe de Bie (Charlottetown, PE), Dave Clifton (Staffordshire, UK), , John Glazebrook (Ipswich, UK), Michael Holdsworth (London, UK), Taylor Marshall (London, ON), Kelly McClean (Toronto, ON), Glynn Middleton (Staffordshire, UK), Eleanor Page (London, UK), Bill Read (Cambridge, ON), Dylan White (Guelph, ON), and Mick Wright (Ipswich, UK).

Protandry Study (Western University):
Avery Bartels (Nelson, BC), Morgan Brown (Milton, ON), Chris Guglielmo (London, ON), Ivan Maginni (London, ON)n and Jessica Deakin (London, ON)

Table 1. Top 10 banded species and their age ratios at LPBO in spring 2015 (including the Tree Swallow Project).

Species	Number Banded	% Second Year	% After Second Year	% After Hatch Year
White-throated Sparrow	1417	58	12	30
Red-winged Blackbird	865	55	41	4
Grey Catbird	679	49	39	11
American Goldfinch	906	48	34	18
Yellow Warbler	571	69	23	9
Magnolia Warbler	410	66	28	5
Chipping Sparrow	409	64	15	20
Ruby-crowned Kinglet	407	50	20	29
Brown-headed Cowbird	381	42	9	48
Hermit Thrush	365	56	29	11

FALL MIGRATION MONITORING PROGRAM

LPBO's 56th fall season ran from August 15 to November 15 at Old Cut, August 10 to September 15 at Breakwater, and August 15 to November 11 at the Tip. Thirty volunteers, representing five countries, logged over 13,000 hours collecting migration data on over 250 species and banded 10,967 birds of 124 species. There were 92 days of coverage, yielding 22,621 net hours, with a catch rate of 110 birds/100 net hours. Twenty-four volunteer 'Friends' of LPBO helped to serve over 900 visitors and an addition 400 students of all ages who enjoyed banding demonstrations.

The fall season was slower than average, with very few big days. Nonetheless, there were some interesting highlights: Long Point's second ever Neotropic Cormorant was photographed off the Tip August 26. Two Eared Grebes were seen in the Outer Bay November 2. A Northern Gannet flew past the Tip October 16. There were two Cattle Egrets seen October 17; one flew over Old Cut, and another was seen from Concession Road 1. An American Avocet was seen briefly at the Tip August 20. A Franklin's Gull, part of large irruption into eastern North America, was seen flying off Hastings Drive November 14. Three Sabine's Gulls were seen from the Tip September 29, October 12 and 13. A White-winged Dove was seen by multiple observers at the Tip on October 22-23. A Western Kingbird was at Breakwater September 6. Single Common Ravens were seen at the Tip on September 21-28 and October 14. One Loggerhead Shrike was detected in the area by the Motus Wildlife Tracking System at the BSC Headquarters September 10. A Townsend's Solitaire was seen at the Tip October 23. A flock of 10 Bohemian Waxwings flew over Old Cut November 14. A Dickcissel was at the Tip October 5. A Nelson's Sparrow was found at the Tip October 18-19. A Yellow-headed Blackbird flew over Old Cut September 5, while another flew over the Tip October 26.

MONARCH BUTTERFLY MIGRATION MONITORING

Long Point is recognized as one of three International Monarch Butterfly Reserves in Canada due to large concentrations during fall migration. In 1990, LPBO began a daily afternoon census of migrating Monarch Butterflies through the Breakwater and Tip research stations, and has also conducted a number of special research projects over the years. Monarchs tagged at Long Point have been recovered elsewhere in Ontario, along the eastern seaboard and as far south as their wintering grounds in Mexico.

In 2015, Monarch Butterfly censuses were conducted at the Tip between 22 August and 14 November and at Breakwater between 18 August and 14 September, resulting in total counts of 1107 (mean = 20.5/day) and 443 (mean = 13/day), respectively. The Tip count was below the 2013 count (1868 [mean = 23/day]), while the Breakwater count was above (252 [mean = 7/day]. The largest movement was on September 19 with 120 counted at the Tip. The highest count at Breakwater occurred on September 14 with 45 individuals. Individuals were seen along Long Point until the end of October.

FALL TRAINING PROGRAM:

Long-term Volunteers *(One month or more)*
Jack Baddams (London, UK), Jacy Bernath-Plaisted (Winnipeg, MA), Kyle Cameron (Peterborough, ON), Liam Curson (East Sussex, UK), Laura Douglas (Toronto, ON), Chris Early (Guelph, ON), Erica Hentsch (Cambridge, ON), Sarah Larocque (Burlington, ON), Hugh McArthur (Vittoria, ON), Andy McCreery (Perth, Australia), Jade Porter (London, ON), Imogen Rutter (Worchestershire, UK), Chris Sukha (Field, ON), Vania Tejeda (Lima, Peru), Matt Timpf (Walsingham, ON), and Evalynn Trumbo (St. Louis, US).

Short-term Volunteers (*Less than one month*)
Carlos Barbary (Ottawa, ON), Mike Burrell (Kingston, ON), Tara Crewe (Port Rowan, ON), Brett Fried (Cambridge, ON), Eric Giles (St. Williams, ON), Lucas Henecker (London, ON), Kristin Jonasson (London, ON), Dayna LeClair (Guelph, ON), Rick Mercer (Toronto, ON), Eleanor Page (London, UK), Alice Pintaric (ON), Carley Rawes (BC), Bill Reed (Cambridge, ON), and Ross Wood (Hamilton, ON).

Table 2. Top 10 banded species and their age ratios at LPBO in fall 2015.

Species	Number Banded	% Hatch Year	% After Hatch Year	% Unknown
Ruby-crowned Kinglet	878	84	12	3
"Myrtle" Yellow-rumped Warbler	770	94	6	0
Golden-crowned Kinglet	730	89	8	3
Swainson's Thrush	580	81	19	0
Magnolia Warbler	452	94	1	0
White-throated Sparrow	443	90	10	0
Slate-coloured Junco	397	66	28	5
American Goldfinch	382	77	20	3
Blackpoll Warbler	342	81	19	1
Hermit Thrush	326	88	11	1

THE FRIENDS OF LONG POINT BIRD OBSERVATORY

The 'Friends' of LPBO continued in 2015 as a group of 24, mostly local, volunteers who greet and inform visitors to the Old Cut Research Station while manning the LPBO 'Shoppe'. Revenue from the 'Shoppe' provide 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 Banders-In-Charge and our volunteers.

THE FRIENDS:
Hugh McArthur – Volunteer Coordinator

Gail Adams, Geoff & Sue Atkins, Pat Finney, Joe Gabriel, Paula & Ted Gent, Len Grincevivius, Don & Yvonne Henderson, Barb Hourigan, Gail & Otto Larsen, Geoff Lilley, Ruth Ann Logan, Ted Maddeford, Sandra Maxwell, Diane Salter, Andrew Sawyer, Evelyn Stone, Nadine Tempilton, Julia Wever, and Margaret Wheeler.

TREE SWALLOW PROJECT

This comprehensive long-term research program was initiated in 1963 at the eastern Tip of Long Point, under the direction of Dr. David Hussell and Dr. 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-1970's, presently at Mud Creek and the Port Rowan Sewage Lagoons. Across these sites, the current project consists of about 200 regularly occupied nest boxes with differing geography, food abundance, and micro-climates. Dr. Hussell enthusiastically ran the project until 2009. Drs. Ryan Norris (University of Guelph) and David Bradley ran the project until 2014 when BSC resumed management of the project while a new Principle Investigator is found. Since its inception, the project has annually supported post-graduate, graduate and/or 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.

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. The project completed its 45th year in 2015, but was significantly scaled back because a full time coordinator was not involved. This year, 1120 (781 nestlings and 339 adults) were banded.

Interim Project Coordinators:
Stu Mackenzie, Sarah Larcoque, and Matt Iles.

BREEDING BIRD CENSUS AND VEGETATION MONITORING

White-tailed Deer were extirpated on Long Point by 1870 due to over hunting and poaching. Following acquisition of Long Point in 1866, the Long Point Company reintroduced deer to the Point. A lack of natural predators subsequently resulted in a herd numerous enough that by 1989 it was threatening its own food supply and was demonstrating a negative impact 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. Following the first cull in 1991, LPBO established 15 10-hectare breeding bird census plots in a variety of representative habitats across Long Point to monitor the response of vegetation and breeding bird communities after the removal of deer.

In 2015, vegetation was examined in all breeding bird census plots by the Nature Conservancy of Canada and Environment Canada, and point count transects were conducted in six plots: Birch-Oak Savannah and Wetland, Red Oak-Sugar Maple Forest, Red Oak-Sugar Maple Savannah, Red Oak-Ironwood Savannah, Red Oak-White Pine, and Sedge-Tamarack Dune Pond.

Contributors:
Michael Bradstreet, Korol Burke, Mark Conboy and Matt Iles.

DOUG TARRY NATURAL HISTORY FUND

LPBO began the Young Ornithologist Workshop in 1975 when the first Bird Study Workshops were offered to three groups of teenagers. 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 people at LPBO. The fund supports the Young Ornithologists' Workshop and Student Internship for teenagers from across Canada.

Since 1991, the program has trained 145 young people, many of which 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. Bird banding and migration monitoring are the main focus, but participants are exposed to a wide range of natural history and scientific experiences. The workshop annually supports six teens from across Canada who descend on Long Point for a 7-10 day workshop. The 2015 workshop ran from August 1 to August 7. The internship immerses workshop alumni in the Migration Monitoring Program while they design and conduct independent research projects.

Table 3. 2015 Young Ornithologist Workshop Participants

Name	Home Town
Rebecca Heath	Haines Junction, YK
Ben Oldfield	Burlington, ON
Joshua Brown	Vancouver, BC
Henrique Pacheco	Toronto, ON
Eric Orosz	Burlington, ON

Table 4. 2015 Young Ornithologist Intern

Name	Home Town
Carlos Barbary	Ottawa, ON

Project Assistants:
Jody Allair – Biologist & Science Educator
Liza Barney – Science Educator
Sarah Larocque – Workshop Chef

Volunteer Contributions:
James Cowan (Director of Canadian Raptor Conservancy), Mary Gartshore, and David Okines (Ontario Bird Banding Association).

LATIN AMERICAN TRAINING PROGRAM

LPBO has been operating a series of Latin American training initiatives since 1987. The training program had its roots in a multi-year collaborative research project that was conducted in Cuba from 1987-1995. 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 and ethical training on all facets of avian research including: bird banding, migration monitoring, data management, forest bird monitoring techniques, and habitat and vegetation surveys. To date LPBO has trained over 92 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 (NABC) and the Western Hemisphere Bird Banding Network.

In 2015, the program supported the advanced training and research of PhD student Ana Gonzalez (Colombia - University of Saskatchewan), and Alain Parada (Cuba - Trent University).

LPBO also co-led two NABC bander-training workshops and certification sessions in Belize which comprised North American and local participants.

COLLABORATIVE RESEARCH

The following is a brief summary of some of LPBO's collaborative research projects in 2015. All projects are conducted with appropriate permits and have been approved by animal care committees.

BIOACOUSTIC ANALYSIS OF MIGRATION PATTERNS AND TIMING IN THE GREAT LAKES REGION.

University of Windsor: Dr. Dan Mannill and Dr. Mandy Ehnes

A project lead by researchers at the University of Windsor and Algoma University tracked movements of nocturnal migratory birds through the Great Lakes. This ecosystem-scale project aims to better understand the migratory routes and timing of migration of birds through this important flyway to the Boreal forest. Historically, there has been little monitoring of nocturnal migrants. Recent advances in bioacoustics technologies have resulted in new ways to study movements of birds based on the species-specific sounds birds produce while migrating. Drs. Dan Mennill (Windsor) and Jennifer Foote (Algoma) and their research teams deployed a network of automated field recorders equipped with sensitive microphones at locations stretching from Thunder Bay to Pelee Island. Each location was monitored by enthusiastic volunteers

who kept them running through the migratory period. The researchers are currently analysing and identifying the calls using bioacoustics software and reference sounds from previous studies.

BAT MIGRATION ECOLOGY

Bird Studies Canada, Western University and Texas Tech University: Stu Mackenzie, Kristin Jonasson, Mary Gartshore, Jon McCracken, Dr. Chris Guglielmo, Dr. Yolanda Morbey, and Dr. Liam McGuire.

Our understanding of bat migration ecology is limited. In an effort to answer some basic questions about bat movements we radio-tagged 99 bats of four species (70 Little Brown Myotis, 13 Silver-haired Bats, 4 Hoary Bats, and 12 Red Bats) were radio-tagged in the greater Long Point region. These bats were then tracked by Motus Wildlife Tracking System. Most importantly, Silver-haired, Red and Hoary bats were all detected crossing Lake Erie during migration. Little Brown Myotis is non-migratory, and most of their movements were within 50 km of their capture location, providing information about postbreeding dispersal. Results from this work has demonstrated, for the first time, that that migratory bats do regularly cross Lake Erie during migration. Anecdotal evidence collected from LPBO suggests that these flights are often low over the water and probably within striking distance of potential wind turbine blades. The 2015 results have also spurred an exciting two-year expansion of the project in collaboration with Texas Tech University, the Pennsylvania Department of Environmental Protection, and the National Oceanic and Atmospheric Administration.

MECHANISMS OF SPRING PROTANDRY IN BLACK-THROATED BLUE, MAGNOLIA, AND YELLOW-RUMPED WARBLERS.

Western University: Dr.Yolanda Morbey, Dr. Ivan Maggini, Dr. Chris Guglielmo, Dr. Jacopo Cecere, Morgan Brown, and Stuart A. Mackenzie.

Males generally precede females during spring migration, and arrive at breeding areas earlier. This phenomenon is called protandry. Multiple hypotheses have been proposed for protandry, yet we still lack good empirical data to properly evaluate these hypotheses. Using the new Motus radiotelemetry array in southern Ontario, we tested for sex differences in the timing and movement of warblers during stopover at Long Point and beyond. In 2015, we put radiotransmitters on three species (Black-throated Blue Warblers, Magnolia Warblers, and Yellow-rumped Warblers). Before release, we measured birds for body weight, tarsus length, and wing (mm), and scanned birds in a Quantitative Magnetic Resonance Body Composition Analyzer to estimate percent fat and percent lean. Using tag detections at Long Point, we quantified length of stay and patterns of diel activity. We also obtained excellent tracks of individuals as they moved north, away from Long Point.

TEMPORAL AND SPATIAL PATTERNS OF STOPOVER USE IN BLACKPOLL WARBLERS (*SETOPHAGA STRIATA*) AND CANADA WARBLERS (*CARDELLINA CANADENSIS*) ACROSS SOUTHERN CANADA DURING FALL MIGRATION.

Trent University: Dr. Erica Nol and Dr. Phil Taylor (Acadia University). MSc. Candidate Alain Parada

Stopover sites are areas where migrants rest and replenish fat stores. Blackpoll Warblers and Canada Warblers breed in the boreal forests of Canada. The purpose of my research is to provide data on spatial extent, temporal patterns and frequency of Blackpoll Warbler and Canada Warbler movements across overland routes during fall migration. Local and migratory movements of radio-tagged birds will be analyzed using the Motus Wildlife Tracking System. I predict that birds detected by receivers will have a lower average number of relocations per unit area per unit time across south-eastern Canada and north-eastern United States compared to those along the coastal plains between Nova Scotia and Cape Hattera. I also predict that young birds will stop for longer period and have more relocations per unit area throughout the overland migration routes than adults.

PUBLICATIONS IN 2012-2015 BY LPBO AND COLLABORATORS

-All BSC and LPBO related publications are tracked via www.zotero.org
group name: Bird Studies Canada

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APPENDIX 1.

Long Point Bird Observatory 2015 banding totals for LPBO's three field stations: A01 (the Tip), A02 (Breakwater), and A13 (Old Cut). 'Other' represents special research projects and banding outside of standard spring (April 1-June 15) and fall (August 15-November 15) migration monitoring seasons.

Species & Forms	Spring			Fall				
	A01	A02	A13	A01	A02	A13	Other	Total
Acadian Flycatcher	4	1	2					7
American Goldfinch	752	115	39	246	4	131	85	1378
American Redstart	67	36	45	67	72	136		423
American Robin	58	36	43	7	3	29	13	189
American Tree Sparrow	2		102	62		152	192	510
American Woodcock			1	7		6		14
Baltimore Oriole	173	37	15	1	21	7	3	257
Barn Swallow	23	1					9	33
Bay-breasted Warbler	4	3	2	35	34	29		107
Belted Kingfisher	1			1	1			3
Bicknell's Thrush							12	12
Black-and-white Warbler	30	6	9	16	31	35		127
Black-bellied Plover				1				1
Black-billed Cuckoo	5	1	1	4	2	1		14
Blackburnian Warbler	23	5	2	13	38	18		99
Black-capped Chickadee	3	2	4	13	3	13	14	67
Blackpoll Warbler	70	27	23	269	54	19		462
Black-throated Blue Warbler	15	3	23	60	32	164		297
Black-throated Green Warbler	26	14	8	23	26	13		110
Blue Jay	237	19	30	8		7		306
Blue-grey Gnatcatcher						1		
Blue-headed Vireo	23	7	20	19		27		96
Blue-winged Warbler	11	2	7	1			3	24
Bobolink	1	1						2
Bonaparte's Gull	3							3
Brewster's Warbler	1	1	1				7	10
Brown Creeper	29	3	99	140		78	2	351
Brown Thrasher	61	21	26	3	2	5	5	124
Brown-headed Cowbird	281	69	31	5			11	397
Canada Warbler	9	4	11	13	11	25		73
Cape May Warbler	12	19	2	70	32	17		152
Carolina Wren						1	1	2
Cedar Waxwing	24	31	6	86		15	73	237
Cerulean Warbler	3	1						4
Chestnut-sided Warbler	82	21	29	28	31	21		212

Chimney Swift		1						1
Chipping Sparrow	283	109	17	26	8	2	3	448
Clay-coloured Sparrow	3							3
Common Grackle	209	23	117	1		34	45	429
Common Tern				4				4
Common Yellowthroat	145	91	95	69	88	73	21	582
Connecticut Warbler	1			1	2	2		6
Copper's Hawk				2				2
Double-crested Cormorant				1				1
Downy Woodpecker	15	14	1	8	6	13	2	62
Dunlin				1				1
Eastern Bluebird	6	1		1				8
Eastern Kingbird	14	13	2		3			32
Eastern Phoebe	11	2	14	32		15	1	76
Eastern Screech-Owl			4	1		1	4	10
Eastern Towhee	16	2	25	1		3		47
Eastern Whip-poor-will				1				1
Eastern White-crowned Sparrow	192	93	51	26		6		368
Eastern Wood-Pewee	41	23	11	34	17	5	2	133
European Starling	8	12	12	1			19	52
Field Sparrow	58	19	10	20	17	4	4	132
Flicker Integrade	1							1
Fox Sparrow			11	7		40	11	69
Golden-crowned Kinglet	10	6	58	420		310	3	807
Golden-winged Warbler						1	37	38
Grasshopper Sparrow	3							3
Great Crested Flycatcher	10	3	2	2	1	1		19
Grey Catbird	289	147	243	4	37	75	40	835
Grey-cheeked Thrush	8	1	15	37	18	62		141
Hairy Woodpecker		1				1		3
Hermit Thrush	64	40	261	174		152	2	693
Hooded Warbler	4	1	9		1	1		16
House Finch	9	4	15			23	6	57
House Sparrow	4		28	7		186	169	394
House Wren	26	29	26	18	19	38	6	162
Indigo Bunting	30	13	5	2	10	5	1	66
Kentucky Warbler	1		1					2
Killdeer		3						3
Least Bittern				1				1
Least Flycatcher	115	28	28	134	28	42	1	376
Lincoln's Sparrow	123	37	44	2		6	1	213
Long-eared Owl				1				1

Magnolia Warbler	191	54	165	106	141	204		862
Marsh Wren	4		1	1		3	1	10
Merlin	1			2				3
Mourning Dove	11	3	11			7	1	33
Mourning Warbler	10	4	13	7	7	11		52
Myrtle Warbler	161	95	12	450	2	318	1	1039
Nashville Warbler	29	15	13	33	71	95		260
Northern Cardinal	57	19	22	6		25	15	144
Northern Mockingbird	3							3
Northern Parula	8	2	1	9	2	8		30
Northern Rough-winged Swallow	6	1	1					8
Northern Saw-whet Owl		1		151		131		283
Northern Waterthrush	23	12	9	58	58	15	4	179
Orange-crowned Warbler	3		1	6		7		17
Orchard Oriole	18	1			1	2		22
Oregon Junco				1				1
Ovenbird	29	11	37	17	22	47		163
Peregrine Falcon				1				1
Philadelphia Vireo	17	3	17	1	9	17		64
Pine Siskin	46	6	28	43		4		127
Pine Warbler	8		1		1			10
Prairie Warbler	1			1	1	1		4
Prothonotary Warbler						1		1
Purple Finch	13	12	1	2		6	10	44
Purple Martin		2						2
Red-bellied Woodpecker	10	3		2			1	16
Red-breasted Nuthatch	1			10		4	2	19
Red-eyed Vireo	82	26	13	53	91	108		373
Red-headed Woodpecker	5			2				7
Red-winged Blackbird	493	95	278	20	8	33	31	958
Ring-billed Gull				1				1
Rose-breasted Grosbeak	137	64	27	5	18	11		263
Ruby-crowned Kinglet	178	96	133	371		507		1285
Ruddy Turnstone				1				1
Rusty Blackbird		1	1	12				14
Sanderling	1			1				2
Savannah Sparrow	37	3						40
Scarlet Tanager	26	3	1		6	3		39
Sharp-shinned Hawk	2			52	3	10		67
Slate-coloured Junco	141	12	138	120		277	65	753
Snow Bunting							184	184
Song Sparrow	60	36	84	50	4	36	39	310

Spotted Sandpiper		1		1				2
Summer Tanager	2	1						3
Swainson's Thrush	32	14	77	154	186	240	6	709
Swamp Sparrow	122	36	55	16	5	63	3	300
Tennessee Warbler	10	10	5	35	51	28		139
Traill's Flycatcher	128	30	29	51	27	41	4	310
Tree Swallow	10	14	13				387	903
Veery	17	11	44	22	34	36	1	165
Vesper Sparrow	2							2
Warbling Vireo	18	12	7	31	41	15	4	129
Western Palm Warbler	68	37	10	13	10	23		161
White-breasted Nuthatch	6	3		1	2	2	2	16
White-crowned Sparrow	6			24		5		35
White-eyed Vireo	1		2					3
White-throated Sparrow	599	246	572	124		314	4	1864
Wilson's Warbler	55	28	49	46	34	29		242
Winter Wren	6	1	7	28		22		64
Wood Thrush	10	8	40	1				59
Worm-eating Warbler	1							1
Yellow Palm Warbler				1				1
Yellow Warbler	410	105	56	57	65	27	30	750
Yellow-bellied Flycatcher	110	5	42	49	26	39		271
Yellow-bellied Sapsucker	7		1	2		2		12
Yellow-billed Cuckoo	2	1		4	2			9
Yellow-breasted Chat	2			1				3
Yellow-headed Blackbird	1							1
Yellow-shafted Flicker	31	5	3	5	3	8	2	58
Yellow-throated Vireo	2	2			1			5
Total	**7202**	**2352**	**3706**	**4498**	**1584**	**4836**	**1605**	**26313**