LONG POINT BIRD OBSERVATORY

2005 FIELD OPERATIONS REPORT

FEBRUARY 2006

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CANADIAN MIGRATION MONITORING NETWORK

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The Tip of Long Point.

Photo: Brian Pruka

INTRODUCTION:

Long Point Bird Observatory (LPBO) is the oldest bird observatory in North America, founded in 1960 by the Ontario Bird Banding Association. It began with a focus on studying and monitoring migratory birds at Long Point, Ontario, Canada. Since then the organization has evolved and expanded its programs to become what is now Bird Studies Canada (BSC). BSC is recognized nation-wide as a leading and respected not-for-profit conservation organization dedicated to advancing the understanding, appreciation and conservation of wild birds and their habitats, in Canada and elsewhere, through studies that engage the skills, enthusiasm and support of its members, volunteers, staff and the interested public.

LPBO now operates as a program of Bird Studies Canada, maintaining five separate programs largely carried out by volunteers recruited from around the world. These programs are as follows:

1) Migration Monitoring Program
2) Tree Swallow Research
3) Vegetation Monitoring and Breeding Bird Censuses on Long Point
4) Latin American Training Program
5) Doug Tarry Natural History Fund – Young Ornithologist Workshop & Internship.

This report summarizes the program activities in 2005, LPBO's 46th year of operation.

Christian Friis, LPBO Tip Warden, says goodbye to the Tip. Photo: Stu Mackenzie

MIGRATION MONITORING PROGRAM

LPBO began collecting data on bird migration at Long Point in 1960. In 1986, LPBO coined the phrase 'migration monitoring' as a quantifiable method for monitoring populations of many migratory species. This is a particularly valuable method, since it enables us to monitor those species that breed in northern Canada, or other inaccessible areas, which can be difficult to assess with more conventional monitoring methods such as the Breeding Bird Survey. Each spring and fall, staff and volunteers perform daily censuses, banding and observations at each of 3 field stations on Long Point - the Tip (A01), Breakwater (A02), and Old Cut (A13), which is open to the public (Figure 1.). These data are used to derive 'estimated totals' for up to 378 species of birds that have been recorded at Long Point. The result is a huge database. The program has generated a unique and vast data set spanning over four decades — the longest running program of its kind in North America. LPBO has been responsible for banding over 750,000 birds of about 270 species, more than any other non-government organization in the Western Hemisphere. Population trends are derived for 64 of these species which are available online at http://www.bsc-eoc.org/national/migmain.jsp. These trends, in some populations, have been found to correlate with trends from North American Breeding Bird Surveys.

Project Partners:

- Environment Canada / Canadian Wildlife Service–National Wildlife Research Centre
- Ontario Ministry of Natural Resources – Community Fisheries and Wildlife Involvement Program (CFWIP)
- Ontario Ministry of Natural Resources – Terrestrial Assessment Program
- Shell Environment Fund

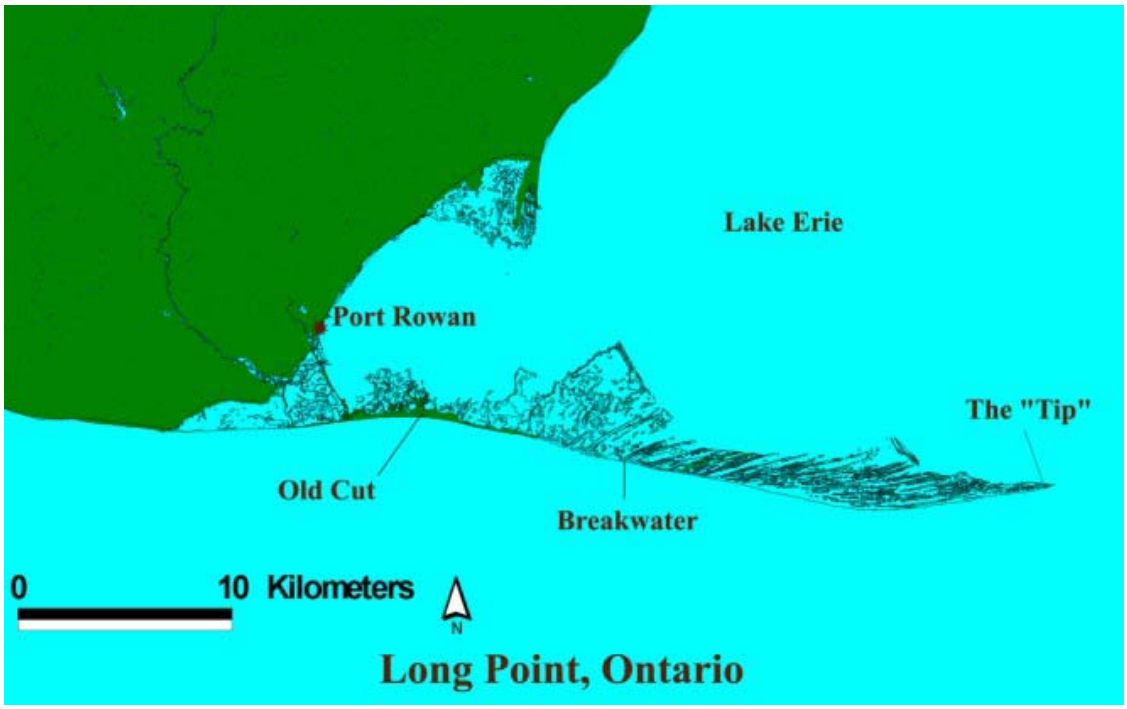


Figure 1. Long Point, Ontario, Canada. The Tip=A01; Breakwater=A02; Old Cut=A13.

SPRING MIGRATION MONITORING SUMMARY

LPBO opened its nets at the Old Cut field station on April 1st to kick off the 46th season of migration monitoring at Long Point. The Tip and Breakwater stations were opened on April 8th and 13th, respectively. A late winter kept the Inner Bay of Long Point frozen well into March, with most inner channels and marshes not freeing up until the first week of April. Luckily for us, this cool start kept ravenous flocks of Golden-crowned Kinglets and Brown Creepers south of us until the first week of April. Our first day of banding yielded 134 birds, another 184 on the 6th, 344 on the 7th and 148 on the 8th at Old Cut alone. The rest of April was relatively slow with only a mediocre mix of Ruby-crowned Kinglets, sparrows and blackbirds moving through. A record early Lincoln's Sparrow was observed at Old Cut on April 7th and another record early bird, a Yellow-throated Vireo, was banded on the 18th.

The majority of temperate migrants like Hermit Thrushes, Myrtle Warblers, White-throated and Chipping Sparrows didn't push through until the first week of May. This wave coincided with the first push of neo-tropical migrants, creating a large concentration on the point which was not short of surprises and interesting movements. For the most part, Breakwater was the place to be this spring. A White-winged Dove flew past on May 2nd and Long Point's first Spotted Towhee was observed singing on the 5th. On May 9th, Long Point's second and Ontario's seventh Swainson's Warbler was banded, while the season's first Summer Tanager waited to be processed. Eleven Summer Tanagers of all ages and sexes were observed at LPBO this spring but only two were banded. On the 11th, a Yellow-throated Warbler was singing in the area, while the season's only Prothonotary Warbler was banded.

The first week of May was spectacular everywhere on Long Point. Between the 4th and 11th of May, LPBO banded one quarter of its entire spring total, 4228 birds. On the 10th, 889 birds of 70 species were banded, and 783 birds of 71 species were banded on the 11th. The Tip witnessed a spectacular movement of Rose-breasted Grosbeaks on the 10th, with 203 recorded on the one-hour morning census, while sore- fingered volunteers banded 37. At least two Kentucky Warblers were present at Old Cut from the 6th to 12th. Shortly thereafter, the first of 3 Worm-eating Warblers was observed at Old Cut on the 14th, the second was banded at Breakwater on the 29th and the third was banded at the Tip on June 3rd. All of the warbler species (37) that routinely occur in eastern North America (with the exception of Kirtland's) were observed at LPBO this spring.

LPBO's 1st Lazuli Bunting.
Photo: Stu Mackenzie

Stormy and wet conditions from the 22nd to 24th of May had many swallows foraging low around Breakwater. During this time, the Breakwater crew banded 253 Bank, 77 Tree, 60 Barn, and 2 Northern Rough-winged and Cliff swallows. The spring also produced two other new species for the Long Point area. On May 14th an adult male Western Tanager was found in a local woodlot and on June 1st, just as we thought all the excitement was over, a second-year female Lazuli Bunting was banded at Old Cut!

In spring 2005, LPBO's 40 volunteer field biologists logged over 3500 hours collecting migration data on 255 species and banding 12,969 birds of 128 species. LPBO had 71 days of coverage and 8748 net hours, with a catch rate of 147.7 birds/100 net hours (slightly above 126.7 in 2004). Twelve ground traps, 4 J-Traps and 2 Heligoland traps contributed 27.7% of the catch. Twenty volunteer 'Friends' of LPBO helped to service over 2300 visitors and students of all ages, who enjoyed banding demonstrations among other marvels of the spring migration through the Old Cut field station. A heart felt thank you goes out to all the volunteers and supporters who made this spring at LPBO so successful.

Table 1. Top 10 banded species divided by age ratios at LPBO in spring 2005.

Species	Number Banded	% Second Year	% After Second Year	% After Hatch Year
White-throated Sparrow	1512	51.4	30.4	18.2
Red-winged Blackbird	968	44.2	50.9	4.9
Blue Jay	699	68.1	26.6	5.3
E. White-crowned Sparrow	567	58.0	21.0	21.0
Common Grackle	521	47.8	2.1	50.1
Slate-coloured Junco	518	66.2	27.0	6.8
Ruby-crowned Kinglet	501	56.5	32.3	11.2
Magnolia Warbler	487	55.6	38.4	6.0
Golden-crowned Kinglet	423	60.5	22.0	17.5
Yellow Warbler	407	56.3	36.6	7.1

Volunteer Contributions:

Long-term Volunteers (> 1 month):

Mike Boyd, John Brett, Kenny Burrell, Pamela Cournoyer, Simon Feys, Manfred Fleischer, Benoit Gendreau, Matt Hindle, Adam Knight, Priscilla Lai, Silke Laucht, Leslie Latt, Ted Maddeford, Hugh McArthur, Fergus Nicoll, Erin O'Reilley.

Short-term Volunteers (< 1 month):

Mike Burrell, David Brewer, David Clifton, Peter Coo, Bert Coleman, Jonathon Coleman, Rosalind Ford, Bethany Foster, Dawn Laing, Nechama Levy, Jon McCracken, Ken McNiffe, Colin McShane, Dawn Miles, Richard (Wing) Morse, Anthony Ormond, Louise Peppe, Blanca Perez, Jude Philips, Bill Read, Ron Ridout, Bill Thompson, Doug Tozer, Barry Joyce, Lee Wells, Ayala Wineman, Ross Wood, Ana Yuristy.

LPBO'S second Swainson's Warbler, banded at Breakwater on May 9th.

Photo: Kenny Burrell.

FALL MIGRATION MONITORING SUMMARY

The fall season officially started on August 15th at Old Cut and the Tip with Breakwater opening on the 17th. Would the fall be as interesting as the spring? As it turns out, it was better! Before the official start of the fall season, the Young Ornithologists' Workshop had done a bit work banding the usual late summer movement of Yellow Warblers, Gray Catbirds and Song Sparrows, not to mention the year's only Louisiana Waterthrush, a hatch-year on July 31st. The first big push hit Breakwater on August 23rd, where the crew banded 106 birds, including a hatch-year male Kentucky Warbler -- suggesting that the species bred in Ontario! Hurricane Katrina roared up from the Gulf of Mexico on August 31st and all three stations were waiting for her. By 0700, Long-tailed and Parasitic jaegers were identified far offshore and at 0730 a dark tropical tern flew past about 500m off the Provincial Park. This Sooty Tern would be another first record for Long Point!

There was a burst of activity as September rolled in, with the majority of the flycatchers finishing up as the warblers and Swainson's Thrushes began. On September 14th, a hatch-year male Scissor-tailed flycatcher entertained the Breakwater crew. September was also particularly good for some of the not-so-common migrants such as Yellow-throated Vireo (2 banded, 10 observed), Connecticut Warbler (14 banded, 9 individuals observed) and Prairie Warbler (2 banded, 6 individuals observed).

On September 18th, a spectacle of migration began on Long Point. At the Tip, 23 warbler species (dominated by Blackpoll, Myrtle, Magnolia and Nashville warblers) contributed heavily to the 323 birds banded of 44 species. The 19th was also busy at the Tip, banding 196 birds. The 20th started off mediocre but at about 0730, small flocks of warblers, mostly Blackpoll and Yellow-rumped, started streaming on to the Tip heading west. On the morning census, between 0815 and 0930, 460 Blackpoll Warblers were counted, along with 340 Yellow-rumped Warblers and a flurry of other activity, including one Le Conte's Sparrow. The Tip banded 197 Blackpolls, released 275 unbanded and estimated 1158 for the day. Old Cut was slow and steady that morning until about 1100, when they got hit with a similar mixed-warbler flock dominated by Blackpoll, Cape May and Yellow-rumped. 313 birds were banded at the Tip and 226 at Old Cut, while Breakwater missed the flight completely, banding only 12, and had very few on census.

In the days prior to the big Blackpoll push, adult birds made up between 5 and 30% of the catch. On the morning of the 20th, the ratio was almost equal with 100 hatch-year and 97 after-hatch year birds banded. Most of the birds that day were also very low on fat, with scores of 1 and 2 on a scale of 0 to 7. A small cold front moved through on the night of the 19th, with light to moderate north-west winds overnight that became strong westerlies by day break. The large ratio of experienced and hearty adult birds combined with low fat scores, could suggest that a large movement was stimulated that evening but the birds were subsequently caught over the lake when dawn broke and west winds made the south bound trek difficult. The birds were then forced to head to the closest land they could see, Long Point. By the end of the fall, LPBO had banded 900 Blackpoll Warblers, the highest total ever.

To put October in perspective, LPBO banded an average of 300 birds a day! These high banding totals can be partially attributed to Myrtle Warblers, which pushed through in large numbers after the Blackpolls. 306 of the 443 birds banded at Old Cut on the 16th were Myrtle Warblers. Large flocks of Golden-crowned and Ruby-crowned Kinglets, Brown Creepers and White-throated Sparrows made up the bulk of the rest of October. Normally, movements between the kinglet species are segregated at least by a few days but not this fall.

On the 9th, 565 Golden-crowned Kinglets were estimated at Old Cut compared to 800 Ruby-crowned. On the 10th, 968 Golden-crowned were estimated compared to 373 Ruby-crowned. A few Gray-cheeked Thrushes lingered through October and even into November, with a record late bird observed on November 13th. Two of these thrushes nearly doubled their weight in a two-week stay in the Long Point area. When one was banded around the end of September, it weighed 26.4 g. It was re-trapped 15 days later and weighed 51.4g !

By October 20th we thought we had seen the bulk of the migration, but the Black-capped Chickadees had other plans. 182 of 348 birds banded at the Tip on the 20th were chickadees and the 21st was even more impressive, with 348 of 368 birds banded being chickadees. And then they were done. Old Cut missed the massive movements experienced at the Tip but they banded and recorded much larger than average totals throughout the fall.

LPBO had some good luck with raptors as well this fall, with 27 Sharp-shinned Hawks, 6 Cooper's Hawks and 2 Merlins banded. The highlight was LPBO's sixth Peregrine Falcon, a hatch-year female banded on October 15th. Northern Saw-whet Owl migration monitoring began at Old Cut and the Tip on September 25th and October 1st, respectively and ending on November 1st and 15th. There were 31 nights of coverage at Old Cut and 12 at the Tip. An average number of 457 N. Saw-whet Owls were banded, slightly less than the 583 banded in 2004. We did, however, band 11 Long-eared Owls -- surpassing a previous LPBO record of 9 set in 1965.

The season ended like most other years, with as many as 2 million blackbirds flying over Old Cut to roost in the Long Point marshes. Fifty-five Cave Swallows were recorded in the Long Point area this fall, as part of a major north-east irruption. Individuals were seen at Old Cut on the 6th, 9th, 10th and 13th.

Afternoon Monarch Butterfly censuses were conducted at the Tip and Breakwater for 100 and 35 days, respectively, resulting in counts of 43,769 and 1652, the highest since counts began in 1990. This is quite an incredible recovery from the third lowest counts in 2004 of 3164 and 204 respectively. The bulk of the Monarch migration occurred in two waves coinciding with gentle fronts creating light to moderate north-west winds. The first wave ran from the 31st of August to September 3rd when 12,414 butterflies moved through the Tip. The highest daily count of 6270 Monarchs on the 18th started the second wave, which tallied another 11,812 over the next four days.

LPBO's sixth banded Peregrine Falcon banded at the Tip on October 15th.

Photo: Mike Boyd

In fall 2005, LPBO's 34 volunteer field biologists logged over 5000 field hours collecting migration data on 269 species and banding 16,798 birds of 115 species and forms. This compares to 9787 birds banded of 117 species in 2004. LPBO had 109 days of coverage, yielding 12,328 net hours with a catch rate of 123.0 birds/100 net hours (slightly above 114.4 in 2004). Twelve ground traps, 4 J-Traps and 2 Heligoland traps contributed 10.3% of the catch (17.4 % lower than the spring). Twenty volunteer 'Friends' of LPBO helped to service over 1000 visitors and students of all ages, who enjoyed banding demonstrations among other marvels of the fall migration through the Old Cut field station. A heart felt thank you goes out to all the volunteers and supporters who made the fall season at LPBO so successful.

Table 2. Top 10 banded species divided by age ratios at LPBO in fall 2005.

Species	Number Banded	% Hatch Year	% After Hatch Year	% Other/Unknown:
Myrtle Warbler	1696	80.4	19.2	0.4
Golden-crowned Kinglet	1591	86.4	10.3	3.3
Ruby-crowned Kinglet	1284	82.9	13.2	3.8
White-throated Sparrow	1077	85.0	14.3	0.7
Blackpoll Warbler	900	70.2	29.6	0.2
Brown Creeper	794	67.7	4.0	28.3
Black-capped Chickadee	744	97.3	1..8	0.9
Swainson's Thrush	720	82.6	16..8	0.6
Slate-colored Junco	577	69.5	30.0	0.5
Northern Saw-whet Owl	457	43.5	13.1	SY=24.1; ASY=17.5; TY=1.5 U=0.2

Volunteer Contributions:

Long-term Volunteers (> 1 month):
Mike Boyd, Doug Brown, Quentin Delorme, Jerome Fischer, Samantha Franks, Benoit Gendreau, Andrea Grunst, Melissa Grunst, Johanna Havelaar, Silke Laucht, Louise Peppe, Juan Rivero, Ted Maddeford, Hugh McArthur, Fergus Nicoll, Jesse Pakkala, Norbert Riezing, Josh Sayers, Ross Wood.

Short-term Volunteers (< 1 month):
Jody Allair, Ted Barney, David Brewer, Emily Burton, Peter Coo, Audrey Heagy, Dawn Miles, Sandra Maxwell, Brad M'Leod, John M'Eachen, Clare Eleanour Evelyn Page, Bill Read, Dave Restivo, Ingrid Sandahl, Ana Yuristy.

Dawn at the Tip.

Photo: Stu Mackenzie

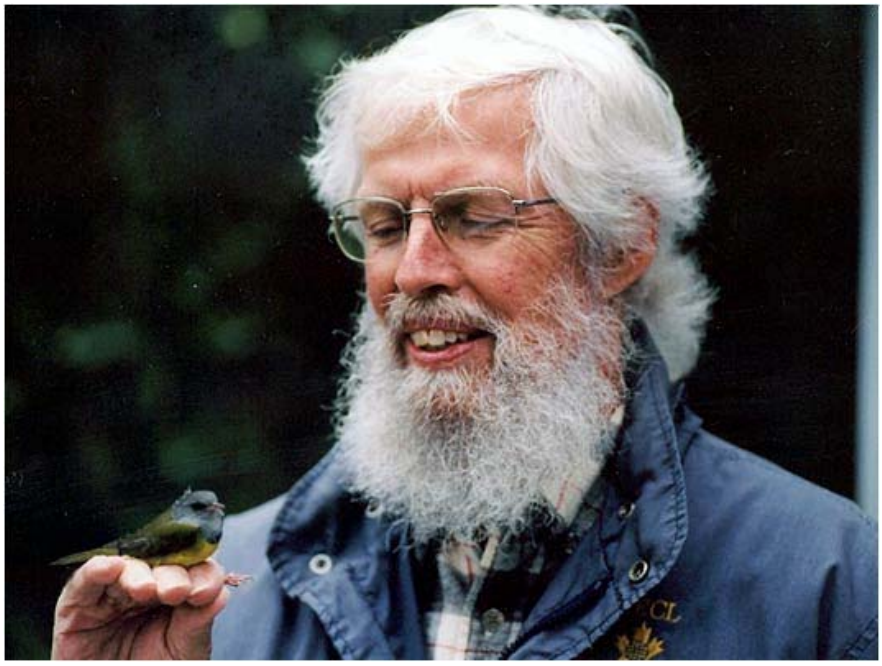
THE FRIENDS OF LONG POINT BIRD OBSERVATORY

In early winter 2004, long-term LPBO volunteer Hugh McArthur and BSC staff organized a new volunteer initiative designed to improve visitor services at LPBO. The fruits of their labour would quickly become a collection of 20, mostly local, volunteers known as the Friends of Long Point Bird Observatory. In 2005 the Friends continued their splendid efforts.

Each day, a few of the Friends kindly greet and inform the visitors to the Old Cut field station while manning the 'LPBO Shoppe'. The 'Shoppe' was open for its second year and continued to bring valuable revenue to support the core programs. The Friends take a great deal of pressure off of the Bander-In-Charge and the volunteers who are often undergoing intensive training. At the same time their presence has increased the quality of our visitor and education services at Old Cut. Thank you all for your help!

Volunteer Contributions:

Hugh McArthur - Volunteer Co-ordinator
Lynne Bradstreet, Bill Coles, Jean Coles, Mary Margaret Dandeneau, Shirley Davidge, Fred Gilman, Pat Finney, Audrey Heagy, Otto Larsen, Gail Larsen, Kathy Jones and company, Ruth Ann Logan, Ted Maddeford, Sandra Maxwell, Diane Salter, Helen Smith, Richard Smith, Evelyn Stone, Emilie White.



The legendary Hugh McArthur, HBM 'Heavily Bearded Man' and a spanking male Mourning Warbler.
Photo: Emily Burton.

TREE SWALLOW RESEARCH PROJECT

Research on Tree Swallows at Long Point has been occurring in some capacity since the late 1960s and has run consistently since 1977. LPBO monitors three nest box 'colonies' of Tree Swallows at Long Point: two on the mainland near Port Rowan (60 boxes each) and the third at the Tip of the point (64 boxes). Under the expert direction of Dr. David Hussell, the objectives of this project are (1) to provide a long-term record of breeding performance of Tree Swallows in relation to insect abundance, weather and climate change, (2) to provide opportunities for short-term research consistent with maintaining the long-term record, (3) to provide training in field ornithology for students and other volunteers, (4) encourage collaboration with other researchers, and (5) to publish results in scientific journals.

Volunteers began sampling insect abundance and diversity as well as taking weather observations on April 19th. Nest checks commenced on May 1st and continued until the last chicks took a leap of faith on their new found wings. Tree Swallows typically lay 4-7 eggs in mid-late May, but we have learned that there is considerable variation among sites and between years, both in mean clutch size and clutch initiation date (Table 3.).

In total, 184 nest boxes were monitored, plus an additional 47 trap boxes that were opened for nesting on May 25. Of these, 179 contained Tree Swallow nests, with an additional 23 in trap boxes. The project crew banded a total of 975 Tree Swallows (798 nestlings, 177 adults). 119 Tree Swallows were caught in trap boxes, 69 of which were new. In addition, 267 previously-banded adults were recaptured, 50 of which from trap boxes.

Table 3. Variation in date of clutch initiation and clutch size among Tree Swallows, 2000-05. SL – Sewage Lagoon, MC = Mud Creek, LP = Long Point. [1] Median date of first egg, 1=1 May.

Year	Median clutch initiation[1]			Mean clutch size		
	SL	MC	LP	SL	MC	LP
2005	13	19	24	5.53	5.17	5.61
2004	13	13	17	5.94	5.27	5.72
2003	19	19	27	5.63	5.30	5.51
2002	28	29	32	5.73	4.94	5.84
2001	10	12	17	6.06	5.39	5.74
2000	10	14	14	5.90	5.33	5.69

Project Partners: Ontario Ministry of Natural Resources – Climate Change Program

Volunteer Contributions: Dr. David Hussell – project leader**.**
Long-term Volunteers (> 1 month):
John Brett, Dr. Gary Burness, Nechama Levy, Louise Peppe, Blanca Perez.
Short-term Volunteers (< 1 month): Lisha Berzins, Bethany Foster, Tara Kelly, Silke Laucht, Jude Philips, Elinor Schindel.

John Brett meticulously weighs a Tree Swallow egg.
Photo: Henri Robert

VEGETATION MONITORING AND BREEDING BIRD CENSUSES ON LONG POINT

White-tailed Deer were extirpated on Long Point by 1870, due to over hunting and poaching. The Long Point Company, following its acquisition of Long Point in 1866, reintroduced deer to the Point. A lack of natural predators subsequently resulted in a herd numerous enough by 1989 that 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. A smaller cull was also carried out in 1994. In 1991, following the first cull, LPBO established 15 breeding bird census plots in a variety of different habitats across Long Point, to monitor vegetation and breeding bird communities following the removal of deer. Vegetation was sampled on all 15 plots in 2005 and breeding bird censuses were completed on three: Red Oak Maple Savannah, Red Oak Ironwood Savannah and Tamarack Slough. Results are posted on BSC's online library at http://www.bsc-eoc.org/library.html .

Project Partners:

- Environment Canada/Canadian Wildlife Service- Ontario Region

Volunteer Contributors:

Dr. Jane M. Bowles, Michael Bradstreet, Benoit Gendreau, Christian Friis, Stuart Mackenzie, Jon McCracken.

The wilds of Long Point.
Photo:LPBO

DOUG TARRY NATURAL HISTORY FUND

Thanks to the generosity and foresight of the late Doug Tarry, the Doug Tarry Natural History Fund was established to support educational activities for young people at LPBO. This supports the Young Ornithologists' Workshop and Student Internship for teenagers from across Canada.

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. The Workshop supports 6 teens from across Canada who come to Long Point and become immersed in bird and natural history studies for 10 days. The Internship invites past workshop participants back to Long Point to become immersed in the Migration Monitoring Program, while designing and implementing their own research project.

Since its inception in 1977, these programs have been the jumping off point for many of today's most talented field biologists in Canada.

Young Ornithologists' Workshop (YOW)

In 2004, the YOW was extended from a one-week to a 10-day program which continued in 2005 thanks to a grant from the Natural Science and Engineering Research Council (NSERC) PromoScience program. Six exceptional participants were selected from across Canada (Table 5). Participants arrived on July 29th and departed on August 7th.

Bird banding and migration monitoring were the main focus but numerous other activities were undertaken to expose the group to a wide range of ornithological, biological, conservation, and other scientific experiences. Some main topics covered in workshop were as follows:

Migration Monitoring Techniques –*censussing, estimating daily totals, banding*
Banding – *bird handling, biometric data, ageing and sexing, mist net and trap use*
Breeding Bird Ecology – *nest searching, colour banding, breeding bird censussing*
Insect Ecology – *moth and butterfly expeditions*
Bird Taxonomy and Anatomy – *examination and preparation of study skins*
Natural History Tour of Long Point – *studying natural communities of Long Point.*
Scientific Method – *Hypothesis testing, data collection and management*

Table 5. 2005 YOW participants.

Name	Origin	Name	Origin
Lucas Beaver	Corbeil, ON	Elizabeth Brennan	Calgary, AB
Sydney Bliss	Sackville, NB	Dominic Cormier	Halifax, NS
Nelson Bodnar	Delhi, ON	Tim Snieder	Sarnia, ON

The 2005 YOW crew examining the Tip.

Photo: Tara Crewe

Young Ornithologist Internship (YOI)

The YOI consisted of two of last year's YOW participants (Table 6). Daniele examined relationships of wind strength and other weather factors to foraging and flight behaviour of swallows at the Tip. Christian wandered the dunes of the Tip census area in search of Tiger Beetles to test a hypothesis relating weather conditions to Tiger Beetle activity on the point. In addition to their special research project, the YOIs participated in every aspect of the migration monitoring program for the month of August. Three other YOW alumni returned for up to a month to volunteer at LPBO this year, again thanks to the Tarry Fund and NSERC.

Table 6. 2005 Internship participants.

Name	Origin
Christian Lunn	Lower Sackville, NS
Daniele Mitchell	Ottawa, ON

Project Partners:

- Doug Tarry Natural History Fund
- National Science and Engineering Research Council (NSERC) – PromoScience
- Ontario Bird Banding Association (OBBA)

Volunteer Contributions:

Peter Carson, Mary Gartshore and many Bird Studies Canada staff. Tara Crewe, Silke Laucht and Ross Wood were a great help.

The 2005 YOW crew, from left to right, Dominic Cormier, Lucas Beaver, Tim Snieder, Sydney Bliss, Nelson Bodnar and Elizabeth Brennan.
Photo: Stu Mackenzie

LATIN AMERICAN TRAINING PROGRAM

Since 1988, LPBO has been operating a series of Latin American training initiatives. The training program had its roots in a multi-year collaborative research project in Cuba, and then expanded to accept applicants from the rest of Latin America in 1996. In 2002 BSC/LPBO conducted two training workshops in Jamaica with a subsequent follow-up workshop at LPBO. Following on this ground work in Jamaica, the 2005 program was delivered in two phases.

2005 JAMAICA TRAINING WORKSHOP

In winter of 2005, LPBO staff facilitated a rigorous 15-day ornithological training workshop at the Windsor Research Centre, in the heart of Cockpit Country, Jamaica. There were eight participants from four countries: Cuba, Dominican Republic, Puerto Rico, and Jamaica (see Table 7). These individuals received intensive training on all aspects of bird banding, migration monitoring program operations, forest bird monitoring techniques, and habitat and vegetation surveys.

Freddy Santana and Kevin Boswell return from a successful net round.

Dwayne Reid performs vegetation surveys in the lush Jamaican forest.

A Caribbean Dove (*Leptotila jamaicensis*) banded in Jamaica.

Photos: Stu Mackenzie

JAMAICA FOLLOW-UP TRAINING PROGRAM AT LONG POINT

In any training regimen, follow up is essential. Following in LPBO's tradition of providing special month-long training for Latin Americans at Long Point, the top three graduates of the Jamaica project were invited to attend. These promising individuals were immersed in our migration monitoring program from September 10th to October 10th. This is the perfect time to examine neo-tropical migrants in basic plumage on their southward trek to their wintering grounds in Latin America. Our trainees had the opportunity to develop, practice and perfect the skills and ornithological techniques required to run all the facets of a landbird monitoring program in their home countries. While at Long Point they worked along side LPBO's suite of international volunteers applying their skills in an active research team setting at one of the busiest bird observatories in North America.

Table 7. 2005 Latin American Training Program Participants. * Participated in both the Jamaica and Long Point programs in 2005. ** Participated in Jamaica and Long Point programs in 2002- 2005.

Name	Origin
Kevin Boswell	Kingston, Jamaica
Manuel J. Cruz *	Anasco, Puerto Rico
Wayne Francis	Trelawny, Jamaica
Paul Greenland	Kingston, Jamaica
Raphael Lorenzo *	Santa Domingo, Dominican Republic
Dwayne O'Neil Reid	Hanover, Jamaica
Freddy R. Santana *	Santiago de Cuba, Cuba
Chris S. Samuels **	Dophin Head, Jamaica

Project Partners: - Funding was provided through BirdLife International by the United Nations Environment Program – Global Environmental Facility and the Environmental Foundation of Jamaica. The Windsor Research Centre provided excellent facilities in which to perform the Jamaica workshop.

Volunteer Contributions: Christian Friis volunteered his time to co-lead the Jamaica workshop.

The Windsor Research Centre.

Photo: Stu Mackenzie

SPECIAL RESEARCH INITIATIVES

LPBO has a unique capacity to be involved in a variety of scientific endeavours that often meld into the regular program schedule. We have modern and accommodating facilities to house and service researchers studying a variety of topics. The following is a brief summary of the research projects pursued in 2005 using LPBO data or resources.

Blue-winged and Golden-winged Warbler Migratory Connectivity Project.

Kevin Fraser, graduate student with Queen's University, is using stable isotope analysis of crown feathers and toe-nail clippings from birds caught on migration in an attempt to determine non-breeding origins. Samples were collected from all three LPBO stations in spring 2005.

Canadian Migration Monitoring Network ecto-parasite and climate change study.

The first year of the cross Canada CMMN collaborative ecto-parasite and climate change study kicked off in 2005. This study is examining the possible effects of climate change on the spread of diseases transmitted by ecto-parasites (ticks) on migratory birds. Of 12,869 birds banded in spring 2005, LPBO examined the heads (the most regular location for infestation) of 9580 and performed entire body investigations of 81 birds. LPBO collected 213 of 261 ticks observed from 122 individuals (or 1.3 % of birds sampled). The ticks were sent to the National Microbiology Lab in Winnipeg to be identified and screened for diseases. LPBO was an integral part of the data collection in 2005 and will continue to do so in 2006.

DNA bar-coding of the breeding birds of North America.

In 2004, LPBO collected 407 feather samples from 105 species for the bar-coding life initiative centred in Dr. Paul Hebert's Lab at the University of Guelph. In 2005 LPBO continued to collect feathers of target species.

For more information visit www.barcodinglife.com or refer to;

- Hebert, P.D.N., Stoeckle, M.Y., and Francis, C.M. 2004. Identification of Birds through DNA barcoding. Public Library of Science - Biology 2(10): 1657-1663.

Immune response in female and nestling Tree Swallows.

Dr. Gary Burness, Assistant Professor at Trent University, and Ph.D candidate Elinor Schindel, conducted research at the Sewage Lagoon and Mud Creek sites on the effects of food abundance on the ability of adults and young to mount an immune response and the relationship between immune responses and corticosterone levels. This was a repeat of research undertaken in 2004. About half of the nests at each site were assigned to these experiments. Analyses so far indicate no differences in immune response between sites.

Incubation behaviour of Tree Swallows.

John Brett, undergraduate student at the University of Toronto, carried out an experiment at the Tip of Long Point to test whether incubation behaviour was influenced by nest box temperature. Nest boxes were heated, cooled or not treated overnight and incubation temperatures measured with I-buttons the next day, to determine whether the female's incubation behaviour was constrained by her energy balance. No effect was detected.

Influence of changes in the light beam of the Long Point lighthouse on nocturnal migrants and age ratios.

Silke Laucht, a volunteer from Germany in 2004, returned for almost the entire 2005 season to conduct her MSc research while stationed at LPBO. She investigated whether changes in the intensity of the light beam at the Long Point lighthouse have resulted in changes in the pattern of nocturnal migration at the Tip. She examined age and sex compositions of birds captured at the Tip before and after a switch in the light beam, relative to the same parameters at the other two field stations. There were no significant changes noted as a consequence of the change in the light characteristics. The Tip station continues to be seen somewhat as an anomaly, because age ratios there tend to be more characteristic of an inland site than a coastal site. It had previously been suggested that the anomaly was due to the presence of the lighthouse.

Investigation of "floating" Tree Swallow populations.

Dr. David Hussell continued investigation of "floating" Tree Swallow populations using supplementary trap boxes to capture box-less adults. The main objective of this study is to continue to document the composition of these floating populations and to determine whether status of floaters detected in 2001-2005 change over time.

Linking spring migration patterns of wintering ground populations of passerines using stable istopes.

Barry Joyce, undergraduate student with Carleton University, is investigating links between spring migration routes and wintering sites using stable isotope analysis of feather samples from Myrtle Warblers. Individuals were sampled from Long Point and Prince Edward Point in the spring of 2005.

Sperm morphology and evolution in Passerines.

Simone Immler and Stephan Leopold, post-doc and PhD student at the Univeristy of Sheffield, UK, are examining sperm morphology in the New World Warblers and Icterids respectively. Simone is studying the evolution of sperm morphology in passerines which consists of a comparative study of species belonging different passerine families. Stephan is examining the influence of sperm shape and function on male fertility in birds specifically within the diverse Icterid family. In 2006, LPBO will aid in the cloacal sampling of the families *Icteridae* and *Parulidae* for their studies.

PUBLICATIONS IN 2004-2005 BY LPBO CONTRIBUTORS OR USING LPBO DATA.

Bart, J., K. P. Burnham, E. H. Dunn, C. M. Francis, and C. J. Ralph. 2004. Goals and strategies for estimating trends in landbird abundance. J. Wildlife Management 68: 611-626.

Flinn, T. 2004. Spring Warbler Migration in Ontario:2004. Toronto Ornithological Club, Toronto, ON. 38pp.

Hussell, D.J.T., and C.J.Ralph. 2005. Recommended methods for monitoring change in landbird populations by counting and capturing migrants. North American Bird Bander 30(1): 6-20.

Mackenzie, S.A.. 2004. Long Point Bird Observatory Spring Report: Atlantic Flyway Review. North American Bird Bander 29(4): 202

Mackenzie, S.A.. 2005. Long Point Bird Observatory Fall Report: Atlantic Flyway Review. North American Bird Bander 30(4): 185-186.

McKinney, R.G. 2004. Skull Pneumatization in Passerines: A Table of Last Dates Many Passerines in the Northeast can be aged safely by skulling. North American Bird Bander 29(4) 164-170.

Mills, A.M. 2005. Changes in the timing of spring and autumn migration in North American migrant passerines during a period of global warming. Ibis 147:259-269.

Mills, A.M. 2005. Protogyny in autumn migration: do male birds 'play chicken'? The Auk 122(1): 71-81.

Nol, E., Francis, C.M. and D.M. Burke. 2005. Using distance from putative source woodlots to predict occurrence of forest birds in putative sinks. Conservation Biology 19:836-844.

ADDITIONAL THESIS:

Brett, J. 2005. Is incubation constancy constrained by an energetic trade-off in the tree swallow, Tachycineta bicolour? Course Paper, University of Toronto.

Daniele, M. 2005. The effect of wind velocity on Swallow Activity. Long Point Bird Observatory Young Ornithologist Internship Report, 7 pp.

ORAL PRESENTATIONS:

Wolfe, K. 2005. The effects of average egg temperature on the length of incubation periods in Tree Swallows. Tri-Beta Regional Research Conference, 9 April 2005.

Wolfe, K. 2005. The effects of average egg temperature on the length of incubation periods in Tree Swallows. Penn State Behrend – Sigma Xi Undergraduate Research Conference, 16 April 2005. (1st place poster).

Appendix 1. LPBO band recoveries in 2005. A01 = Tip, A02 = Breakwater, A13 = Old Cut, BCNWA = Big Creek National Wildlife Area.

Species	Band Number	Date Banded	Date Recovered	Days Between Capture	LPBO Station	Location Recovered	Distance (km)
American Robin	1152-64550	May 1, 2004	November 13, 2004	166	A01	Glencoe, Pennsylvania	344
Bald Eagle	0629-25244	June 2, 1998	May 2, 2005	2470	Nest	Brownsville, Ohio	251
"	0629-29502	June 11, 2004	May 5, 2005	328	Nest	Detroit Edison Power Plant	156
Brown-headed Cowbird	1681-37735	April 29, 2004	May 18, 2004	20	A02	Dunnville, Ontario – Rock Point Bird Observatory	66
Blue Jay	1152-35302	April 21, 2002	November 25, 2005	553	A02	Remsen, New York	428
"	1152-64530	April 29, 2004	May 10, 2004	12	A13	West Greece, New York	230
"	1152-64976	May 7, 2004	May 12, 2004	5	A13	Leamington, Ontario	178
"	1162-92372	May 11, 2004	May, 2004		A01	Youngstown, New York	110
"	1162-92486	May 13, 2004	February 1, 2005	263	A01	Cherry Fork, Ohio	46
Chipping Sparrow	2370-84420	October 15, 2004	May 4, 2005	201	A01	Ruthven, Ontario – Haldimand Bird Observatory	200
Common Grackle	1063-07871	Apil 26, 2004	June 8, 2004	43	A01	Kingsville, Ontario	200
Magnolia Warbler	2330-19121	May 26, 2003	May 22, 2005	727	A02	Port Huron, Michigan	195
Myrtle Warbler	2170-86772	October 7, 2000	February 6, 2002	487	A01	Homosassa, Florida	1156
"	2370-84911	October 27, 2004	2005		A01	Edgemere, Maryland	482
Northern Goshawk	0816-33910	October 1, 2002	December 9, 2002	70	A01	Genoa, Ohio	297
Northern Saw-whet Owl	0764-32389	October 18, 1999	October 11, 2004	1820	A13	St.Williams, Ontario	19
"	1293-37102	November 3, 2001	October 11, 2004	1073	A01	"	33
"	1273-53831	October 12, 2003	October 27, 2004	381	A13	Holiday Beach Migration Observatory, Ontario	227
"	1273-55405	October 18, 2003	January 14, 2005	454	A13	Brighton, Michigan	273
"	1273-55445	October 21, 2003	October 20, 2005	730	A13	Selkirk Prov. Park – Haldimand Bird Observatory	45
"	0634-69186	October 23, 2003	October 20, 2005	728	A13	Lakefield, Ontario	269
"	0634-69195	October 27, 2003	October 27, 2004	366	A13	Holiday Beach Migration Observatory, Ontario	227
"	0634-69194	October 27, 2003	August 8, 2004	286	A13	Diamond Lake, Ontario	321

Species	Band Number	Date Banded	Date Recovered	Days Between Capture	LPBO Station	Location Recovered	Distance (km)
"	0634-69328	November 6, 2003	February 12, 2005	440	A01	Arley, Alabama	1134
"	0924-12016	October 3, 2004	October 27, 2004	24	A13	Holiday Beach Migration Observatory, Ontario	227
"	0924-12947	October 11, 2004	December 13, 2004	63	A13	Fulks Run, Virginia	445
"	0634-69353	October 12, 2004	November 10, 2004	29	A01	Timber Creek, Virginia	586
"	0924-13005	October 24, 2004	November 2, 2004	9	A01	St. Williams, Ontario	33
"	0924-12082	October 25, 2004	March 27, 2005	153	A13	Oliphant, Ontario	250
"	0924-13100	October 25, 2004	November 26, 2004	32	A01	Gatr Tract Wildlife Management Area, Virginia	708
"	0924-13135	October 25, 2004	November 10, 2004	16	A01	Stuart Knob, West Virginia	409
"	0924-13083	October 25, 2004	Nov ember 4, 2005	375	A01	Carsonville, Pennsylvania	378
"	0924-13111	October 25, 2004	October 19, 2005	364	A01	Stevens Point, Wisconsin	794
"	0924-13086	October 25, 2004	October 3, 2005	343	A01	St. Ignace, Michigan	526
"	0924-13188	October 31, 2004	April 2, 2005	153	A01	Cheboygan State Park, Michigan	481
"	0924-12137	November 7, 2004	November 9, 2004	2	A13	St. Williams, Ontario	19
"	0924-12172	November 9, 2004	November 10, 2004	1	A13	"	19
"	0924-12175	November 9, 2004	October 20, 2005	345	A13	Elmbrook, Ontario	317
"	0924-12186	November 13, 2004	October 31, 2005	352	A13	Friedensburg, Pennsylvania	413
Prothonotary Warbler	2160-13957	June 29, 1999	July 6, 2005	2199	N/A	Holiday Beach to Rondeau Provincial Park	100
Sharp-shinned Hawk	1373-16463	September 6, 2002	April 18, 2005	956	A01	Lakeport State Park, Michigan	199
"	1063-08075	October 23, 2003	July 2, 2005	618	A13	Grand Remous, Quebec	555
Tree Swallow	2171-21261	June 8, 2001	May 24, 2005	1446	A13	Long Point Causeway, Ontario	14
"	1671-50691	June26, 2002	May 24, 2005	1064	A13	"	14
"	1771-40151	June 25, 2003	May 8, 2005	683	A01	Dry Lake, Ontario	37
"	1771-43854	June 23, 2004	May 24, 2005	333	A13	Long Point Causeway, Ontario	14
Tundra Swan	0519-77619	December 13, 1998	December 13, 2005	2559	BCNWA	Greenville, North Carolina	866
"	0519-77658	March 29, 2003	October 31, 2004	582	BCNWA	Brownsville, Minnesota	890
Wilson's Warbler	2330-21485	May 20, 2004	May 26, 2004	6	A01	Dunnville, Ontario – Rock Point Bird Observatory	66

Species	Band Number	Date Banded	Date Recovered	Days Between Capture	LPBO Station	Location Recovered	Distance (km)
Wood Duck	0606-84545	August 4, 2004	September 4, 2004	31	A13	Port Rowan, Ontario	10
Wood Duck	0606-84547	August 4, 2004	November 13, 2004	101	A13	Bentley, Louisiana	1650
Whip-poor-will	1202-17627	September 26, 2004	October 23, 2004	27	A13	Cleveland, Ohio	170
Yellow Warbler	2290-31232	June 14, 2002	May 13, 2005	1064	A01	Port Dover, Ontario	23
“	2350-63355	May 19, 2004	May 25, 2004	6	A02	Hartford, Connecticut	626

APPENDIX 2. 2005 LPBO re-capture summary. Birds with at least one return record in 2005.

Species	Foreign Controls	LPBO Birds	Species	Foreign Controls	LPBO Birds	Species	Foreign Controls	LPBO Birds
American Goldfinch	1	11	European Starling	0	3	Red-bellied Woodpecker	0	2
American Redstart	0	12	E. White-crowned Sparrow	0	83	Ruby-crowned Kinglet	0	70
American Robin	0	16	Field Sparrow	0	11	Red-eyed Vireo	0	23
American Woodcock	0	2	Fox Sparrow	0	16	Red-headed Woodpecker	0	2
American Tree Sparrow	0	17	G. White-crowned Sparrow	0	2	Red-winged Blackbird	0	270
Baltimore Oriole	0	33	Great-crested Flycatcher	0	1	Slate-coloured Junco	0	137
Barn Swallow	0	2	Golden-crowned Kinglet	1	57	Scarlet Tanager	0	1
Black and White Warbler	0	11	Gray-cheeked Thrush	0	59	Song Sparrow	0	88
Bay-breasted Warbler	0	1	Gray Catbird	1	100	Sharp-shinned Hawk	1	2
Black-capped Chickadee	0	71	Hermit Thrush	0	66	Swamp Sparrow	0	9
Brown-headed Cowbird	1	64	House Finch	0	2	Swainson's Thrush	0	72
Blue-headed Vireo	0	5	House Sparrow	0	14	Tree Swallow	0	357
Blue Jay	0	104	House Wren	0	27	Traill's Flycatcher	0	8
Blackpoll Warbler	0	20	Indigo Bunting	0	1	Veery	0	14
Brown Creeper	0	67	Least Flycatcher	0	3	Warbling Vireo	0	4
Brown Thrasher	0	9	Lincoln's Sparrow	0	8	White-breasted Nuthatch	0	8
Black-throated Blue Warbler	0	22	Magnolia Warbler	1	54	White-eyed Vireo	0	1
Black-throated Green Warbler	0	1	Mourning Dove	0	2	Wilson's Warbler	0	14
Blue-winged Warbler	0	1	Mourning Warbler	0	4	Winter Wren	0	6
Carolina Wren	0	13	Myrtle Warbler	0	41	Wood Thrush	0	2
Canada Warbler	0	9	Nashville Warbler	0	9	Western Palm Warbler	0	1
Cedar Waxwing	0	1	Northern Cardinal	0	39	White-throated Sparrow	1	319
Chipping Sparrow	0	37	Northern Waterthrush	0	3	Yellow-breasted Chat	0	2
Cape May Warbler	0	3	Northern Rough-winged Swallow	0	2	Yellow-billed Cuckoo	0	3
Common Grackle	2	151	Northern Saw-whet Owl	25	58	Yellow-bellied Flycatcher	0	1
Common Yellowthroat	0	30	Orange-crowned Warbler	0	1	Yellow-bellied Sapsucker	0	3
Chesnut-sided Warbler	0	6	Ovenbird	0	20	Yellow-shafted Flicker	0	3
Downy Woodpecker	0	18	Philadelphia Vireo	0	2	Yellow Warbler	0	41
Eastern Kingbird	0	3	Pine Siskin	1	1			
Eastern Phoebe	0	2	Prairie Warbler	0	1	**TOTAL**	**35**	**2942**
E. Towhee	0	12	Purple Finch	0	1			
E. Wood Pewee	0	10	Rose-breasted Grosbeak	0	6			
E. Tufted Titmouse	0	1	Red-breasted Nuthatch	0	17			

Appendix 3. 2005 LPBO Migration Monitoring Species Summary.
*=High Estimated Total (ET) on more than one day at more than one location.
NB = incidentally captured and not banded.

Species	High ET; day/month; Station	Banded Spring	Banded Fall	Special Projects	Total Banded
Red-throated Loon	10; 10/5; A02	0	0	0	0
Common Loon	114; 25/4 – A02	0	0	0	0
Pied-billed Grebe	3; 10/9 – A02	0	0	0	0
Horned Grebe	160; 23/10 - A01	0	0	0	0
Red-necked Grebe	2; 13,23/10 – A01	0	0	0	0
Double-crested Cormorant	25 000; 28/9 – A01	0	0	0	0
American Bittern	4; * A13 & A02	0	0	0	0
Least Bittern	2; * - A02	0	0	0	0
Great Blue Heron	24; 8/10 – A01	0	0	0	0
Great Egret	10; 8/10 - A13	0	0	0	0
Snowy Egret	1; 3, 5/6 – A13	0	0	0	0
Cattle Egret	1; 8/11 - A13	0	0	0	0
Green Heron	13; 10/5 – A13	1	0	0	1
Black-crowned Night Heron	2; * - A13	0	0	0	0
Turkey Vulture	206; 15/10 – A13	0	0	0	0
Lesser Snow Goose	7; 29/10- A13	0	0	0	0
Cackling Goose	1; 5/9 - A01	0	0	0	0
Canada Goose	587; 8/10 – A01	2	0	0	2
Brant	16; 9/10 - A01	0	0	0	0
Mute Swan	8; 28/4 – A02	0	0	0	0
Trumpeter Swan	1, 14/4 – A02	0	0	0	0
Tundra Swan	203; 14/11 – A13	0	0	0	0
Wood Duck	67; 28/9 – A13	0	0	0	0
Gadwall	8; 15/9 – A02 & 1/10 – A13	0	0	0	0
American Wigeon	185; 15/9 – A02	0	0	0	0
American Black Duck	123; 27/8 - A02	0	0	0	0
Mallard	1200; 13/9 – A02	0	0	0	0
Blue-winged Teal	250; 14/9 – A02	0	0	0	0
Northern Shoveler	400; 8/11 – A13	0	0	0	0
Northern Pintail	96; 19/9 – A02	0	0	0	0
Green-winged Teal	485; 8/11 – A13	0	0	0	0
Canvasback	313; 8/11 – A13	0	0	0	0
Redhead	388; 12/11 – A13	0	0	0	0
Ring-necked Duck	600; 2/11 – A01	0	0	0	0
Greater Scaup	650; 22/4 – A02	0	0	0	0
Lesser Scaup	201; 2/11 – A01	0	0	0	0
Unidentified Scaup	5300; 8/11 – A13	0	0	0	0
Harlequin Duck	4; 14/10 – A01	0	0	0	0
Surf Scoter	93; 10/5 – A02	0	0	0	0
White-winged Scoter	52; 8/10 – A01	0	0	0	0
Black Scoter	13; 24/4 - A02	0	0	0	0
Long-tailed Duck	130; 25/4 – A01	0	0	0	0
Bufflehead	17; 16/4 – A02	0	0	0	0
Common Goldeneye	30; 4/4 – A13	0	0	0	0
Hooded Merganser	9; 3 /4 – A13	0	0	0	0
Common Merganser	364; 8/10 – A01	0	0	0	0
Red-breasted Merganser	700; 21/4 – A02	0	0	0	0
Ruddy Duck	110; 27/10 – A13	0	0	0	0
Osprey	5; 18/9 – A13	0	0	0	0
Bald Eagle	12; 26/9 – A01	0	0	10	10
Northern Harrier	57; - 9/10 - A01	1	0	0	1

Species	High ET; day/month; Station	Banded Spring	Banded Fall	Special Projects	Total Banded
Sharp-shinned Hawk	404; 15/10 – A01	1	27	0	28
Cooper's Hawk	44; 15/10 – A01	1	6	0	7
Northern Goshawk	5; 26/10 – A01	0	0	0	0
Red-shouldered Hawk	33; 14/10 – A13	0	0	0	0
Broad-winged Hawk	12; 3/9 – A13	0	0	0	0
Red-tailed Hawk	120; 14/10 – A13	0	0	0	0
Rough-legged Hawk	5; 14,26/10 – A13	0	0	0	0
Golden Eagle	2; 27/10 – A13	0	0	0	0
American Kestrel	24; 26/9 – A01	0	0	0	0
Merlin	24; 20/9 – A01	0	2	0	2
Peregrine Falcon	5; 26,28/9 – A01	0	1	0	1
Wild Turkey	3; 17/4 – A01	0	0	0	0
Virginia Rail	3; 20/5 – A02	0	0	0	0
Sora	2; 22/8 – A01	0	0	0	0
American Coot	2; 16,17,19/04 – A02	0	0	0	0
Sandhill Crane	54; 10/11 – A13	0	0	0	0
Black-bellied Plover	15; 31/8 – A01	0	1	0	1
American Golden Plover	4; 13/9 & 15/9 – A01	0	0	0	0
Semipalmated Plover	5; 21/8 & 2/9 – A01	0	0	0	0
Piping Plover	1; 23/9 – A01	0	0	0	0
Killdeer	16; 2/5 – A01	2	0	0	2
Greater Yellowlegs	17; 7/4 – A13	0	0	0	0
Lesser Yellowlegs	21; 1/10 – A13	0	0	0	0
Solitary Sandpiper	4; 10/5 – A02	0	0	0	0
Willet	1; 21/8 – A01	0	0	0	0
Spotted Sandpiper	15; 10/5 – A01	0	0	0	0
Whimbrel	1; 20,21/8 & 3,15/9 – A01	0	0	0	0
Hudsonian Godwit	1; 18/8 – A13	0	0	0	0
Ruddy Turnstone	20; 6/9 – A13	0	0	0	0
Sanderling	75; 19/9 – A01	0	0	0	0
Semipalmated Sandpiper	92; 31/8 – A01	0	0	0	0
Least Sandpiper	6 – 17/8 – A01	0	0	0	0
White-rumped Sandpiper	1; 7,11/10 – A01	0	0	0	0
Baird's Sandpiper	4 ; 23/8 – A01	0	0	0	0
Pectoral Sandpiper	6; 31/8 –A01	0	0	0	0
Purple Sandpiper	1; 2/11 – A01	0	0	0	0
Dunlin	45; 11/11 – A13	0	0	0	0
Short-billed Dowitcher	5; 31/8 – A01	0	0	0	0
Wilson's Snipe	7; 23/10 – A01	0	0	0	0
American Woodcock	9; 4/9 – A13	3	13	0	16
Red Phalarope	1; 15/10 – A01	0	0	0	0
Parasitic Jaeger	1; 5/9 – A01	0	0	0	0
Laughing Gull	1; 24/5 & 2/10 – A01	0	0	0	0
Little Gull	21; 7/10 – A01	0	0	0	0
Black-headed Gull	1; 20/9 – A01	0	0	0	0
Bonaparte's Gull	8810; 2/11 – A01	0	0	0	0
Ring-billed Gull	2705; 24/5 – A01	0	0	0	0
California Gull	1; 1/10 – A01	0	0	0	0
Herring Gull	1350; 15/10 – A01	0	0	0	0
Thayer's Gull	1, 20,21/20 – A01	0	0	0	0
Iceland Gull	1; 8,20/4 & 16,22/5 – A01	0	0	0	0
Lesser Black-backed Gull	2; 14/4 – A01	0	0	0	0
Glaucous Gull	1; 14/4, 22/10 & 1/11-A01	0	0	0	0
Great Black-backed Gull	24; 25/5 – A01	0	0	0	0
Black-legged Kittiwake	1;17& 28/9–Between A13 and A01	0	0	0	0

Species	High ET; day/month; Station	Banded Spring	Banded Fall	Special Projects	Total Banded
Caspian Tern	44; 9/10 – A01	0	0	0	0
Common Tern	28 145; 26/9 – A01	0	0	0	0
Forster's Tern	24; 26/9 – A01	0	0	0	0
Sooty Tern	1; 31/8 – A13- Provincial Park	0	0	0	0
Black Tern	10; 13/5 – A02	0	0	0	0
Rock Pigeon	22; 7/5 – A01	0	0	0	0
White-winged Dove	1; 2/5 – A02	0	0	0	0
Mourning Dove	222; 14/4 – A02	32	7	0	39
Eurasian-collared Dove	1 ; 24/8 – A01	0	0	0	0
Black-billed Cuckoo	4; 11/5 – A13 & 21,21/8 - A02	8	4	0	12
Yellow-billed Cuckoo	6; 16/8 – A01	3	12	0	15
Eastern Screech Owl	2 ; * - A13	0	1	0	1
Great Horned Owl	1; 14/5 – A13 & 19/10 – A01	0	0	0	0
Long-eared Owl	4; 26,27/10 –A01	0	11	0	11
Short-eared Owl	1; */10-A01 & 9/8-A13	0	0	0	0
Northern Saw-whet Owl	118; 28/10 – A01	3	457	0	460
Common Nighthawk	54; 29/8 – A13	0	0	0	0
Whip-poor-will	3; 10/5 – A01	3	1	0	4
Chimney Swift	81; 29/8 – A02	0	0	0	0
Ruby-throated Hummingbird	45; 26/8 – A01	0	0	0	328 - NB
Belted Kingfisher	4; 22/8 – A13	0	0	0	0
Red-headed Woodpecker	18; 11/5 – A01	8	0	0	8
Red-bellied Woodpecker	6; 11/5 – A01	25	0	0	25
Yellow-bellied Sapsucker	30; 27/9 – A01	32	24	0	56
Downy Woodpecker	8; 25/9 – A13	17	27	0	44
Hairy Woodpecker	2; 10/9 – A02	1	0	0	1
N. Flicker – Yellow-shafted	181; 18/9 – A01	25	56	0	81
Flicker Intergrade	1; 18/4 & 30/5 – A13	2	0	0	2
Flicker – Red-shafted	1; 20/9 – A01	0	0	0	0
Olive-sided Flycatcher	2; 31/5 – A13 & 9/9 – A02	1	1	0	2
Easten Wood-Pewee	20; 27/5 – A01	44	97	0	141
Yellow-bellied Flycatcher	37; 5/6 – A01	75	110	0	185
Acadian Flycatcher	1; 31/5,2/6-A13; 28/8-A01	0	0	0	0
Alder Flycatcher	2; 30/5 – A01	0	0	0	0
Willow Flycatcher	8; 30/5 – A01	0	0	0	0
Traill's Flycatcher	30; 30/5 – A01	134	156	0	290
Least Flycatcher	44; 22/8 – A01	143	190	0	333
Eastern Phoebe	21; 17/10 – A01	15	59	0	74
Great-crested Flycatcher	7; 10/5 – A01	10	5	0	15
Eastern Kingbird	32; 1/10 – A13	19	8	0	27
Scissor-tailed Flycatcher	1; 14/9 – A02	0	0	0	0
Northern Shrike	2; 28,29/10 – A01	0	1	0	1
White-eyed Vireo	3; 27/5 – A13	4	1	0	5
Blue-headed Vireo	12; 14/5 – A13	44	68	0	112
Yellow-throated Vireo	2; 9/9 – A13	1	2	0	3
Warbling Vireo	12; 21/8 – A02	42	66	0	108
Philadelphia Vireo	7; 27/5 – A01	24	26	0	50
Red-eyed Vireo	45; 10/9 – A02	64	229	0	293
Blue Jay	220; 25/5 – A01	699	15	0	714
American Crow	230; 26/10 – A13	0	0	0	0
Common Raven	1 ; 2/6 – A13	0	0	0	0
Horned Lark	24; 24/10 – A01	0	0	0	0
Purple Martin	407; 27/8 – A01	6	0	0	6
Tree Swallow	1100; 30/4 – A13	104	0	973	1077
N. Rough-winged Swallow	75; 30/4 – A13	8	0	0	8

Species	High ET; day/month; Station	Banded Spring	Banded Fall	Special Projects	Total Banded
Bank Swallow	1965; 31/8 – A02	255	0	0	255
Cliff Swallow	121; 31/8 – A02	2	0	0	2
Cave Swallow	5 ; 9/11 - A13	0	0	0	0
Barn Swallow	3030; 31/8 – A02	86	5	0	91
Black-capped Chickadee	1204; 21/10 – A01	12	744	0	756
Tufted Titmouse	2; 23/10 – A01	2	2	0	4
Red-breasted Nuthatch	28; 14/10 – A01	31	107	0	138
White-breasted Nuthatch	34; 14/10 – A01	6	60	0	66
Brown Creeper	150; 14/10 – A01	283	794	0	1077
Carolina Wren	7; 2/9 – A13	2	14	0	16
House Wren	23; 11/5 – A01	77	187	0	264
Winter Wren	55; 17/4 – A01	58	97	0	155
Sedge Wren	1; */5 – A01, */5 - A02	0	0	0	0
Marsh Wren	9; 3/10 – A01	1	10	0	11
Golden-crowned Kinglet	968; 10/10 – A13	423	1591	0	2014
Ruby-crowned Kinglet	820; 14/10 –A01	501	1284	0	1785
Blue-gray Gnatcatcher	32; 23/8 – A01	0	0	0	17 - NB
Eastern Bluebird	17 ; 2/11 – A13	1	0	0	1
Veery	20; 10/5 – A13	63	68	0	131
Gray-cheeked Thrush	65; 21/9 – A01	27	291	0	318
Gray-cheeked /Bicknell's	1; 20,21/9 – A01 & 22/9 – A13	0	4	0	4
Swainson's Thrush	89; 21/9 – A01	100	720	0	820
Hermit Thrush	159; 16/10 – A01	232	324	0	556
Wood Thrush	26; 10/5 – A13	5	56	0	61
American Robin	987; 26/10 – A13	94	76	0	170
Gray Catbird	66; 10/5 – A01	379	266	0	645
Northern Mockingbird	14; 31/8 – A01	4	4	0	8
Brown Thrasher	23; 5/5 – A01	80	20	0	100
European Starling	42 000; 6/11 – A13	42	21	0	63
American Pipit	222; 7/11 – A13	0	0	0	0
Cedar Waxwing	568; 7/11 - A13	7	41	0	48
Blue-winged Warbler	5; 7/5 – A13	14	3	0	17
Brewster's Warbler	1; 14/5 – A13	0	0	0	0
Golden-winged Warbler	3; 14/5 – A13	2	1	0	3
Tennessee Warbler	15; 20/9 – A01	4	64	0	68
Orange-crowned Warbler	7; 18/9 – A01	5	10	0	15
Nashville Warbler	46; 18/9 – A01	124	196	0	320
Northern Parula	5; 14/5 & 28/9 – A13, A01	7	5	0	12
Yellow Warbler	124; 21/5 – A01	407	137	0	544
Chestnut-sided Warbler	60; 14/5 – A01	122	44	0	166
Magnolia Warbler	72; 19/5 – A13	490	411	0	901
Cape May Warbler	40; 20/9 – A13	9	119	0	128
Black-throated Blue Warbler	28; 27/9 – A13	69	169	0	238
Myrtle Warbler (Yellow-rumped)	2386; 8/10 – A13	176	1696	0	1872
Black-throated Green Warbler	55; 18/9 – A01	33	90	0	123
Blackburnian Warbler	10; 24/5 & 18/9 – A01	20	23	0	43
Yellow-throated Warbler	1; 11/5 – A02	0	0	0	0
Pine Warbler	5; 9/10 – A01	3	4	0	7
Prairie Warbler	1; * - A01 & A13	0	2	0	2
Western Palm Warbler	56; 8/10 – A13	39	109	0	148
Yellow Palm Warbler	1; 14/5,*/10-A13,*/9 & 20/10-A01	1	5	0	6
Bay-breasted Warbler	10; 2/9 – A01	3	51	0	54
Blackpoll Warbler	1158; 20/9 – A01	18	900	0	918
Cerulean Warbler	1 ; 9/5 – A01	0	0	0	0
Black and White Warbler	17; 14/5 – A13 & 18/9 – A01	50	72	0	122

Species	High ET; day/month; Station	Banded Spring	Banded Fall	Special Projects	Total Banded
American Redstart	58; 18/5 – A13	127	213	0	340
Prothonotary Warbler	1; 11/5 – A02	1	0	25	26
Worm-eating Warbler	1; 14/5 A13, 29/5-02,4/6-01	2	0	0	2
Swainson's Wa$rbler	1; 9/5 – A02	1	0	0	1
Ovenbird	28; 10/5 – A13	91	83	0	174
Northern Waterthrush	9; 2/8 – A02	36	80	0	116
Louisiana Waterthrush	1; 31/7 – A13	0	1	0	1
Kentucky Warbler	2; 7, 9/5 – A13	1	1	0	2
Connecticut Warbler	3 ; 20/9 - A01	0	14	0	14
Mourning Warbler	7; 5/6 – A13	23	15	0	38
Common Yellowthroat	36; 20/9 – A01	173	227	0	400
Hooded Warbler	3; 14/5 – A13	7	2	210	219
Wilson's Warbler	13; 29/5 – A13	66	111	0	177
Canada Warbler	14; 15/8 – A01	55	71	0	126
Yellow-breasted Chat	1; * - A01, 02, 13.	5	2	0	7
Summer Tanager	2; 10,11/5 – A13	2	0	0	2
Scarlet Tanager	17; 10/5 – A13	9	12	0	21
Eastern Towhee	18; 5/5 – A01	38	14	0	52
Eastern/Spotted Towhee	1; 10/16 – A01	0	1	0	1
American Tree Sparrow	135; 14/11 – A13	42	81	0	123
Chipping Sparrow	330; 4/5 – A01	395	228	0	623
Clay-colored Sparrow	2 ; 6/5 - A02 ; 27/9 - A01	1	0	0	1
Field Sparrow	44; 4/9 – A01	75	100	0	175
Vesper Sparrow	2; 27/9 & 28/10 – A01	0	0	0	0
Savannah Sparrow	52; 9/5 – A01	41	2	0	43
Grasshopper Sparrow	2; 11/5 – A01	0	0	0	0
Le Conte's Sparrow	1; 21/5 & 20/9 – A01	0	0	0	0
Fox Sparrow	17; 8/4 – A13	22	32	0	54
Song Sparrow	130; 17/10 – A01	192	345	0	537
Lincoln's Sparrow	33; 14/5 – A01	178	24	0	202
Swamp Sparrow	25; 30/4 – A01 & 17/10 - A13	147	158	0	305
White-throated Sparrow	1019; 18/10 – A13	1512	1077	0	2589
E. White- crowned Sparrow	310; 7/5 – A01	567	141	0	708
Gambel's White-crowned Sp.	3; 11/5 – A01	7	0	0	7
Slate-colored Junco	700; 10/4 – A01	518	578	0	1096
Snow Bunting	80; 24/10 – A01	0	0	0	0
Northern Cardinal	19; 24/8 – A13	60	45	0	105
Rose-breasted Grosbeak	340; 10/5 – A01	142	33	0	175
Indigo Bunting	21; 26/5 – A01	21	20	0	41
Lazuli Bunting	1; 1/6 – A13	1	0	0	1
Dickcissel	1; 27/5 – A01	0	0	0	0
Bobolink	113; 30/8 – A13	5	0	0	5
Red-winged Blackbird	82 060 13/11 – A13	969	30	0	999
Eastern Meadowlark	36; 12/10 – A01	1	0	0	1
Yellow-headed Blackbird	1; 25/5 – A01	0	0	0	0
Rusty Blackbird	727; 9/10 – A01	2	0	0	2
Brewer's Blackbird	3 ; 9/10 – A13	0	0	0	0
Common Grackle	900 000; 3/11 – A13	523	21	0	544
Brown-headed Cowbird	1221 – 11/5 – A01	341	5	0	346
Orchard Oriole	11; 10/5 – A01	13	2	0	15
Baltimore Oriole	113; 9/5 – A01	138	112	0	250
Purple Finch	24; 9/10 – A13	20	12	0	32
House Finch	31; 11/11 – A13	11	1	0	12
White-winged Crossbill	2; 4/4 –A13	0	0	0	0
Pine Siskin	19; 23/10 – A01	0	0	0	0

Species	High ET; day/month; Station	Banded Spring	Banded Fall	Special Projects	Total Banded
American Goldfinch	573; 8/11 – A13	282	156	0	438
Evening Grosbeak	4 ; 27/10 – A13	0	0	0	0
House Sparrow	122; 21/8 – A13	30	167	0	197
Total Species and Forms	**275**	**128**	**115**	**4**	**140**
Total Banded		**12 869**	**16 798**	**1218**	**30 885**