Toronto and Region Conservation Authority

Migration Monitoring at TTPBRS
2023 Annual Report

Prepared by Shane Abernethy

February 2024

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INTRODUCTION

The Tommy Thompson Park Bird Research Station (TTPBRS) was established in April 2003 and is operated by Toronto and Region Conservation Authority (TRCA). It is located on Peninsula D within Tommy Thompson Park. The primary objectives of TTPBRS are to aid bird conservation efforts at local, national, and international levels through monitoring, research, and education. This is achieved through participation in the Canadian Migration Monitoring Network following a standard protocol for spring and fall migration monitoring including standard observation and standard capture methodologies.

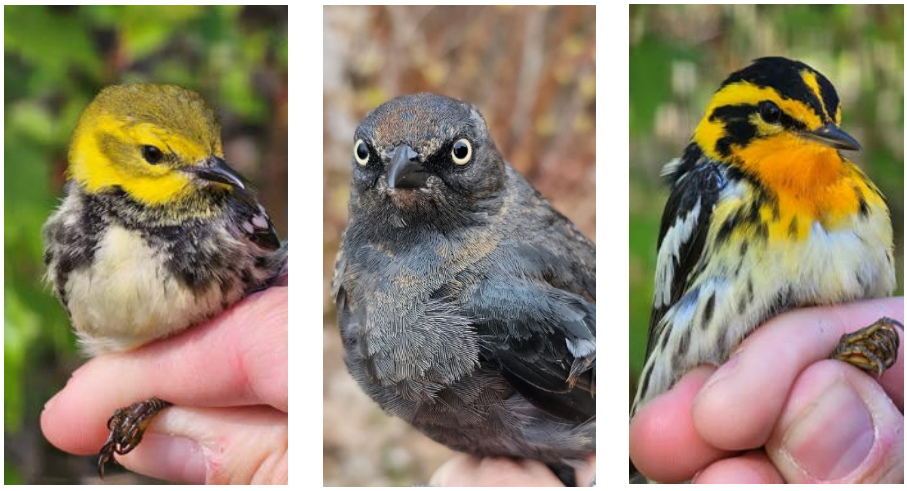
ANNUAL SUMMARY

During the 2023 field season, TTPBRS conducted three main projects: spring migration monitoring, fall migration monitoring, and Monitoring Avian Productivity and Survivorship (MAPS) during the summer. Active mist netting efforts took place on 111 days across all three programs, during which 4,442 birds were captured. Daily operations were overseen by Bander-in-Charge Shane Abernethy, and assisted by approximately 50 volunteers, who contributed 2,282 total hours.

SECTION 1: SPRING 2023

1.1 Summary

The 2023 spring migration monitoring season ran for 70 days between April 1 and June 9, with banding occurring on 45 of those days. 370 staff hours and 774 volunteer hours allowed for the detection of 159 bird species, 78 of which were captured during mist netting. 1,795 birds in total were captured during the season. Fifteen of the 20 standardized mist nets were run regularly between April 1 and June 9. The remaining 5 nets (9, 10, 11, A and B) were only operated once due to their distance from the station and limited personnel. We hosted at least 1,065 visitors during the season, many of which were organized school groups, and at least 200 of whom participated in the Spring Bird Festival.



Several attractive birds captured during spring migration at TTPBRS. From left to right: Black-throated Green Warbler, Rusty Blackbird, Blackburnian Warbler.

1.2 Spring Migration Monitoring

Spring Migration Summary	
Staff and volunteer hours	1,142
Total recorded species	159
Total capture events	1,795
Total species captured	78
Birds banded	1,322
Birds recaptured	435
Birds released unbanded	38
Total net-hours (adjusted)	1,673
Total net-hours (9m mist nets)	1809
Total net-hours (12m mist nets)	316.5
Capture rate	107 / 100 net-hours
Recorded visitors	1,065

Personnel

Bander-in-Charge	Shane Abernethy	
Project Coordinator	Hillary Morris	
Project Manager	Andrea Chreston	
Senior Manager	Karen McDonald	
Volunteers	Abby Godden Alex Hoffman Andrew Brown Ariel Lovejoy Brian Chan Ceana See-Lai Klump Hannah Scott Helen Fong Henry James Ileana Scialla Ivan Tse Jessica Benavides John Nishikawa Julia Zarankin Kazuo Koekebakker	Laura Talbot Lisa Myslicki Luca Villeneff Lynne Freeman Mary Newberry Megan Heft Melad Razzouk Nina Koskenoja Olivia Maillet RuiLin Guo Sarah Bonnett Thomas Leung Vedant Gattani Will Heikoop

The busiest part of the season was the first three weeks of May, during which we caught over 700 birds. See Table 1 in Appendix A for a detailed breakdown of captures.

The TTPBRS team was able to run the season smoothly and adapt to rapidly changing environmental conditions. Challenges ranged from unseasonably warm temperatures, followed immediately by unseasonably cold temperatures, and an unprecedented amount of wildfire smoke pollution towards the beginning of June.

Highlights

Several exciting birds were either captured or sighted during the daily census this spring. The major highlight was the first **Acadian Flycatcher** captured at the station since 2017, likely driven north by extremely smoky conditions farther south. Another major highlight was a **Warbling Vireo** that was originally banded in spring 2011, making it 13 years old and the oldest passerine return on record for TTPBRS! The final major highlight was a very scruffy **American Woodcock**, captured mid-molt at the end of spring.

A male Indigo Bunting, possibly the most striking bird captured this year.

Minor highlights include two male **Indigo Buntings**, a single lovely **Barn Swallow**, and a memorable instance of six **Rose-breasted Grosbeaks** caught in the same net at the same time. A **Prothonotary Warbler** was positively identified on a single rainy census when the lab was closed, but was unfortunately not sighted again.

Another positive development is a substantial increase in the local population of **Tree Swallows**. Severe flooding in 2017 and 2019 led to a dieback of most of the non-native European birch trees on Peninsula D, which were left as standing deadwood. Woodpeckers and chickadees have since excavated cavities, which now provide nesting opportunities for Tree Swallows.

Table 1: 10-year breakdown of mist netting results and effort for spring migration at TTPBRS

Table 2: 10-year breakdown of mist netting results and effort for spring migration at TTPBRS										
	2023	**2022**	**2021**	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**
Birds Banded	1322	2340	2060	---	4070	2240	2659	2621	2369	3145
Birds Recaptured	435	429	356	---	792	451	595	615	713	952
Captured Unbanded	38	72	49	---	67	53	106	51	54	109
Total Captures	1795	2841	2465	---	4929	2744	3360	3287	3136	4206
Net Hours	1673	2911	2715	---	4026	4526.5	4106	4532	4906	5363.5
Captures/100 net hours	107	97.6	90.8	---	122.4	60.6	81.8	72.5	63.9	78.4

1.3 Events and Outreach

Volunteers and Visitors

Migration monitoring operations are staffed by a single individual and therefore the program is highly reliant on the assistance of volunteers. In exchange, these volunteers receive training and experience banding birds, and are able to expand their knowledge of bird ecology. In total, the spring's 28 volunteers contributed 774 combined hours to the program. We were also pleased to host 1,065 visitors throughout the spring, including a

number of school groups, naturalist clubs and guided hikes, most of whom were able to get a close-up look at the bird banding process.

2023 Spring Bird Festival

The TRCA Spring Bird Festival returned to TTP on May 13 after several years of COVID shutdowns! Boreal warblers had arrived in force at that point, and the trees were alive with the *chups* of Yellow-rumped Warblers and the songs of Northern Parulas. Over the course of the event, at least 250 visitors stopped at the bird research station, which operated past its usual hours to allow later visitors to observe the banding process firsthand.

SECTION 2: FALL 2023

2.1 Summary

The 2023 fall migration monitoring season ran for 100 days between August 5 and November 12. Banding occurred on 60 days throughout the season, using 15 mist nets. The remaining 5 standard nets (9, 10, 11, A and B) were not operated due to their distance from the station and limited experienced personnel. 1,210 volunteer-hours and 570 staff-hours resulted in detecting 155 species, 69 of which were captured. 2,072 net-hours were accumulated over the season, allowing us to band 1,972 birds and capture 2,360 in total, yielding an overall capture rate of 113.9 birds/100 net-hours.

2.2 Fall Migration Monitoring

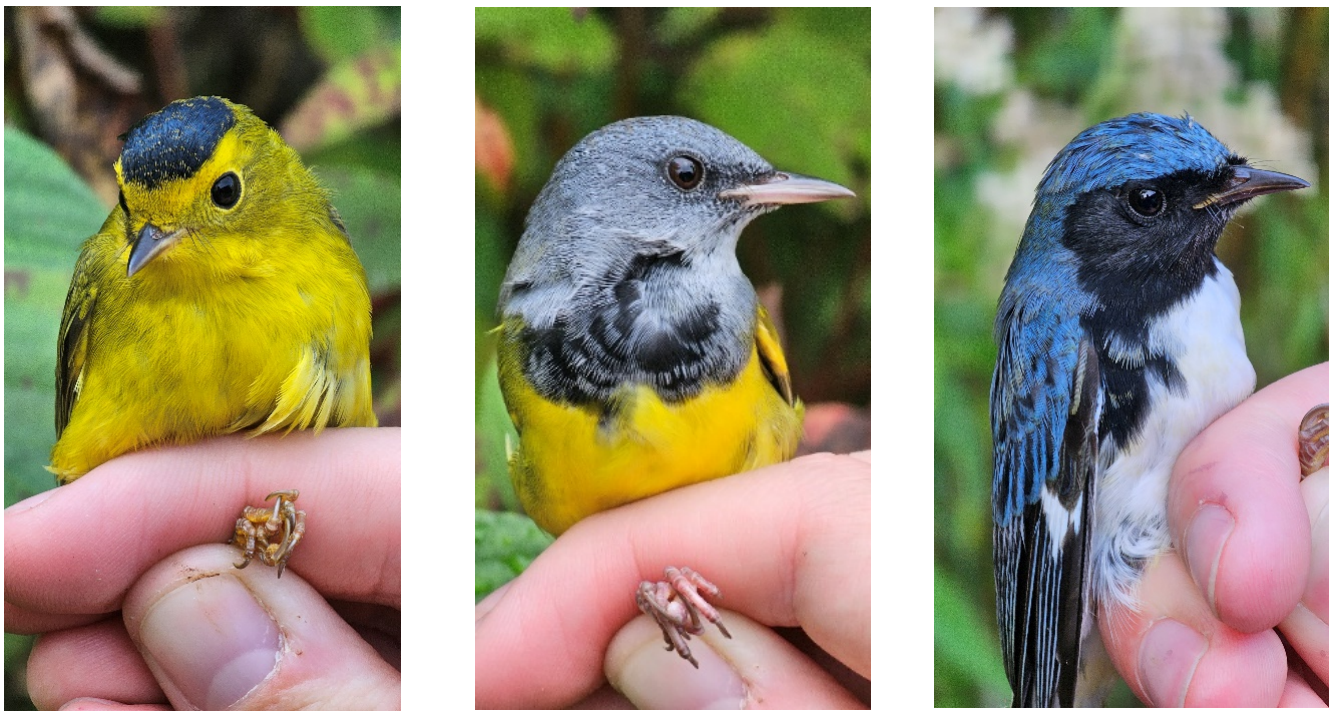
Fall Migration Summary	
Staff and volunteer hours	1,780
Total recorded species	155
Total capture events	2,320
Total species captured	69
Birds banded	1,972
Birds recaptured	352
Birds released unbanded	36
Total net-hours (adjusted)	2,072
Total net-hours (9m mist nets)	2,283
Total net-hours (12m mist nets)	360
Capture rate	113.9 / 100 net-hours
Recorded visitors	795

Personnel

Bander-in-Charge	Shane Abernethy
Environmental Technologist	Hillary Stead
Senior Project Manager	Andrea Chreston
Senior Manager	Karen McDonald

Volunteers	Anne Purvis Ariel Lovejoy Autumn White Brian Chan Camryn O'Keeffe Ceana See-Lai Klump Clara Siu Diana Turchin Elias Malcolm George Thorman Hannah Scott Helen Fong Ivan Tse Jessica Benavides Jim Mackiewicz John Nishikawa	Lama Miri Laura Seaton Lily Domingue Lisa Myslicki Lynda Mackiewicz Lynne Freeman Maleeka Thaker Max Hargreaves McKayla Jarvie Nina Koskenoja Rae Sturge Scott Da Rocha Vedant Gattani Will Heikoop Zachary Khan

Fall proved to be a significantly more challenging season than spring, largely because of persistent poor weather throughout the end of September and most of October. Near-constant high winds caused by a stalled polar vortex forced us to operate census-only or at extremely limited capacity for an extended period, causing us to miss much of the kinglet rush. The most productive day of the season was in early September when an influx of warblers propelled us to 130 captures.



A spread of showy warblers from the fall migration season. From left to right: Wilson's Warbler, Mourning Warbler, Black-throated Blue Warbler.

Highlights

Early in the season, we captured several birds (two Yellow Warblers, a Baltimore Oriole and two Cedar Waxwings) showing an unusual amount of orange in their plumage, likely a result of pigment loading from their consumption of local non-native Tatarian Honeysuckle berries. This academically interesting phenomenon clearly demonstrated how much the local environment factors into a bird's developing plumage.

Other highlights included a single **Connecticut Warbler**, the only bird of that species encountered all year, a pair of **Great Crested Flycatchers**, and a young **Scarlet Tanager**. A large flock of **Yellow-shafted (Northern) Flickers**, sometimes numbering as many as 9, were routinely encountered by nets 5 and 6 for several weeks before one was finally captured and banded.

We also logged the return of one of spring's highlights: the 13-year-old **Warbling Vireo** appeared again, this time in heavy molt. While it is not yet confirmed at the time of writing, the timing of its second capture may have caused it to break the North American longevity record, making it the oldest bird of its species ever recorded! More exciting is that it was actively molting – as Warbling Vireos do not migrate until they finish their fall molt, this was a strong indicator that this bird nested at TTP this year, if not on Peninsula D itself.

Table 3: 10-year breakdown of mist netting results and effort for fall migration at TTPBRS

Table 4: 10-year breakdown of mist netting results and effort for fall migration at TTPBRS										
	2023	**2022**	**2021**	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**
Birds Banded	1972	3459	4529	3975	3172	4592	2430	3396	4090	3871
Birds Recaptured	352	301	438	458	469	583	390	313	534	464
Captured Unbanded	36	79	111	98	190	259	45	42	166	57
Total Captures	2360	3839	5078	4531	3831	5434	2865	3751	4790	4392
Net Hours	2072	3048	5035	2639.4	5854	5127	3810	5457	6845	7509
Captures/100 net hours	113.9	125.9	100.8	145.1	65.4	106	75.2	68.7	70	58.5

2.3 Events and Outreach

Volunteers and Visitors

Each season, TTPBRS recruits volunteers to assist with banding, census and other day-to-day monitoring operations. In exchange, they are trained to handle, band and process wild birds, and receive skills that benefit or develop careers in wildlife biology. This year, we recruited many new volunteers, swelling the total ranks to over 40! In all, 43 volunteers contributed 1,209 total hours over the fall season.

The bird research station is open to the public during the park's open hours, and this fall we were pleased to host 795 recorded visitors. These were a mix of school groups, after-school programs, incidental visitors, and other arranged groups. A number of these visitors were during the annual Butterfly Festival, which alone saw at least 200 visitors to the lab, all of whom were treated to live bird banding demonstrations and explanations of the importance of bird monitoring.

SECTION 3: OTHER PROGRAMS

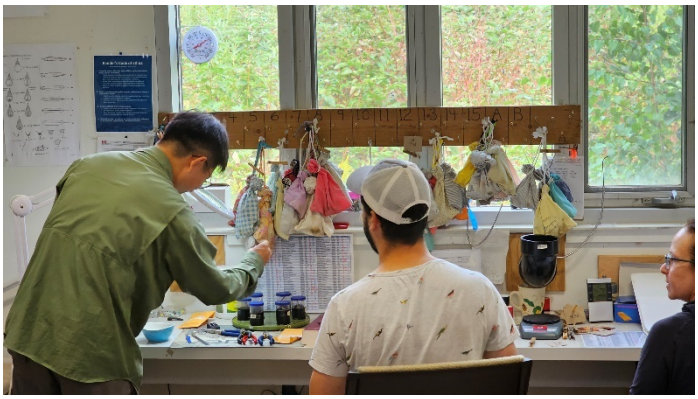
3.1 Monitoring Avian Productivity and Survivorship (MAPS)

Background

MAPS (Monitoring of Avian Productivity and Survivorship) is a specialized banding protocol targeted at breeding birds during the summer months, developed by the Institute for Bird Populations and followed by stations throughout North America. This protocol allows TTPBRS staff to monitor local breeding birds more closely. A single MAPS station operates once every 10 days, with a monitoring period that depends on the latitude and length of the local breeding season. The rationale is to band and thereby track breeding adults, monitor their condition during the nesting season, then band and assess chicks as they fledge, which can provide insights into breeding success and species composition.

Summary

The TBRS MAPS station was established on Peninsula D at Tommy Thompson Park and covers a similar area as migration monitoring. Based on factors including ease of access and habitat protection, half of the eight MAPS net lanes were established in existing migration monitoring net lanes. Monitoring was conducted using 12-metre mist nets on six days between June 9 and August 5 (June 19, June 27, July 4, July 17, July 25, and August 2), accumulating 213.5 net-hours. During that time, we captured 327 birds that were either breeding on or hatched on the peninsula, yielding a capture rate of 153.2 captures/100 net-hours.



Volunteers processing a large number of birds on a particularly busy day.

Day-to-day operations were conducted by Bander-in-Charge Shane Abernethy with the assistance of Maud Ioannidis, overseen by Andrea Chreston, Hillary Stead and Karen McDonald.

Species	Number Captured	% of Total
Yellow Warbler	231	70.6
Song Sparrow	17	5.1
Grey Catbird	16	4.8
American Robin	15	4.6

Yellow Warblers dominated the summer's captures, making up 70% of all birds captured during the season. Overall, species composition lined up with what would be expected of the habitat, except for the sheer number

of Yellow Warblers; while it was known that TTP supported a great deal of them, we didn't expect them to completely eclipse everything else!

One unusual highlight marked this summer's monitoring: a White-tailed Deer doe was repeatedly seen on Peninsula D, occasionally accompanied by two fawns! Due to the geographic positioning and habitat availability at TTP, deer are locally rare, making these three individuals an exceptional sighting. All three were unafraid and quite bold, allowing us to capture some great photographs!

Volunteers and visitors

During the summer season, a select group of volunteers were invited to participate in the 2023 pilot MAPS season. The MAPS data collection protocol is quite different from the migration monitoring protocol many volunteers were used to, making it an excellent learning experience for those who participated. In total, 10 volunteers contributed at least 100 combined hours to this project and were a great help in keeping it running smoothly.

While a number of incidental visitors were encountered during the summer, the lab was not formally open to the public while banding was in progress. This was a result of the more sensitive nature of MAPS banding, which demanded processing birds as quickly as possible without delay. Despite this, we were able to engage with a handful of visitors during spare moments.

3.2 Double-crested Cormorant Monitoring

Every year, a small group led by Dr. Gail Fraser visit the Double-crested Cormorant colony on Peninsula B of Tommy Thompson Park to band chicks. This banding takes place at night to minimize colony disturbance, and was only performed on one night this summer, during which 36 cormorant chicks were banded at their nests. The chicks are banded using the standard aluminum leg bands, along with a colour band to increase sighting reports. Resighting data provides insight on whether chicks hatched in the ground nesting colony return to ground nest or tree nest in future years, as well as where they go after the breeding season (which migratory route they take, and where they overwinter).

3.3 University of Toronto Collaboration

Bird banding stations provide an opportunity to collaborate with academia and for post-secondary students to conduct bird-related studies, largely because of the easy access to trained personnel, facilities, and birds already captured for migration monitoring. This fall, a group of students led by Prof. Santiago Claramunt began collecting data on the takeoff performance of various species of wild birds by recording their takeoffs with high-speed cameras.

ACKNOWLEDGEMENTS

A bird research station is far from a one-person endeavour, and many hands collaborated to make this year's work possible. Thanks to Andrea Chreston, Hillary Stead and Karen McDonald for their supervision, oversight,

and administrative work. Thanks to John Nishikawa, Lynne Freeman, Alex Hoffman and Will Heikoop for taking on the daily census.

And thanks to the volunteers who assisted with day-to-day operation this year: Abby Godden, Andrew Brown, Anne Purvis, Ariel Lovejoy, Autumn White, Brian Chan, Camryn O'Keeffe, Ceana See-Lai Klump, Clara Siu, Diana Turchin, Elias Malcolm, George Thorman, Hannah Scott, Helen Fong, Henry James, Ileana Scialla, Ivan Tse, Jessica Benavides, Jim Mackiewicz, Julia Zarankin, Kazuo Koekebakker, Lama Miri, Laura Seaton, Laura Talbot, Lily Domingue, Lisa Myslicki, Luca Villeneff, Lynda Mackiewicz, Maleeka Thaker, Mary Newberry, Maud Ioannidis, Max Hargreaves, McKayla Jarvie, Megan Heft, Melad Razzouk , Nina Koskenoja, Olivia Maillet, Rae Sturge, RuiLin Guo, Sarah Bonnett, Scott Da Rocha, Thomas Leung, Vedant Gattani, and Zach Khan.

SECTION 4: APPENDICES

Table 5: Total number and type of capture per species for spring migration monitoring at TTPBRS

Species	Banded	Recapture	Unbanded	Total
Acadian Flycatcher	1			1
American Goldfinch	36	8		44
American Redstart	27	2	2	31
American Robin	32	19	1	42
American Woodcock	1			1
American Tree Sparrow	25	8		33
Baltimore Oriole	7	3		10
Barn Swallow	1			1
Black-and-white Warbler	1			1
Bay-breasted Warbler	9	1		10
Black-capped Chickadee	14	24	1	29
Brown-headed Cowbird	4	3	1	8
Blackburnian Warbler	6			6
Blackpoll Warbler	8			8
Brown Creeper	17			17
Brown Thrasher	1			1
Black-throated Blue Warbler	1			1
Black-throated Green Warbler	4			4
Cedar Waxwing	2			2
Chipping Sparrow	1			1
Cape May Warbler	9			9
Common Grackle	8			8
Common Yellowthroat	18	2		20
Chestnut-sided Warbler	9			9
Downy Woodpecker	5	8		13
Eastern Kingbird	3			3
Eastern Phoebe	6	5		11
Eastern Wood-Peewee	1			1

European Starling	1			1
Field Sparrow	2			2
Fox Sparrow	23	3	1	26
Great Crested Flycatcher	1			1
Golden-crowned Kinglet	45	2	7	54
Gray-cheeked Thrush	10			10
Grey Catbird	22	10		32
Hairy Woodpecker	1	3		4
Hermit Thrush	20	2		22
House Wren	6	12	3	21
Indigo Bunting	2			2
Least Flycatcher	21	5		26
Lincoln's Sparrow	4			4
Magnolia Warbler	25	1	2	28
Mourning Warbler	3			3
Myrtle Warbler	110	2	1	113
Nashville Warbler	11		1	12
Northern Cardinal	10	2		12
Northern Parula	13	3		16
Northern Waterthrush	26	4		30
Orchard Oriole	1			1
Ovenbird	1			1
Philadelphia Vireo	6			6
Pine Warbler	1			1
Rose-breasted Grosbeak	9			9
Red-breasted Nuthatch	2			2
Ruby-crowned Kinglet	59	4	1	64
Red-eyed Vireo	7	1	1	9
Ruby-throated Hummingbird			6	6
Rusty Blackbird	1			1
Red-winged Blackbird	51	21	6	78
Slate-colored Junco	26	1		27
Song Sparrow	83	46		129
Swamp Sparrow	22	2		24
Swainson's Thrush	42	5		47
Tennessee Warbler	8			8
Tree Swallow	26	21		47
Traill's Flycatcher	35			35
Veery	5			5
Warbling Vireo	7	15		22
Willow Flycatcher	3	1		4
Wilson's Warbler	10			10
Winter Wren	1			1

Wood Thrush	6			6
Western Palm Warbler	27	1		28
White-throated Sparrow	119	4	2	125
Yellow-bellied Flycatcher	9			9
Yellow-bellied Sapsucker	5			5
Yellow Warbler	135	180	2	317
Yellow-shafted Flicker	1	1		2
Total	**1322**	**435**	**38**	**1795**

Table 6: Total number and type of capture for each species banded at TBRS during the MAPS program

Species	Banded	Recapture	Unbanded	Total
American Goldfinch	1	2	3	6
American Robin	11	4		15
Baltimore Oriole	2			2
Black-capped Chickadee	1			1
Cedar Waxwing	2			2
Common Grackle		1		1
Common Yellowthroat	1			1
Downy Woodpecker	3			3
Eastern Wood-Peewee	1			1
Gray Catbird	12	4		16
House Wren	3	1	1	5
Least Flycatcher	3	2	1	6
Northern Cardinal	1		1	2
Red-winged Blackbird	4	4		8
Song Sparrow	7	10		17
Tennessee Warbler	1			1
Traill's Flycatcher		1		1
Warbling Vireo	7	1		8
Yellow Warbler	164	60	7	231
Total	**224**	**90**	**13**	**327**

Table 7: Total number and type of capture for each species banded during fall migration

Species	Banded	Recapture	Unbanded	Total
Alder Flycatcher	1			1
American Goldfinch	9	1		10
American Redstart	96	26	2	124
American Robin	20			20
American Tree Sparrow	24	2		26
Baltimore Oriole	6	1		7
Black-and-white Warbler	11	1		12

Bay-breasted Warbler	22			22
Black-capped Chickadee	10	50		60
Blue-grey Gnatcatcher	6			6
Blue-headed Vireo	4			4
Blackburnian Warbler	10			10
Blackpoll Warbler	26			26
Brown Creeper	8		1	9
Black-throated Blue Warbler	7			7
Black-thr. Green Warbler	10	1		11
Canada Warbler	9	1		10
Cedar Waxwing	5			5
Cape May Warbler	43			43
Common Grackle	1			1
Connecticut Warbler	1			1
Common Yellowthroat	24	3		27
Chestnut-sided Warbler	9	2		11
Downy Woodpecker	11	19		30
Eastern Phoebe	6	1		7
Eastern Wood-Peewee	4			4
European Starling	1			1
Fox Sparrow	8			8
Great Crested Flycatcher	2			2
Golden-crowned Kinglet	182	11	3	196
Gray-cheeked Thrush	24	1		25
Gray Catbird	54	28	2	84
Hermit Thrush	63	3		66
House Wren	14	9	1	24
Least Flycatcher	34	4		38
Lincoln’s Sparrow	1		1	2
Magnolia Warbler	103	24		127
Mourning Warbler	5			5
Myrtle Warbler	88	9		97
Nashville Warbler	52	1	2	55
Northern Cardinal	8	15	2	25
Northern Parula	37	1	1	39
Northern Waterthrush	25	1		26
Northern Saw-whet Owl	2			2
Orange-crowned Warbler	1			1
Ovenbird	12	5		17
Philadelphia Vireo	13	3		16
Rose Breasted Grosbeak	2			2

Ruby-crowned Kinglet	152	16	2	170
Red-eyed Vireo	53	11		64
Ruby-thr. Hummingbird			12	12
Slate-colored Junco	74			74
Scarlet Tanager	1			1
Song Sparrow	32	10	2	44
Swamp Sparrow	5			5
Swainson's Thrush	133	3		136
Tennessee Warbler	58	2		60
Traill's Flycatcher	64	9		73
Veery	18	1		19
Warbling Vireo	86	49	1	136
White-crowned Sparrow	1		1	2
Willow Flycatcher	2			2
Wilson's Warbler	20	5		25
Winter Wren	2			2
Western Palm Warbler	11			11
White-throated Sparrow	71	1	1	73
Yellow-bellied Flycatcher	13		1	14
Yellow Warbler	61	19	1	81
Yellow-shafted Flicker	1			1
Totals	**1972**	**352**	**36**	**2360**

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