Toronto and Region Conservation Authority

Migration Monitoring at TTPBRS
2024 Annual Report

Prepared by Shane Abernethy

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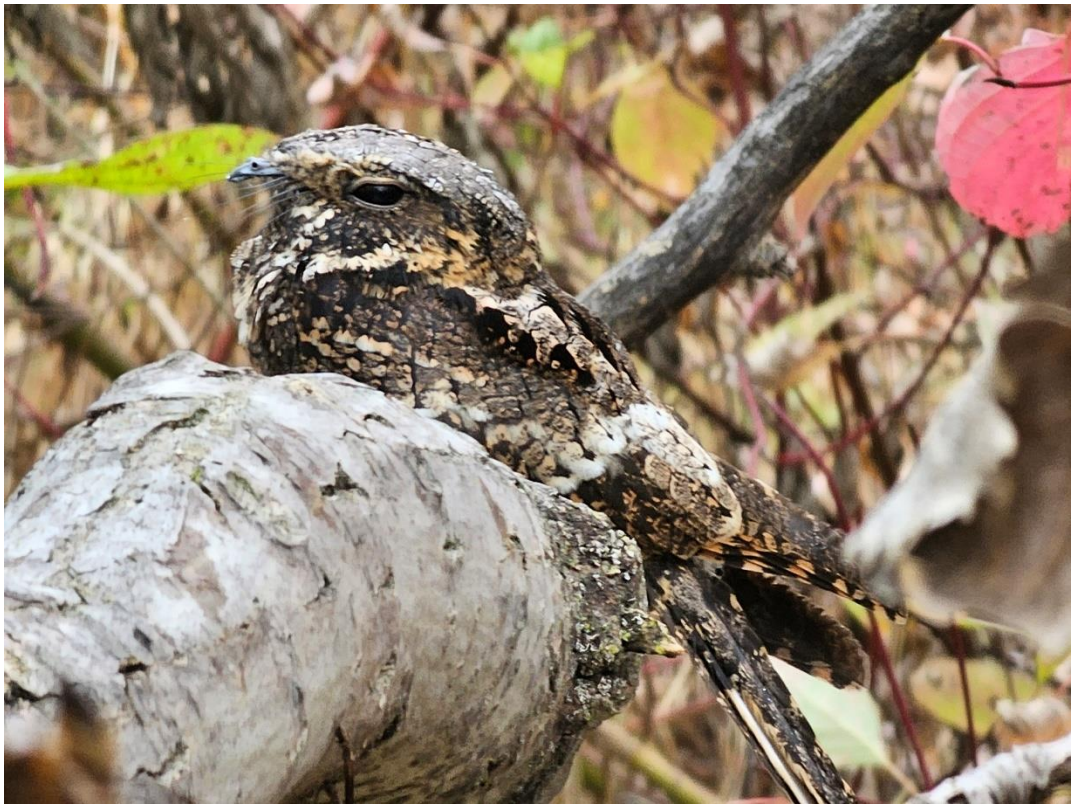
INTRODUCTION

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 2024 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 105 days across all three programs, during which 5,524 birds were captured. Daily operations were overseen by Bander-in-Charge Shane Abernethy, and assisted by 45 volunteers, who contributed 2,847 total hours.



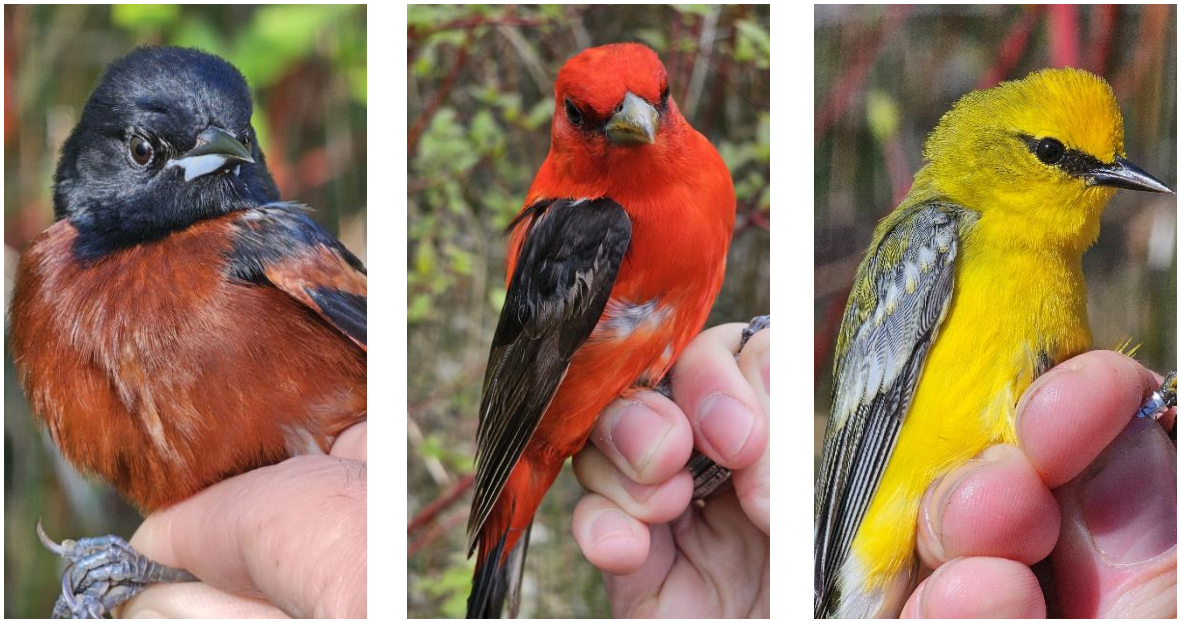
An Eastern Whip-poor-will encountered near the end of fall during routine maintenance

SECTION 1: SPRING 2024

1.1 Summary

The spring 2024 migration monitoring season ran for 70 days between April 1 and June 9, with 67 days of monitoring coverage. Active capture and banding operations took place on 41 of those days. 370 staff hours and 1,494 volunteer hours allowed for the 2,058 captures of 77 species. 20 standardized mist net lanes were used regularly over the season, with day-to-day variance depending on volunteer coverage and local conditions. During the season, we were pleased to host 557 recorded visitors, 220 of whom visited during the Spring Bird Festival on Saturday May 11.

Spring Migration Summary	
Staff and volunteer hours	1,864
Total recorded species	155
Total capture events	2,055
Total species captured	77
Birds banded	1,524
Birds recaptured	491
Birds released unbanded	40
Total net-hours (adjusted)	1845.5
Total net-hours (9m mist nets)	2008.5
Total net-hours (12m mist nets)	339
Capture rate	111.5 captures/100 net-hours
Recorded visitors	557



Three highlight birds from spring migration. From left to right: Orchard Oriole, Scarlet Tanager, Blue-winged Warbler. All are male.

Personnel		
Bander-in-Charge	Shane Abernethy	
Environmental Technologist	McLean Smith	
Senior Project Manager	Andrea Chreston	
Senior Manager	Karen McDonald	
Volunteers	Susan Blayley Isaac Buckstein Tabris Cao Gabriella Carew Brian Chan Francine Da Silva Carly Davenport Taylor Doyle Petra Dreisner Helen Fong Vedant Gattani Martina Gjevori Kieran Guimond Jillian Haight Max Hargreaves Ariel Lovejoy Lama Miri John Nishikawa	Lisa Myslicki Mary Newberry Anne Purvis Mariah Ramlogan Meg Reid Hannah Scott Laura Seaton Natalie See Clara Siu Rae Sturge Donald Taylor Maleeka Thaker George Thorman Ivan Tse Diana Turchin Luca Villeneff Samantha Wang Lynne Freeman

1.2 Spring Migration Monitoring

A series of continued improvements to both station operation and the volunteer experience contributed to an excellent spring season. A brief period of poor weather in early April limited effort at the beginning of the season, but conditions were largely cooperative after it cleared. Water levels were also substantially lower than the previous year, which translated to more navigable conditions in the net lanes and various paths.

Highlights

In the middle of April, after conditions finally began to improve, we captured a completely unexpected species: a **Virginia Rail**, a secretive marsh bird that is often heard, but rarely seen, and even more rarely actually handled. It stands proud as the season highlight.

Other capture highlights include a **Blue-winged Warbler**, captured during the busiest day of the season, during which we processed 190 birds in a six-hour period, and a presumed mated pair of **Orchard Orioles**, both aged as after-second-years.

We also logged several interesting recaptures: one, a **Yellow Warbler** with an unfamiliar band number, had originally been captured at TTPBRS in spring 2016, making it 9 years old and one of the oldest returns recorded at the station. We also captured an **American Woodcock** who, to our surprise and amusement, had already been banded: she was in fact the very same woodcock that made the highlights section last year!

During the spring, a vagrant **Snow Goose** was repeatedly sighted on the Toronto Islands, and would occasionally fly over the study area while foraging. This rare Ontario sighting was always a treat when it showed up.

The final highlight of the season came on the last day of spring monitoring, when a flock of five **American White Pelicans** suddenly appeared over the lakeshore, triggering a wave of rare bird reports as they flew north over the city. Not only does their migration route rarely overlap with Toronto, but by that time they should have been well into their breeding grounds in the prairie provinces. What they were still doing at this latitude, let alone this longitude, is a mystery.

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

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
Birds Banded	1524	1322	2340	2060	---	4070	2240	2659	2621	2369
Birds Recaptured	491	435	429	356	---	792	451	595	615	713
Captured Unbanded	43	38	72	49	---	67	53	106	51	54
Total Captures	2058	1795	2841	2465	---	4929	2744	3360	3287	3136
Net Hours	1545.5	1673	2911	2715	---	4026	4526.5	4106	4532	4906
Captures/100 net hours	111.5	107	97.6	90.8	---	122.4	60.6	81.8	72.5	63.9

1.3 Events and Outreach

Migration monitoring this spring was managed by a single full-time staff member, and as such we are heavily reliant on volunteer assistance. The relationship is reciprocal: in exchange for their assistance, volunteers receive extensive training in bird handling, identification and other aspects of the banding process, and are able to expand their knowledge of bird ecology. This spring, 36 volunteers contributed a total of 1,494 volunteer hours. We also hosted 557 total visitors, which were a mix of incidentals, school groups, local naturalist groups and guided hikes.

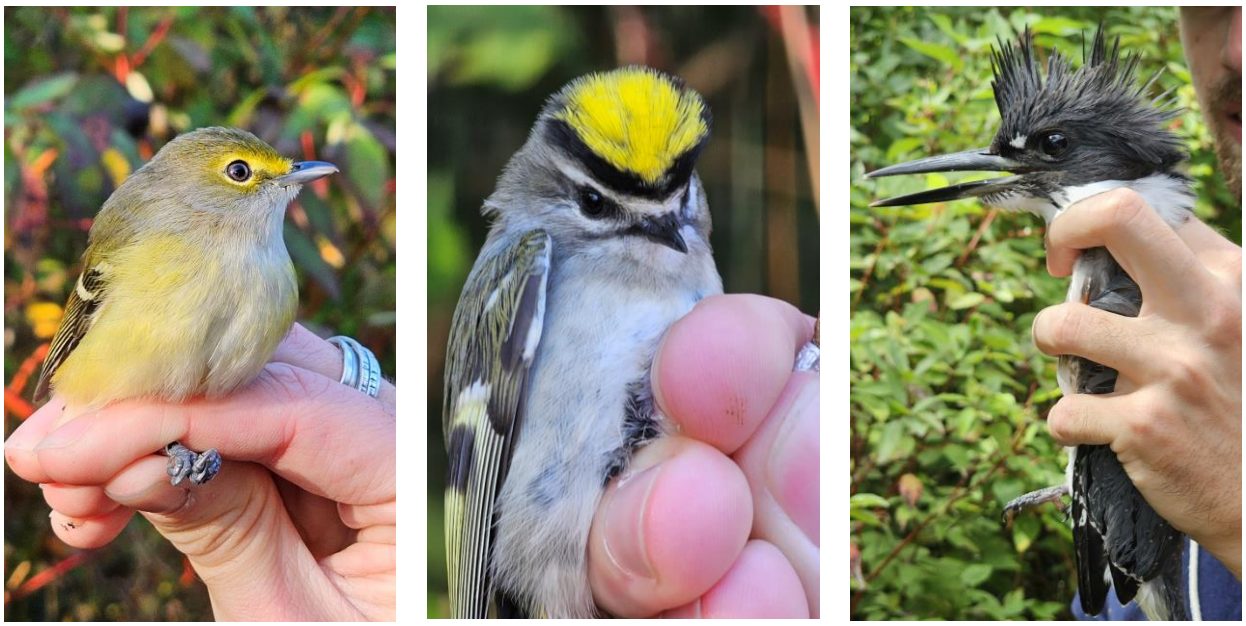
During the annual Spring Bird Festival on May 11, we enjoyed excellent weather and high capture rates, hosting an estimated 220 visitors over the course of the day. A steady stream of warblers and one very photogenic Brown Thrasher kept everyone interested, while staff and volunteers busily processed captures in the background.

SECTION 2: FALL 2024

2.1 Summary

The fall migration monitoring season ran for 100 days between August 5 and November 12, with 94 total days of coverage. Active capture and banding efforts occurred on 57 days during the season, during which we accumulated 3,223 net-hours across 20 mist nets. 898 staff and 1,233 volunteer hours resulted in the detection of 163 species, 74 of which were captured. 3,155 birds were captured over the course of the season, for a seasonal capture rate of 97.8 captures/100 net-hours.

Fall Migration Summary	
Staff and volunteer hours	2,131
Total recorded species	163
Total capture events	3,143
Total species captured	75
Birds banded	2,577
Birds recaptured	515
Birds released unbanded	51
Total net-hours (adjusted)	3,223
Total net-hours (9m mist nets)	3,508.5
Total net-hours (12m mist nets)	591
Capture rate	97.8 captures/100 net-hours
Recorded visitors	650



A wide variety of birds were captured in fall. Left to right: a White-eyed Vireo, a female Golden-crowned Kinglet furiously displaying her crown, and a Belted Kingfisher.

Personnel		
Bander-in-Charge	Shane Abernethy	
Field Staff	Maleeka Thaker	
Environmental Technologist	McLean Smith	
Senior Project Manager	Andrea Chreston	
Senior Manager	Karen McDonald	
Volunteers	Sophie Anderson Eray Caglayan Tabris Cao Brian Chan Nicole Chan Scott Da Rocha Shahd Daoud Naveen David Helen Fong Lynne Freeman Vedant Gattani Abbie Gingles Max Hargreaves	Mary Newberry John Nishikawa Anne Purvis Justin Rai Mariah Ramlogan Meg Reid Clara Siu Bumika Sri Calder Stark Rae Sturge Donald Taylor Ivan Tse Diana Turchin

2.2 Fall Migration Monitoring

During fall migration, we were lucky to have largely cooperative weather, allowing us to band on more days than expected. This proved to be a double-edged sword, as the unusually mild fall weather resulted in a very strangely-timed migration season. Some species arrived early, others arrived late, still others bypassed the area entirely during a long warm spell in September. However, once the kinglet and sparrow rush arrived in October, we experienced extremely high capture volume, propelling our total past 3,000. We were also pleased to welcome Maleeka to the TTPBRS team as a full-time Field Staff this season – her help this fall was invaluable.

Highlights

Our big seasonal highlight came at the end of August, when I was summoned out to one of the nets to assist with an extraction. It quickly became clear why my help was needed, because Maleeka was holding a **Belted Kingfisher**, a bird that the nets aren't designed to catch. This unique bird was the third of its kind I have ever handled, and the first one I'd seen up close in years.

Another highlight came later in the season when we captured a **White-eyed Vireo** during a routine net check, a vagrant species that had gone the wrong way on migration. It was carrying an exceptional fat load, indicating it had realized its mistake and was well on its way to correcting it.

On the morning of October 5, a fallout of birds occurred and created incredible bird densities in the study area. A capable cast of volunteers diligently worked throughout the day as we processed an impressive 265 birds within the six-hour study period, making it the busiest day of the year and the busiest day of many of our careers.

Other highlights included a spectacular flock of an estimated 300 **Blue Jays** passing overhead in early September, a **Sharp-shinned Hawk** captured in mid-September, and an **Eastern Whip-poor-will** that was repeatedly encountered near the end of the peninsula while performing routine maintenance.

One last highlight came in the final few days of the season, when a **White-winged Crossbill** arrived on the peninsula and posed in a tree for most of the morning.

Table 2: 10-year breakdown of mist netting results and effort for fall migration at TTPBRS

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
Birds Banded	2590	1972	3459	4529	3975	3172	4592	2430	3396	4090
Birds Recaptured	513	352	301	438	458	469	583	390	313	534
Captured Unbanded	52	36	79	111	98	190	259	45	42	166
Total Captures	3155	2360	3839	5078	4531	3831	5434	2865	3751	4790
Net Hours	3223	2072	3048	5035	2639.4	5854	5127	3810	5457	6845
Captures/100 net hours	97.8	113.9	125.9	100.8	145.1	65.4	106	75.2	68.7	70

2.3 Events and Outreach

We rely heavily on the aid of volunteers both to manage everyday operations and host the public. 26 volunteers were active in the fall and contributed 1,233 hours to the program. In return, they gained applied experience in bird banding and field biology and enhanced their personal knowledge. 650 visitors were recorded during fall, many of whom came as part of school groups, and received a rare opportunity to see the banding process and study migrating birds up close.

While we were prepared to host a large volume of visitors during the Butterfly Festival and had shifted our operational hours to accommodate, the weather had other ideas. Brief bursts of rain repeatedly forced us to shut down mist nets and carefully study the radar through most of the morning, and a miserable curtain of humidity made even being outside, let alone hiking to the research station, an unattractive option. As a result, on a day when we expected perhaps two hundred visitors, we instead played host to three.

SECTION 3: OTHER PROGRAMS

3.1 Monitoring Avian Productivity and Survivorship (MAPS)

A volunteer admiring a freshly banded Blue Jay just before release

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 2024 MAPS season involved the continued operation of a single station, designated TBRS. It comprises of eight 12-metre mist nets, and has a study area that overlaps with the migration monitoring survey area. MAPS banding occurred on 7 days this season, on June 6, June 14, June 20, July 5, July 12, July 22, and August 1, accumulating 318.5 net-hours across all dates. This resulted in 326 captures and a seasonal capture rate of 102.6 captures/100 net-hours.

Species	Number Captured	% of Total
Yellow Warbler	144	44.9
Grey Catbird	26	8.1
Song Sparrow	22	6.9
Black-capped Chickadee	17	5.3
American Robin	13	4

Yellow Warblers continued to be a dominant presence at the TBRS station, but not to the same degree as last year, where they outnumbered every other species combined. It is unclear what caused this reduction in density relative to the previous year, and further monitoring is necessary to establish which scenario is the “normal” one.

Volunteers and Visitors

The MAPS protocol is very different from the protocol many volunteers are used to, and is far more sensitive. As such, select volunteers were invited to participate, along with assistance enlisted from past volunteers who were now part of the Tommy Thompson Park Field Crew. Volunteers contributed 120 total hours to the program.

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 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 spring, a group of students led by Prof. Santiago Claramunt returned to collect data on the takeoff performance of various species of wild birds by recording their takeoffs with highspeed cameras.

3.3 Stable Isotope Collaboration

During the spring and fall season we also collaborated with a large-scale joint project between Environment and Climate Change Canada (ECCC) and Birds Canada, during which we sampled tail feathers from select species for stable isotope analysis. This project aims to shed additional light on the specific origin points and breeding communities of birds migrating through various Canadian migratory hotspots.

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, McLean Smith and Karen McDonald for their supervision, oversight, and administrative work. Thanks to John Nishikawa, Lynne Freeman, and Will Heikoop for taking on the daily census.

And thanks to the volunteers who assisted with day-to-day operation this year: Abbie Gingles, Anne Purvis, Ariel Lovejoy, Brian Chan, Bumika Sri, Calder Stark, Carly Davenport, Clara Siu, Diana Turchin, Donald Taylor, Eray Caglayan, Francine Da Silva, Gabriella Carew, George Thorman, Hannah Scott, Helen Fong, Isaac Buckstein, Ivan Tse, Jillian Haight, Justin Rai, Kieran Guimond, Lama Miri, Laura Seaton, Lisa Myslicki, Luca Villeneff, Maleeka Thaker, Mariah Ramlogan, Martina Gjevori, Mary Newberry, Max Hargreaves, Meg Reid, Natalie See, Naveen

David, Nicole Chan, Petra Dreisner, Rae Sturge, Samantha Wang, Scott Da Rocha, Shahd Daoud, Sophie Anderson, Tabris Cao, Taylor Doyle and Vedant Gattani.

SECTION 4: APPENDICES

Table 3: Total number and type of capture per species for spring migration monitoring at TTPBRS

Species	Band	Recap	Unband	Total
Alder Flycatcher	4			4
American Goldfinch	39	20		59
American Redstart	30	2	1	33
American Robin	21	15		36
American Tree Sparrow	18	3	1	22
American Woodcock	1	1		2
Baltimore Oriole	13	14	1	28
Bay-breasted Warbler	9	1		10
Black-and-white Warbler	5			5
Blackburnian Warbler	11			11
Black-capped Chickadee	5	28		33
Blackpoll Warbler	18			18
Black-throated Blue Warbler	3	1		4
Black-throated Green Warbler	4			4
Blue-winged Warbler	1			1
Brown Creeper	11		1	12
Brown Thrasher	4			4
Brown-headed Cowbird	2	3	1	6
Canada Warbler	9			9
Cape May Warbler	10			10
Cedar Waxwing	3			3
Chestnut-sided Warbler	23	1	1	25
Common Grackle	3		1	4
Common Yellowthroat	34	3	3	40
Downy Woodpecker	6	12		18
Eastern Kingbird	1	3		4
Eastern Phoebe	2	3		5
Eastern Towhee	1			1
Eastern White-crowned Sparrow	5			5
Eastern Wood-Pewee	2			2
Field Sparrow	3	1		4
Fox Sparrow	6			6
Golden-crowned Kinglet	60	2	2	64
Gray Catbird	45	19		64
Gray-cheeked Thrush	6			6
Great Crested Flycatcher	3			3

Hermit Thrush	19	2		21
House Wren	6	16		22
Indigo Bunting	1			1
Least Flycatcher	20	7	1	28
Lincoln's Sparrow	9			9
Magnolia Warbler	67	5	1	73
Mourning Warbler	4			4
Myrtle Warbler	93	1	4	98
Nashville Warbler	41	1	3	45
Northern Cardinal	12	12		24
Northern Parula	10	1	1	12
Northern Waterthrush	12			12
Orange-crowned Warbler	1			1
Orchard Oriole	2			2
Ovenbird	7			7
Philadelphia Vireo	8			8
Purple Finch	2			2
Red-eyed Vireo	40	1		41
Red-winged Blackbird	47	25	1	73
Rose-breasted Grosbeak	4			4
Ruby-crowned Kinglet	43	3	1	47
Ruby-throated Hummingbird			1	1
Scarlet Tanager	2			2
Slate-colored Junco	23	2	2	27
Song Sparrow	76	56	1	133
Swainson's Thrush	48		1	49
Swamp Sparrow	30			30
Tennessee Warbler	14			14
Traill's Flycatcher	31	1		32
Tree Swallow	18	6		24
Veery	7	1		8
Virginia Rail	1			1
Warbling Vireo	18	26		44
Western Palm Warbler	31	4		35
White-throated Sparrow	188	5	6	199
Willow Flycatcher	2			2
Wilson's Warbler	5			5
Winter Wren	3		1	4
Yellow Warbler	147	184	4	335
Yellow-bellied Flycatcher	8			8
Yellow-bellied Sapsucker	1			1

Yellow-shafted Flicker	2			2
Totals	**1524**	**491**	**40**	**2055**

Table 4: Total number and type of capture for each species banded at TBRS during the MAPS program

Species	Banded	Recap	Unband	Total
American Goldfinch	6	2		8
American Robin	10	3		13
Baltimore Oriole	9	1		10
Black-capped Chickadee	10	7		17
Canada Warbler	1			1
Cedar Waxwing	10			10
Common Grackle		1		1
Downy Woodpecker	5	1		6
Gray Catbird	16	10		26
House Wren	3	5	1	9
Least Flycatcher		3		3
Magnolia Warbler	1			1
Northern Cardinal	3	9		12
Northern Waterthrush	3			3
Red-winged Blackbird	5	8		13
Song Sparrow	13	9	1	23
Swainson's Thrush	4			4
Tree Swallow	1	1		2
Traill's Flycatcher	4	1		5
Warbling Vireo	1	6	1	8
Yellow-bellied Flycatcher	5			5
Yellow Warbler	79	65	2	146
Total	**189**	**132**	**5**	**326**

Table 5: Total number and type of capture for each species banded during fall migration

Species (Fall)	Banded	Recap	Unband	Total
Alder Flycatcher	1			1
American Goldfinch	4	2		6
American Redstart	115	18		133
American Robin	12	1		13
American Tree Sparrow	16	3		19
Baltimore Oriole	6	3		9
Black-and-white Warbler	9	2		11

Bay-breasted Warbler	37	4		41
Black-capped Chickadee	61	125		186
Belted Kingfisher	1			1
Blue-gray Gnatcatcher	8	3		11
Blue-headed Vireo	6			6
Blackburnian Warbler	8			8
Blue Jay	6			6
Blackpoll Warbler	15	1		16
Brown Creeper	38	1		39
Brown Thrasher	1			1
Black-throated Blue Warbler	8	1		9
Black-throated Green Warbler	14	1		15
Canada Warbler	5	2		7
Cedar Waxwing	7			7
Cape May Warbler	41	6		47
Common Yellowthroat	10	1		11
Chestnut-sided Warbler	7	3		10
Downy Woodpecker	6	12		18
Eastern Phoebe	17		1	18
Eastern Wood-pewee	3			3
Eastern White-crowned Sparrow	3		1	4
Field Sparrow	1			1
Fox Sparrow	8	1		9
Great-crested Flycatcher	3			3
Golden-crowned Kinglet	339	34	10	383
Gray-cheeked Thrush	15			15
Gray Catbird	55	35		90
Hairy Woodpecker	3			3
Hermit Thrush	141	24	3	168
House Wren	9	7	1	17
Least Flycatcher	25	3		28
Lincoln’s Sparrow	6		1	7
Magnolia Warbler	88	26	1	115
Marsh Wren	1			1
Mourning Warbler	1	1		2
Myrtle Warbler	129	9	2	140
Nashville Warbler	42	2		44
Northern Cardinal	21	20		41
Northern Parula	40	9		49
Northern Waterthrush	19	1		20
Northern Saw-whet Owl	2			2

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