

Albert Creek Bird Observatory Final Report 2015



Ben Schonewille
Society of Yukon Bird Observatories
February 2015

The 2015 operation of the Albert Creek Bird Observatory was made possible due to support and financial contributions from the following organizations.



Environment
Canada

Environnement
Canada



Cover Photo: male Black-backed Woodpecker (Photo: Jukka Jantunen)

The Albert Creek Bird Observatory is a project of the **Society of Yukon Bird Observatories** (SOYBO; PO Box 30056, Whitehorse, YT, Y1A 5M2). SOYBO was established during 2010 to formalize the operation of the Yukon Bird Observatories. The objectives of SOYBO are: (1) contribute to the conservation of migratory birds in western North America, (2) to make the public aware of the avifauna of the Yukon and educate the public, and, (3) to work with other societies, organizations and individuals with similar objectives. For further information, email – teslin.bird.banding@gmail.com or visit <http://yukonbirdobservatories.org>

SUMMARY

During 2014, the Yukon Bird Observatories (Teslin Lake and Albert Creek) were granted full membership status to the Canadian Migration Monitoring Network (CMMN). The Yukon Bird Observatories are the northernmost stations and are the only stations located within the core of Canada's western Boreal Forest.

The Albert Creek Bird Observatory completed its fifteenth consecutive year of spring migration monitoring in 2015 and operated for a total of 46 days between April 22 and June 6. During 2015, the observatory followed the same protocols used since 2004. Operations between 2001 and 2004 were variable and are considered non-standard due to changes in mist net location and variable sampling effort during site testing

Standard methods to mist net, handle, band and record information from captured birds were followed. A total of 2,339 birds of 49 species were captured during 5,454 net hours (42.9 birds/100 net hours). Wilson's Warbler, Myrtle Warbler, Common Redpoll, White-crowned Sparrow and American Tree Sparrow were the five most common species banded, accounting for an even 50% of all individuals banded.

Aside from standardized banding, observations of birds within the count area were also collected. Of particular interest are the species often referred to as 'southeast Yukon specialties'; these species are at the northwestern extent of their breeding range and are not found regularly to the west of the observatory. Such species encountered at the observatory during 2015 included: Pileated Woodpecker, Cape May Warbler, Magnolia Warbler, Ovenbird, Black-and-white Warbler, Swamp Sparrow, White-throated Sparrow and Western Tanager.

Noteworthy results from 2015 included:

- The number of birds banded was slightly above average although when the number of birds per 100 net hours is taken into consideration, 2015 was considerably lower than the long term average.
- Species banded in particularly high numbers included Common Redpoll whereas Myrtle Warbler and Blackpoll Warbler were banded in notably low numbers.
- No new species were banded at the observatory although one new species (Smith's Longspur) was added to the list of species observed at the site since 2001.
- Since 2001, a total of 49,288 birds of 92 species have been banded at the observatory and 173 species have been observed.
- A total of 11 volunteers spent a total of 835.8 hours at the observatory and a total of 21 individuals visited the observatory totaling 76.7 visitor hours.

TABLE OF CONTENTS

1.0	INTRODUCTION.....	6
1.1	BACKGROUND	6
1.2	GOALS OF THE ALBERT CREEK BIRD OBSERVATORY	7
1.3	OBJECTIVES OF THE 2014 SEASON.....	7
1.4	ACKNOWLEDGEMENTS	7
2.0	METHODS	8
2.1	STUDY SITE	8
2.2	GENERAL METHODS	8
2.3	MIST NETTING.....	10
2.4	CENSUS	10
2.5	INCIDENTAL OBSERVATIONS	10
2.6	PUBLIC ENGAGEMENT	10
3.0	RESULTS & DISCUSSION.....	11
3.1	STATION OPERATION.....	11
3.2	PATTERNS IN CAPTURES	13
3.3	MIGRATION TIMING	16
3.3.1	<i>Generalized Migration Timing.....</i>	<i>16</i>
3.3.2	<i>Arrival Dates.....</i>	<i>16</i>
3.4	BAND REPEATS, RETURNS & RECOVERIES	18
3.5	INTERESTING & NOTABLE CAPTURES / OBSERVATIONS	19
3.6	RUSTY BLACKBIRDS.....	24
3.7	VISITORS AND VOLUNTEERS	24
4.0	CONCLUSION	26
4.1	RECOMMENDATIONS	26
	APPENDIX A – SPECIES CHECKLIST	27
	APPENDIX B – DAILY SPECIES TOTAL SUMMARY	28

LIST OF FIGURES

Figure 1. Overview of the Albert Creek Bird Observatory.	9
Figure 2. Summary of birds banded per day during the spring of 2015.	14
Figure 3. Summary of birds banded during the spring from 2001 to 2015.	14
Figure 4. Summary of hours per mist net during the spring of 2015 (2m).	15
Figure 5. Number of birds banded per mist net during the spring of 2015.....	15
Figure 6. Generalized migration timing by species group during 2015 as compared to the average timing	16
Figure 7. Summary of Sora records at Albert Creek during the spring season from 2003 to 2015.	20
Figure 8. Summary of Pileated Woodpecker records at Albert Creek from 2003 to 2015	21
Figure 9. Summary of White-throated Sparrow standardized estimated total data during the spring from 2007 to 2015.	23

LIST OF TABLES

Table 1. Summary statistics for the 2015 spring season.....	11
Table 2. Birds banded during the 2015 spring season.	11
Table 3. Summary of weather conditions during the 2015 spring season.	12
Table 4. Comparison of weather conditions during 2015 as compared to previous years.	13
Table 5. The 10 most common bird species banded in 2015 as compared to 2007–2014 totals.	13
Table 6. Summary of arrival dates for frequently observed species at Albert Creek from 2007 to 2015.	17
Table 7. Summary of band repeats during the spring 2015 season.	18
Table 8. Summary of band returns during the spring 2015 season.	19
Table 9. Summary of paid and volunteer hours at the observatory during 2014.....	25
Table 10. Summary of visitor hours at the observatory during the spring 2014 season.	25

1.0 Introduction

This report describes methods and results of work done at the Albert Creek Bird Observatory from April 22 to June 6, 2015, the fifteenth year of spring migration monitoring at the site. Activities during 2015 mirrored those of previous years and no new activities were conducted at the observatory.

Previous annual reports and additional information on the observatory can be found on the Society of Yukon Bird Observatories website: www.yukonbirdobservatories.org

1.1 Background

The observatory collects information on birds which is shared through an international bird banding database (Canadian Wildlife Service Bird Banding Office and USGS Bird Banding Laboratory), Society of Yukon Bird Observatories annual station reports, and other publications. During 2014, the Yukon Bird Observatories (Teslin Lake and Albert Creek) were granted full membership status to the Canadian Migration Monitoring Network (CMMN). The CMMN is a nationwide network of 26 membership stations from across Canada who collect standardized bird monitoring data and collaborate on research projects. The Yukon Bird Observatories are the furthest north CMMN stations and are the only ones located within the core of Canada's western Boreal Forest.

Many of the birds banded and observed at Albert Creek are highly migratory, spending the winter months as far south as Central and South America. In addition to the potential knowledge gained from band recoveries, the observatory also continues to gather baseline data of birds (and their migration) in the Liard region and the Yukon as a whole. Due to the large landmass of the territory, and the relatively few bird biologists and advanced birders in the Yukon, there is still a great deal to be learned regarding the bird life of the Yukon. The observatory serves as a highly valuable research and monitoring project to better understand the distribution of the Yukon's bird species, many of which are considered uncommon or rare. Over the long term, the data collected at the observatory will facilitate trend analysis for a number of species. Such information will be valuable for conservation and monitoring of bird populations not only in the Yukon, but North America as a whole. In addition to monitoring bird populations, the observatory collects a substantial amount of data on each bird banded. Information such as age, sex, measurements (wing, tail, etc.) and molt timing continue to add to the knowledge base of such information across North America.

The observatory plays a role in education as a place where the public, volunteers and students can take part in a unique, community based research project. Numerous people visit the observatory on an annual basis and the field station has become a valuable training opportunity for individuals interested in learning about ornithological research and monitoring methods.

1.2 Goals of the Albert Creek Bird Observatory

The goals of the Albert Creek Bird Observatory are to:

- Gather baseline information on birds and bird migration in the Watson Lake area.
- Collect data to facilitate the long term monitoring (*i.e.* trend analysis) of birds in the southeast Yukon.
- Conduct and participate in specific studies such as colour banding and feather collecting for various studies.
- Provide a setting for the public including school groups to learn about birds and bird migration.
- Provide employment and training opportunities for students and volunteers.
- Provide a unique tourist attraction for the community of Watson Lake.

1.3 Objectives of the 2015 Season

The objectives of the 2015 field season at the Albert Creek Bird Observatory were to:

- Continue the spring migration monitoring work using previously established protocols,
- Collect an additional year of bird monitoring data to be used for future trend analysis, and,
- Compare 2015 bird migration results to the previous 6 years of similarly collected data.

1.4 Acknowledgements

The 2015 operation of the Albert Creek Bird Observatory would not have been possible without financial assistance from the following organizations/groups: Environment Canada (Canadian Wildlife Service), Yukon Bird Club, EDI Environmental Dynamics Inc. and the Friends of Albert Creek Society.

Jukka Jantunen's excellent bird identification skills ensured high quality data collection, particularly when documenting rare and unusual species. Jukka and Ted Murphy-Kelly shared the Bander in Charge duties at the observatory. Jim Hawkings provided editorial comments on the draft version of this report. Susan and Barry Drury generously provided accommodations for the Bander in Charge and volunteers. Long term volunteers Helene Dion-Phenix and Francis Bordeleau-Martin spent the majority of the spring season at the observatory and contributed significantly to the day-to-day operations.

We appreciate the help of the following volunteers:

- Over 15 days - H  l  ne Dion-Phenix, Francis Bordeleau-Martin
- 10 to 15 days – Anissa Berry, Susan Drury
- 5 to 10 days – Andrea Sidler, Julie Bauer
- 1 to 5 days – Hilary Cooke, Lila Tauzer, John Meikle, Helen Liskova and Gwen Baluss

2.0 Methods

2.1 Study Site

The bird observatory is located along Albert Creek in the Liard River Valley, 15 km west of the community of Watson Lake in the southeast region of the Yukon Territory. The site is located on the Rancheria Loop Road near the Albert Creek Subdivision (Upper Liard) and is 1.4 km north of Alaska Highway. The observatory is located on the margin of a large wetland complex locally known as Moon Lake and is at the southern extent of the Tintina Trench, a prominent geological feature and a known bird migration corridor which bisects the Yukon in a northwest/southeast direction. The site falls within Liard Basin Ecoregion (Boreal Cordillera Ecozone. (Smith et al. 2004)¹.

The majority of the site is composed of a regenerating forest with the marsh being the defining feature of the study site. The area is dominated by willow (*Salix* spp.), alder (*Alnus* spp.) and regenerating white birch (*Betula papyrifera*) with some mature white spruce (*Picea glauca*), trembling aspen (*Populus tremuloides*) and balsam poplar (*Populus balsamifera*) scattered throughout. The under-story vegetation within the regenerating portion of the study site consists primarily of red clover (*Trifolium pratense*), fireweed (*Epilobium augustifolium*), yarrow (*Achillea millefolium*), red raspberry (*Rubus idaeus*), prickly rose (*Rosa acicularis*) as well as various grass species (*Poa* spp). Within the stands of mature white spruce, the under-story is dominated by various bryophytes and cranberry (*Vaccinium vitis-idaea*) with willow, alder and red osier dogwood (*Cornus stolonifera*) scattered throughout.

2.2 General Methods

The methods for the operation of the bird observatory follow the Albert Creek Bird Observatory Field Protocol and Manual². A brief summary of the field protocol is described in the following sections; however, for a detailed description refer to the publications page of the Society of Yukon Bird Observatories website (www.yukonbirdobservatories.org).

All monitoring activities at the observatory can be separated into standardized and non-standardized methods. To facilitate long term analysis of the observatory's data, the standardized data is collected in the same format year after year. Non-standardized activities may include operating species-specific mist nets within the count area or the collection of banding/observation data outside of the standard count period.

¹ Smith, C.A.S., Meikle, J.C., and Roots, C.F. (editors), 2004. Ecoregions of the Yukon Territory: Biophysical properties of Yukon landscapes. Agriculture and Agri-Food Canada, PARC Technical Bulletin No. 04-01, Summerland, British Columbia, 313 p.

² Schonewille, B., T. Murphy-Kelly and J. Jantunen. 2014. Albert Creek Bird Observatory (ACBO) Field Protocol (version 3). Society of Yukon Bird Observatories.

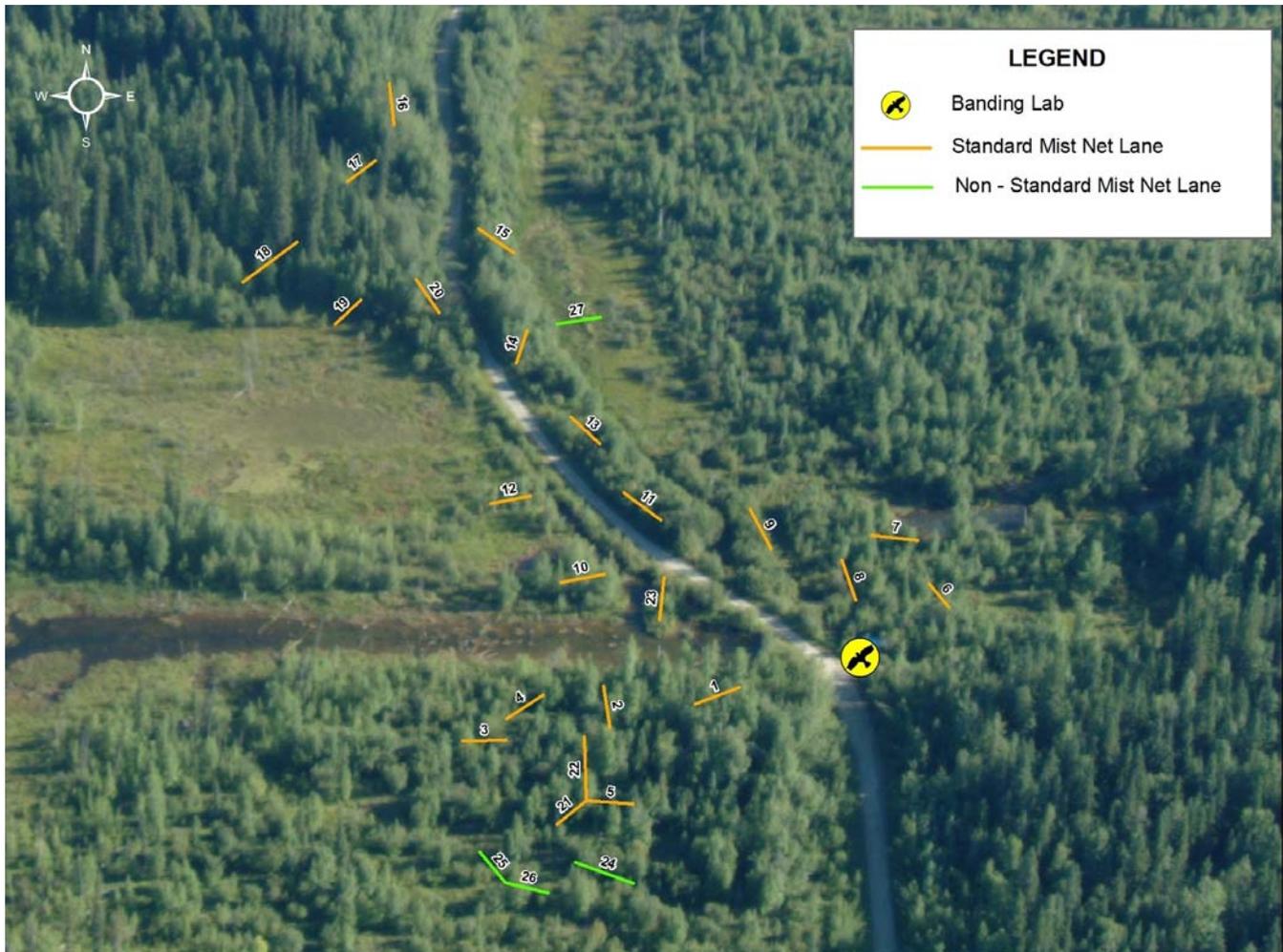


Figure 1. Overview of the Albert Creek Bird Observatory (60.06181 °N, -128.91653 °W). The numbered lines are mist nets, each 12 m long with the exception of nets 18 and 22 which were 18 m in length. The road passing through the image is the Rancheria Loop Road.

For every species observed, estimated totals are calculated for every day of operation using the following categories;

- Band: new birds banded
- Recaptures: previously banded birds, not included if recaptured on the day they were banded.
- Other Visual Migrants: birds in obvious migration flight observed incidentally
- Census: birds observed while on census only
- Observed: all other bird observations including incidental observations.

Using the categories outlined above, the Bander-In-Charge estimates the total number of birds observed within/passing through the count area within the standard count period on a daily basis. Using only the standard count period data, this number represents the “Daily Estimated Total – DET” and when the non-standard data is included, this number represents the “Daily Species Total – DST”.

2.3 Mist Netting

The primary method of monitoring the movement of birds at the study site is the use of mist nets for the purpose of capturing and banding birds. The observatory operates with 23 standard mist nets and one non-standard mist net (Figure 1). Non-standard nets used in 2015 were limited to net 27 which was used to target Rusty Blackbirds and other marsh-oriented birds (shorebirds, ducks) not typically captured in the standard nets. All nets are 30 mm mesh and 12 m in length, with the exception of nets 18 and 22 which are 18 m in length. The standard mist netting effort begins at official sunrise and continues for 6 hours. The full mist netting effort is achieved only on days when adequate personnel are present onsite and weather conditions are favorable. If this is not possible, the number of nets operated is reduced rather than the duration of effort.

2.4 Census

To supplement the banding data, five short census “legs” are surveyed on a daily basis as personnel allow. Many other observatories operate a longer (1 hour) census through the count area; however, this is not possible at Albert Creek due to inconsistent numbers of qualified observers on site. Census legs are predefined routes which are followed by a single observer to record bird observations independent from the mist netting captures and incidental observations. The short census legs allow for a single observer to census birds without committing a full hour to this activity. On days when bird captures are relatively low and/or adequate personnel are onsite, these census legs can be surveyed in combination with the mist net checks.

2.5 Incidental Observations

Incidental observations are collected on a continuous basis at the observatory. For example, birds observed while conducting mist net checks would be considered incidental observations. Any birds in obvious migration flight (flying over the site) are recorded as ‘other visual migrants’ on the daily log sheets.

2.6 Public Engagement

To attract members of the public to the observatory, we put up posters at the Watson Lake Visitor Centre and the community library. We also advertised the observatory through digital media including the Yukon Bird Observatories blog, Facebook page, and website.

3.0 Results & Discussion

3.1 Station Operation

The 2015 spring season included a total of 46 field days between April 22 and June 6; standardized mist netting occurred on 40 days between April 23 and June 6. Non-standard operation included 1 day at the start of the season during setup of the observatory and 5 days near the start of the season due to weather-induced delays of the daily count period.

A total of 2,339 birds of 49 species were banded and 115 species were observed (Table 1, Table 2). The all-time total number of birds banded at Albert Creek Bird Observatory is now 49,288 birds of 92 species, and 173 species have been observed (Appendix A); the lone new species observed in 2015 was Smith's Longspur.

Table 1. Summary statistics for the 2015 spring season.

Week	Date	Days Operated ^A	Birds Banded				Total Species Observed
			#	Species	Net Hours	#/100 Net Hours	
1	22 – 28 April	7	249	10	307.0	81.1	43
2	29 April – 5 May	7	535	19	687.75	77.8	50
3	6 – 12 May	7	823	31	1050.0	78.4	66
4	13 – 19 May	7	369	26	1050.0	35.1	80
5	20 – 26 May	7	149	25	1038.0	14.4	83
6	27 May – 2 Jun	7	148	22	762.5	19.4	79
7	3 – 9 Jun	4	66	19	529.0	12.5	75
ALL		46	2,339	49	5454.25	42.9	115

^A Requires a minimum of 3 hours onsite with full estimated totals recorded (does not require mist netting if weather conditions are adverse).

Table 2. Birds banded during the 2015 spring season.

Common Name	Scientific Name	# Banded	# Banded / 1000 Net Hours
Sharp-shinned Hawk	<i>Accipiter striatus</i>	1	0.18
Lesser Yellowlegs	<i>Tringa flavipes</i>	1	0.18
Solitary Sandpiper	<i>Tringa solitaria</i>	2	0.37
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	16	2.93
Black-backed Woodpecker	<i>Picoides arcticus</i>	1	0.18
Northern Flicker	<i>Colaptes auratus</i>	3	0.55
Alder Flycatcher	<i>Empidonax alnorum</i>	13	2.38
Least Flycatcher	<i>Empidonax minimus</i>	7	1.28
Hammond's Flycatcher	<i>Empidonax hammondii</i>	6	1.10
Warbling Vireo	<i>Vireo gilvus</i>	15	2.75
Gray Jay	<i>Perisoreus canadensis</i>	5	0.92
Tree Swallow	<i>Tachycineta bicolor</i>	2	0.37
Black-capped Chickadee	<i>Poecile atricapillus</i>	1	0.18
Boreal Chickadee	<i>Poecile hudsonicus</i>	6	1.10
Ruby-crowned Kinglet	<i>Regulus calendula</i>	67	12.28
Gray-cheeked Thrush	<i>Catharus minimus</i>	5	0.92
Swainson's Thrush	<i>Catharus ustulatus</i>	27	4.95

Common Name	Scientific Name	# Banded	# Banded / 1000 Net Hours
Hermit Thrush	<i>Catharus guttatus</i>	1	0.18
American Robin	<i>Turdus migratorius</i>	58	10.63
Varied Thrush	<i>Ixoreus naevius</i>	13	2.38
Bohemian Waxwing	<i>Bombycilla garrulus</i>	2	0.37
Lapland Longspur	<i>Calcarius lapponicus</i>	1	0.18
Northern Waterthrush	<i>Parkesia noveboracensis</i>	147	26.95
Tennessee Warbler	<i>Oreothlypis peregrine</i>	49	8.98
Orange-crowned Warbler	<i>Oreothlypis celata</i>	162	29.70
Common Yellowthroat	<i>Geothlypis trichas</i>	57	10.45
Black-and-white Warbler	<i>Mniotilta varia</i>	1	0.18
Ovenbird	<i>Seiurus aurocapilla</i>	2	0.37
American Redstart	<i>Setophaga ruticilla</i>	12	2.20
Yellow Warbler	<i>Setophaga petechial</i>	56	10.27
Blackpoll Warbler	<i>Setophaga striata</i>	8	1.47
Myrtle Warbler	<i>Setophaga coronate</i>	257	47.12
Wilson's Warbler	<i>Cardellina pusilla</i>	266	48.77
American Tree Sparrow	<i>Spizella arborea</i>	196	35.94
Chipping Sparrow	<i>Spizella passerine</i>	3	0.55
Savannah Sparrow	<i>Passerculus sandwichensis</i>	56	10.27
Fox Sparrow	<i>Passerella iliaca</i>	73	13.38
Lincoln's Sparrow	<i>Melospiza lincolni</i>	94	17.23
Swamp Sparrow	<i>Melospiza georgiana</i>	6	1.10
White-throated Sparrow	<i>Zonotrichia albicollis</i>	18	3.30
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	224	41.07
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	1	0.18
Slate-colored Junco	<i>Junco hyemalis</i>	100	18.33
Western Tanager	<i>Piranga ludoviciana</i>	3	0.55
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	3	0.55
Rusty Blackbird	<i>Euphagus carolinus</i>	53	9.72
Brown-headed Cowbird	<i>Molothrus ater</i>	3	0.55
Purple Finch	<i>Carpodacus purpureus</i>	8	1.47
Common Redpoll	<i>Acanthis flammea</i>	228	41.80
TOTAL		2,339	428.84

Weather conditions largely influence the activities at the observatory (Table 3). Windy conditions and periods of prolonged precipitation reduce the mist netting effort. The spring of 2015 saw weather conditions (temperature, wind and precipitation) that were comparable to previous years with the exception of slightly warmer temperatures and fewer days with rain and snow (Table 4).

Table 3. Summary of weather conditions during the 2015 spring season.

Weather Parameter	Week						
	1	2	3	4	5	6	7
Average Opening Temperature	0.0	-2.0	0.3	3.0	3.9	3.9	6.5
Average Closing Temperature	9.5	10.3	18.2	20.5	20.0	11.8	17.5
Average Opening Wind	0.5	0.0	0.0	0.0	0.0	0.4	0.3
Average Closing Wind	0.5	0.9	0.3	0.2	0.0	1.2	2.0
Days with Rain	0	1	0	0	0	1	1
Days with Snow	0	0	0	0	0	0	0

Table 4. Comparison of weather conditions during 2015 as compared to previous years (spring season only).

Weather Parameter	Annual Average						2010-2015 Average
	2010	2011	2012	2013	2014	2015	
Average Opening Temperature (°C)	0.8	1.9	1.4	0.5	0.5	1.9	1.2
Average Closing Temperature (°C)	13.7	12.4	11.2	10.7	12.7	15.0	12.6
Average Opening Wind (Beaufort scale)	0.1	0.3	0.1	0.2	0.0	0.2	0.2
Average Closing Wind (Beaufort scale)	1.1	1.2	0.9	1.1	0.5	0.6	0.9
Days with Rain	3	9	11	8	8	3	7
Days with Snow	2	1	3	6	1	0	2

3.2 Patterns in Captures

Each component of the 2015 data is summarized and presented in the following subsections; however, a summary account of the 2015 estimated total data is shown in Appendix B. Unless otherwise stated, the results presented in this report combine and summarize both standard and non-standardized data. Note that the estimated totals are derived on a daily basis by the Bander in Charge and incorporate all data collection components (mist netting captures and all observations) to estimate the number of birds of each species within or passing through the count area on each day operation.

Among the top 10 species banded during 2015, five were captured in above average numbers and five in below average numbers (Table 5). Among the species banded in above average numbers, Common Redpoll was the most notable with 228 banded compared to an average of 98 in 2007-2015. The most notable species banded in below average numbers was Myrtle Warbler with 257 banded compared to the 2007 to 2015 average of 322. Capture rates of this species are often highly variable between years. For example, the record season high banding total is 571 (2012) compared to the record low of 61 during 2013.

Table 5. The 10 most common bird species banded in 2015 as compared to 2007–2015 averages (numbers in brackets indicate the annual ranking in birds banded. The prefix “T” indicates a tied in annual banding totals; data from 2009 excluded due to inadequate duration of data collection for comparisons between years.

Species	2015	2014	2013	2012	2011	2010	2008	2007	2007 – 2015 Average
Wilson’s Warbler	266 (1)	273 (1)	228 (3)	259 (7)	125 (4)	249 (4)	182 (4)	369 (1)	244
Myrtle Warbler	257 (2)	148 (3)	61 (11)	571 (1)	217 (2)	776 (1)	434 (1)	113 (9)	322
Common Redpoll	228 (3)	12 (T18)	294 (2)	58 (18)	1 (T39)	127 (7)	54 (9)	12 (24)	98
White-crowned Sparrow	224 (4)	6 (T23)	394 (1)	263 (6)	68 (11)	262 (2)	138 (5)	217 (6)	197
American Tree Sparrow	196 (5)	13 (T17)	61 (T12)	571 (T1)	63 (13)	136 (6)	74 (8)	345 (2)	177
Orange-crowned Warbler	162 (6)	125 (4)	78 (8)	288 (4)	75 (10)	177 (5)	339 (2)	251 (5)	187
Northern Waterthrush	147 (7)	118 (5)	106 (5)	166 (10)	81 (9)	65 (9)	31 (15)	145 (7)	107
Slate-colored Junco	100 (8)	13 (T17)	102 (6)	263 (T5)	109 (6)	57 (13)	48 (12)	334 (3)	128
Lincoln’s Sparrow	94 (9)	16 (T14)	101 (7)	193 (8)	66 (12)	60 (11)	27 (16)	120 (8)	85
Fox Sparrow	73 (10)	2 (T39)	155 (4)	181 (9)	164 (3)	257 (3)	51 (11)	60 (13)	118

The peak period for mist netting occurred during weeks 1-3 (April 22 to May 12) when a large movement of early season migrants moved through the study site (Figure 2). Captures during this period were dominated by Gambel’s White-crowned Sparrow and American Tree Sparrow with Wilson’s and Myrtle warblers becoming more common within the daily banding totals after May 10. Banding captures after May 15 were relatively low as no large movements of the later migrating species were noted. Notable species under-represented in the banding totals during this timing included Yellow and Blackpoll warblers.

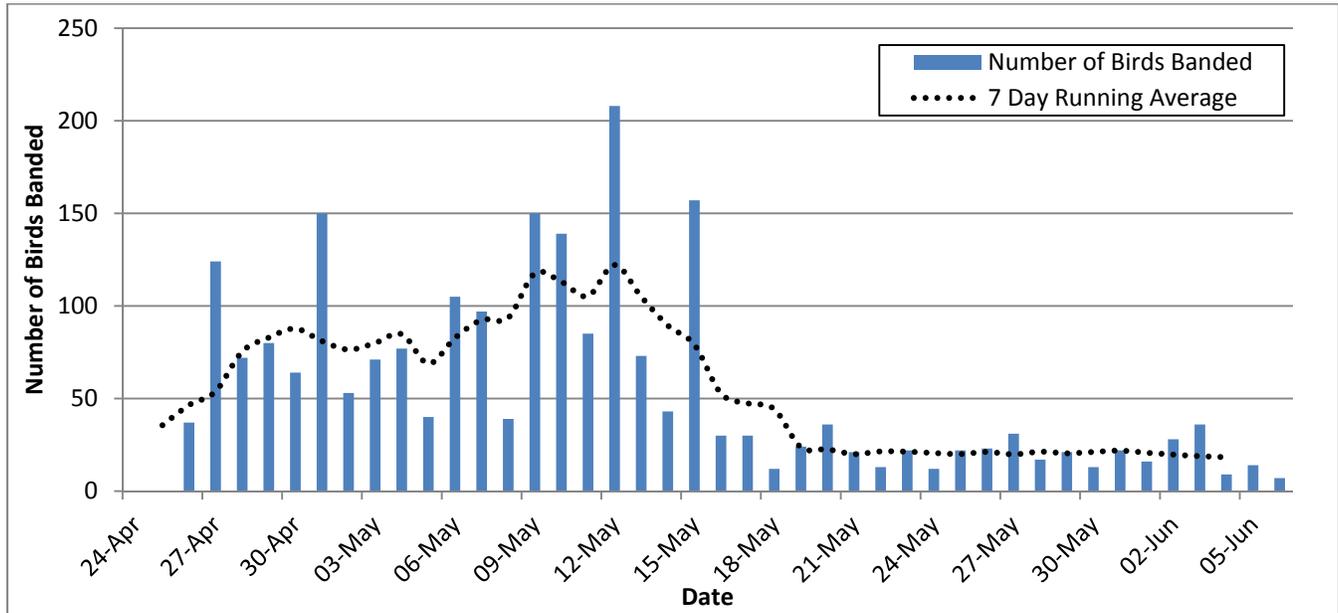


Figure 2. Summary of birds banded per day during the spring of 2015.

The overall number of birds banded during 2015 was slightly above the long term average of 2,199; however, the number of birds per 100 net hours (41.4) was considerably lower than the long term average of 52.2 (Figure 3).

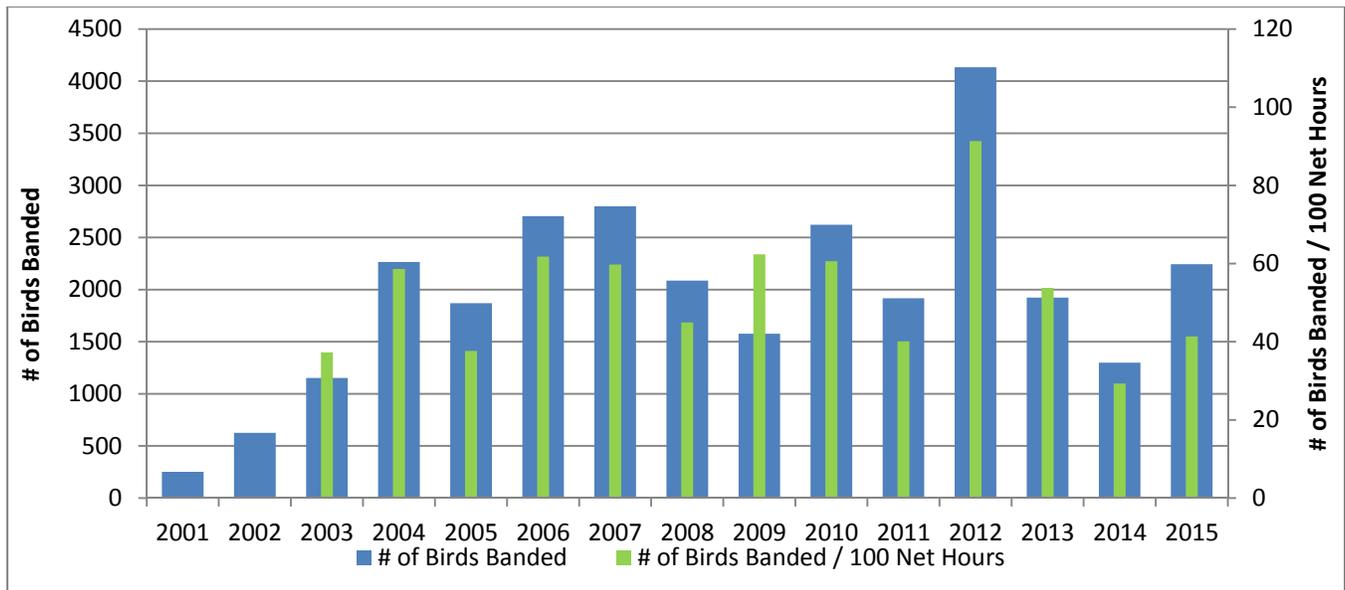


Figure 3. Summary of birds banded during the spring from 2001 to 2015.

The high level of consistency in effort across all standard mist nets (Figure 4) demonstrates adherence to the observatory’s monitoring protocol, particularly nets 1 through 14 and 21/22 which are the core nets. Nets 22 and 18 are 18 m nets and therefore their effort is multiplied by 1.5 to be consistent with the effort of the other nets which are 12 m in length. Also note that net 27 is considered non-standard and is used primarily to target species not frequently captured such as waterfowl, shorebirds and blackbirds.

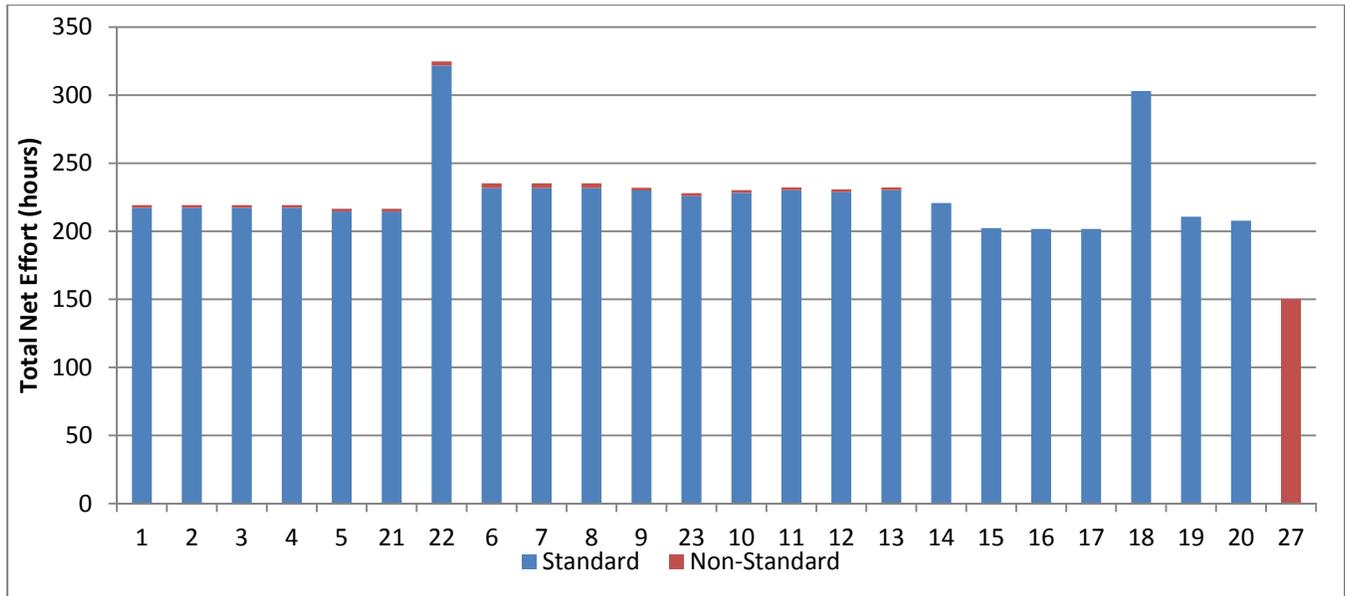


Figure 4. Summary of hours per mist net during the spring of 2015 (note net 22 and 18 are 18 m nets whereas all other nets are 12m).

Standard mist nets with the highest productivity were those within and adjacent to marsh habitats such as net 8, 9, 12 and 23 (Figure 5). This is likely due to the edge habitats present in these areas which provide feeding opportunities and movement corridors within the marsh. Mist nets are placed in various habitats to sample different species of birds despite lower overall capture rates; examples include nets 16 through 20 which are located in a mature forest.

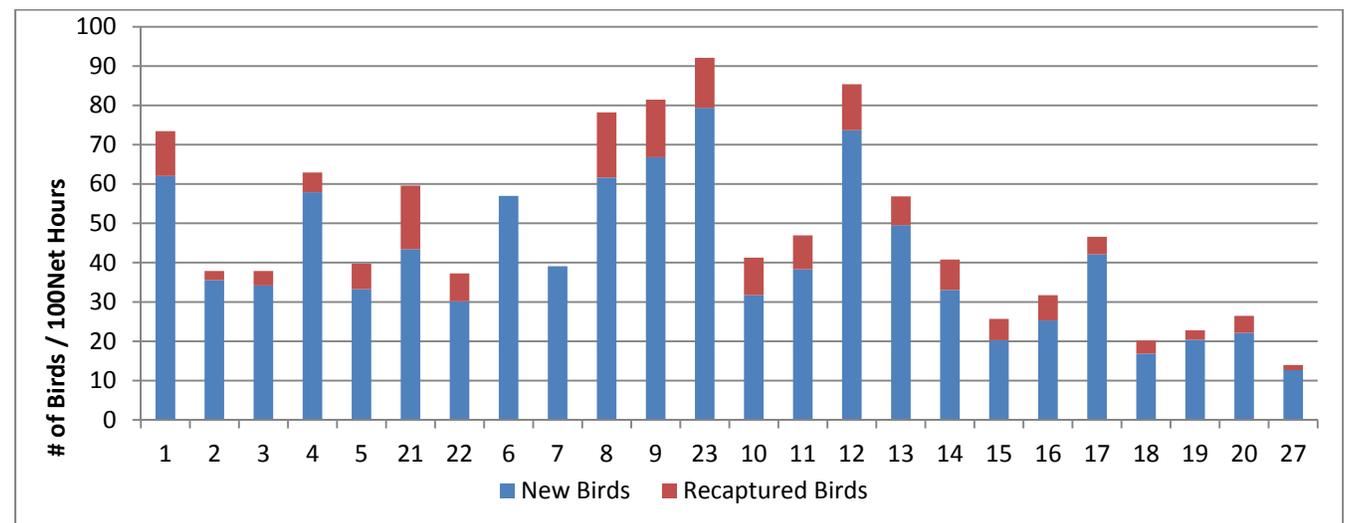


Figure 5. Number of birds banded per mist net during the spring of 2015

3.3 Migration Timing

The standardized monitoring at the observatory can be used to investigate the spring migration timing of numerous species as summarized in the following subsections.

3.3.1 Generalized Migration Timing

Generalized migration timing during 2015 as compared to the 2010 to 2014 average for temperate, neotropical and irruptive migrants/year round residents is presented in Figure 6.

As indicated by the number of birds banded during 2015, the migration timing of the temperate migrants appeared to be similar to previous years. Fewer neotropical migrants were banded than average; however, the timing appeared to be one week earlier than average as indicated by the peak capture of this group of migrants during the week of May 14.

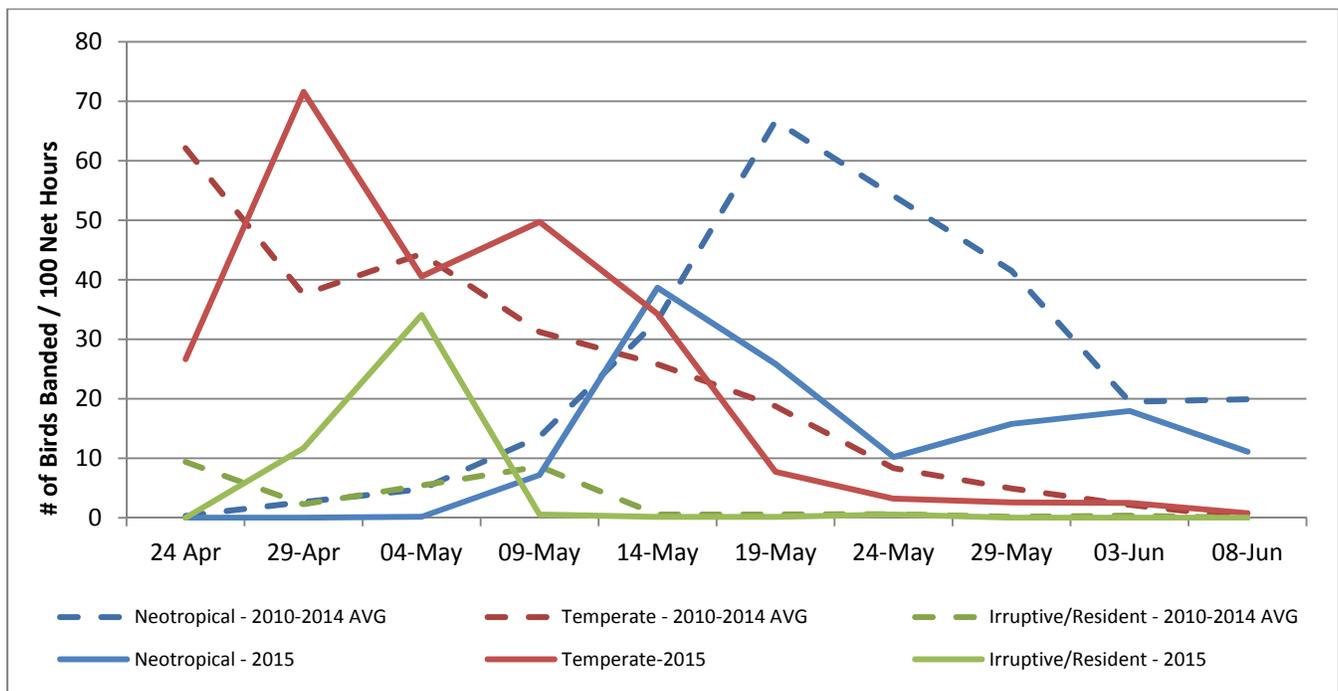


Figure 6. Generalized migration timing by species group during 2015 as compared to the average timing from 2010 to 2014.

3.3.2 Arrival Dates

Spring arrival dates for species encountered in sufficient numbers can also be used to make general migration timing comparisons between years; spring arrival dates for 22 species are shown in Table 6. This data shows that 18 of the 22 species arrived earlier than average and 3 species arrived on a record early date. The most notable early arrival was a Yellow Warbler banded on May 9 compared to the average arrival date of May 17. Since 2007, the only other year with as many early arrivals was 2012 when 19 species arrived earlier than average. At the other end of the spectrum, only one species arrived earlier than average in the spring of 2014.

Table 6. Summary of arrival dates for frequently observed species at Albert Creek from 2007 to 2015. Green cells indicate an arrival date earlier than the average, yellow cells indicate on average and red cells indicate later than average early arrivals. The record early dates for each species are shown in **bold**.

Species	2015	2014	2013	2012	2011	2010	2009	2008	2007	2007 to 2014 Average Arrival Date
Station Opening Date	22-Apr	22-Apr	23-Apr	21-Apr	24-Apr	22-Apr	11-May	24-Apr	23-Apr	
Solitary Sandpiper	6-May	13-May	9-May	7-May	3-May	10-May	-	12-May	11-May	09-May
Yellow-bellied Sapsucker	30-Apr	12-May	15-May	1-May	6-May	24-Apr	-	9-May	2-May	05-May
Alder Flycatcher	26-May	28-May	25-May	21-May	20-May	26-May	21-May	26-May	23-May	23-May
Least Flycatcher	18-May	27-May	24-May	25-May	18-May	29-May	4-Jun	26-May	22-May	25-May
Hammond’s Flycatcher	4-May	8-May	11-May	1-May	13-May	2-May	-	12-May	14-May	08-May
Warbling Vireo	11-May	13-May	16-May	21-May	21-May	16-May	21-May	20-May	19-May	18-May
Gray-cheeked Thrush	15-May	17-May	21-May	15-May	-	15-May	23-May	16-May	11-May	16-May
Swainson’s Thrush	10-May	15-May	10-May	3-May	10-May	16-May	19-May	11-May	11-May	11-May
Tennessee Warbler	17-May	25-May	24-May	22-May	16-May	24-May	26-May	25-May	24-May	23-May
Orange-crowned Warbler	27-Apr	7-May	8-May	1-May	6-May	24-Apr	-	3-May	28-Apr	02-May
Yellow Warbler	9-May	18-May	17-May	15-May	15-May	17-May	20-May	18-May	18-May	17-May
Cape May Warbler	3-Jun	26-May	24-May	28-May	26-May	30-May	26-May	26-May	28-May	26-May
Myrtle Warbler	26-Apr	3-May	6-May	21-Apr	30-Apr	21-Apr	-	30-Apr	23-Apr	27-Apr
Blackpoll Warbler	12-May	18-May	10-May	13-May	10-May	15-May	23-May	9-May	16-May	14-May
American Redstart	24-May	27-May	25-May	22-May	21-May	26-May	29-May	27-May	27-May	25-May
Northern Waterthrush	9-May	13-May	8-May	7-May	9-May	10-May	-	10-May	5-May	08-May
Common Yellowthroat	12-May	17-May	16-May	13-May	15-May	13-May	20-May	10-May	11-May	14-May
Wilson’s Warbler	5-May	8-May	7-May	30-Apr	8-May	10-May	-	3-May	11-May	06-May
Savannah Sparrow	26-Apr	9-May	6-May	24-Apr	3-May	29-Apr	-	29-Apr	23-Apr	30-Apr
Swamp Sparrow	9-May	15-May	23-May	3-May	16-May	5-May	22-May	9-May	5-May	12-May
White-throated Sparrow	13-May	13-May	18-May	8-May	15-May	1-May	18-May	10-May	15-May	12-May
Red-winged Blackbird	30-Apr	10-May	12-May	23-Apr	3-May	27-Apr	-	3-May	3-May	03-May
Number of Record Early Arrivals	3	0	1	6	5	4	0	2	3	-
Total ‘Earlier than Average’ Arrivals	18	1	5	19	8	11	1	6	9	-
Total ‘On Average’ Arrivals	0	2	3	1	2	0	1	4	3	-
Total ‘Later than Average’ Arrivals	4	19	14	2	11	11	11	12	10	-

3.4 Band Repeats, Returns & Recoveries

The proportion of band repeats during 2015 was 11.7% across all species combined (Table 7). . The proportion of band repeats during 2014 was considerably lower (5.9%) although in earlier years, the proportion has typically been in the 8-10% range.

Table 7. Summary of band repeats during the spring 2015 season.

Species	# of Individuals Recaptured	Proportion of Original Individuals Banded (%)
Yellow-bellied Sapsucker	4	25.0
Least Flycatcher	1	14.3
Hammond's Flycatcher	2	33.3
Warbling Vireo	7	46.7
Gray Jay	1	20.0
Boreal Chickadee	3	50.0
Ruby-crowned Kinglet	3	4.5
Swainson's Thrush	1	3.7
American Robin	12	20.7
Varied Thrush	1	7.7
Northern Waterthrush	5	3.4
Tennessee Warbler	9	18.4
Orange-crowned Warbler	4	2.5
Common Yellowthroat	3	5.3
American Redstart	1	8.3
Yellow Warbler	3	5.4
Yellow-rumped ' Myrtle' Warbler	5	2.0
Wilson's Warbler	18	6.8
American Tree Sparrow	76	38.8
Lincoln's Sparrow	16	17.0
Swamp Sparrow	1	16.7
Savannah Sparrow	9	16.1
Fox Sparrow	4	5.5
White-crowned Sparrow	59	26.3
White-throated Sparrow	3	16.7
Slate-colored Junco	11	11.0
Rusty Blackbird	5	9.4
Common Redpoll	6	2.6
ALL SPECIES	273	11.7

Band returns (individuals banded at the site in previous years) typically represent individuals that breed within the study site as the likelihood of re-trapping migrants is relatively low. During 2015, the observatory had 17 returns of birds banded in previous years representing 10 species (Table 8). The oldest band recovery during 2015 was a Black-capped Chickadee initially banded as a hatch year bird during July 2010. Other relatively old band recoveries included a Black-capped Chickadee, Warbling Vireo and White-throated Sparrow banded in 2011.

Table 8. Summary of band returns during the spring 2015 season.

Species	Band Number	Banded		Recaptured
		Date	Age – Sex ¹	Date
Sharp-shinned Hawk	1013-51160	21 Aug 2012	AHY – M	4 Jun 2015
Yellow-bellied Sapsucker	2231-27769	25 May 2014	TY – F	15 May 2015
Warbling Vireo	2650-56078	23 Jul 2011	AHY – U	25 May 2015
Black-capped Chickadee	2640-17148	25 Jul 2010	HY – U	26 Apr 2015
Black-capped Chickadee	2650-56255	26 Jul 2011	HY – U	2 May 2015
American Robin	1292-04560	25 May 2012	ASY – M	29 Apr 2015
American Robin	1352-02013	15 May 2014	SY – M	29 Apr 2015
American Robin	1352-02026	30 May 2014	SY – M	4 May 2015
Northern Waterthrush	2730-84605	23 May 2012	SY – U	20 May 2015
Northern Waterthrush	2730-84664	25 May 2012	ASY – U	27 May 2015
Northern Waterthrush	2740-17419	21 May 2013	SY – U	15 May 2015
Northern Waterthrush	2740-18185	25 May 2014	ASY – U	14 May 2015
Northern Waterthrush	2740-18271	27 May 2014	SY – U	23 May 2015
Myrtle Warbler	2740-17567	28 May 2013	AHY – M	13 May 2015
White-throated Sparrow	2341-67873	1 Jun 2011	SY – U	21 May 2015
White-crowned Sparrow	2251-47496	12 May 2012	SY – U	3 May 2015
Rusty Blackbird	1292-04508	5 May 2012	ASY – F	1 May 2015

¹ HY – hatch year, AHY – after hatch year, ASY – after second year, TY – third year; M – male, F – female, U – unknown.

Foreign band recoveries are a very infrequent event and to date there have been four foreign band recoveries of birds banded at Albert Creek;

- Hatch year male Yellow-rumped Warbler banded on July 26, 2010 and recovered near Colfax, Louisiana on November 2, 2010.
- After hatch year male Yellow-rumped Warbler banded on May 1, 2005 and recovered near Mehanga, Minnesota on April 27, 2006.
- Hatch year Pine Siskin banded on August 22, 2011 and recovered in Bottrel, Alberta on May 19, 2012.
- Hatch year Pine Siskin banded on July 17, 2010 and recovered near Portland, Oregon on April 4, 2012.

3.5 *Interesting & Notable Captures / Observations*

The vast majority of birds banded and observed at Albert Creek are species which are common and widespread north and west of the study site. As the observatory operates on a daily basis during the migration season, there are often a number of interesting and notable species captured and/or observed at the site. The following section summarizes these occurrences during 2015 as well as the occurrence of the species not regularly found farther west and north in the Yukon than Albert Creek.

Sora

Sora is the only species of rail recorded in the Yukon and is uncommon at productive wetlands, primarily in the southern portion of the territory. In the spring of 2015, this species was observed on

11 days from May 24 to June 6 with 1 or 2 individuals recorded on each day. The numbers observed appear to be variable between years; however, the numbers recorded in 2015 were slightly above the average of 7 bird days but well below the high of 25 bird days during 2011 (Figure 7). To date, the earliest and latest records for this species at Albert Creek are May 2 (2012) and September 9 (2007).

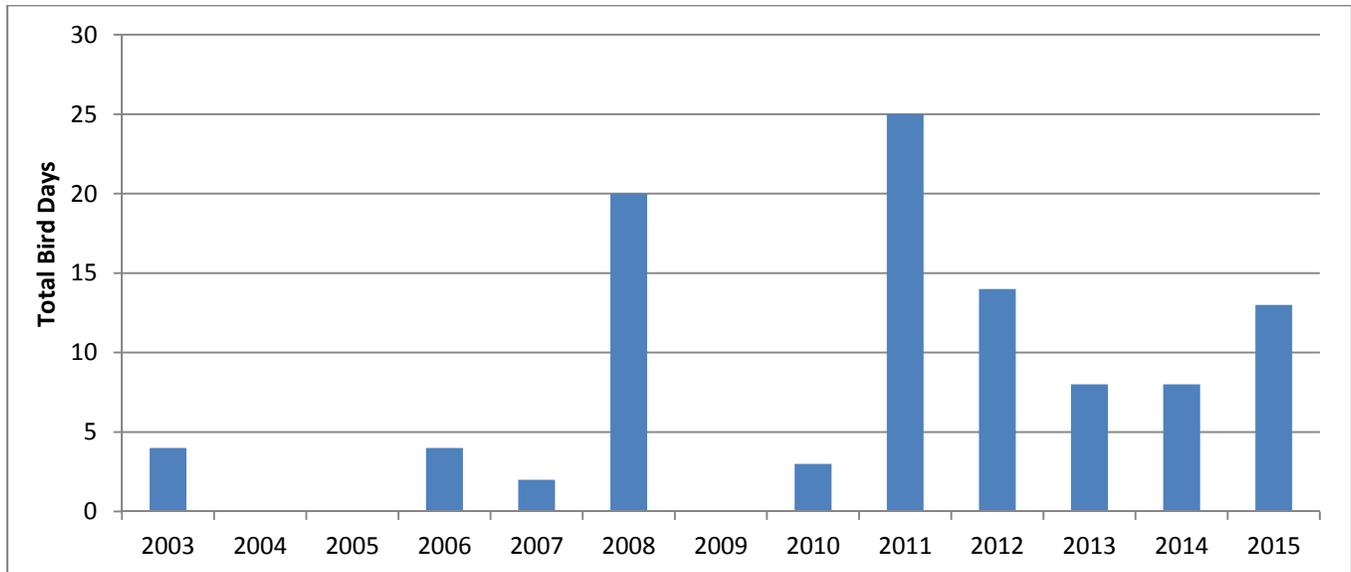


Figure 7. Summary of Sora records at Albert Creek during the spring season from 2003 to 2015.

Barred Owl

The Yukon's first Barred Owl was documented at Albert Creek during the spring season of 2010 when it was heard on 20 days between April 20 and June 4 and also on August 26. In 2012, a singing individual was heard on 31 days from April 23 to June 5 and also on one day during the fall (August 28). Once again during 2013, a singing individual was observed on 19 days from May 10 to 29. As incidental observations, two Barred Owls were heard calling back and forth at Albert Creek on August 6 by bird observatory personnel and again on September 1. During 2014, a single bird was heard on 33 days between April 25 and June 7 and once again during 2015, a single individual was observed on 15 days between April 22 and June 3. Two individuals were detected on May 27 suggesting that there is likely a breeding pair present at the site.

Pileated Woodpecker

The least common woodpecker in the Yukon, Pileated Woodpecker is restricted to the southeast portion of the territory. This species has been observed annually since 2003 with the exception of 2010 and has been less common in recent years (Figure 8). The species was observed on 8 days in 2015 from May 15 to June 6 with a single individual detected on all days.

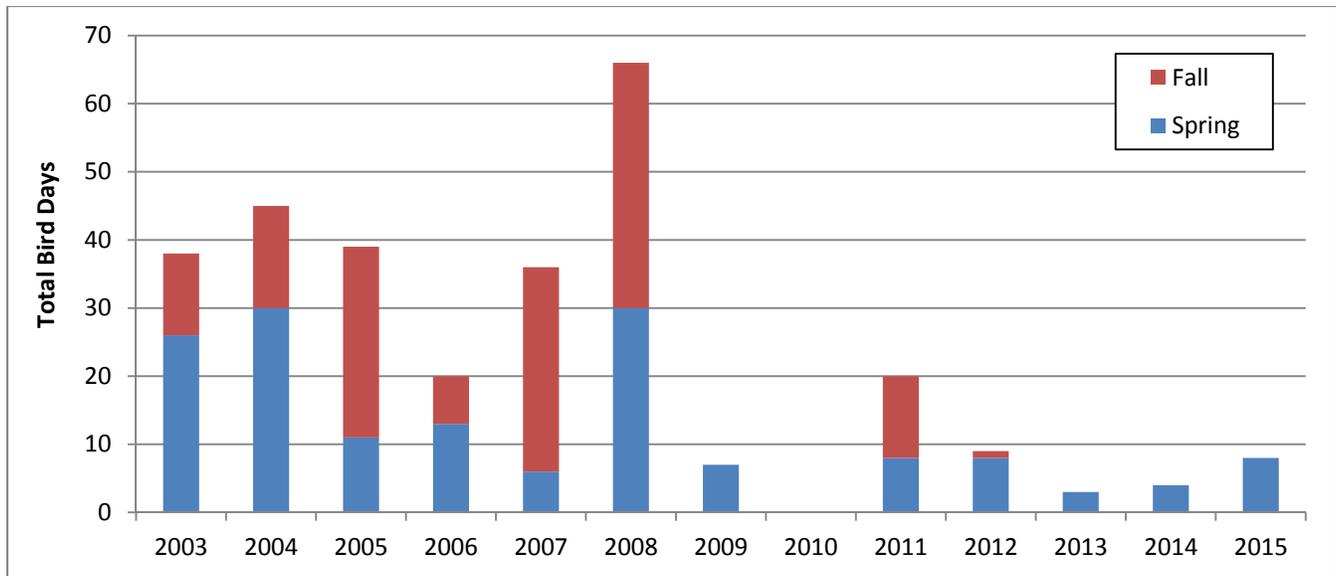


Figure 8. Summary of Pileated Woodpecker records at Albert Creek from 2003 to 2015 (note – the station has not operated during the fall since 2012 and not all full capacity since 2011).

American Crow

American Crow appears to be increasing in numbers in the Yukon and is now regularly encountered at a number of locations near Albert Creek, including the town of Watson Lake, Watson Lake airport and Upper Liard. In 2015, this species was encountered on 23 days from April 22 to June 6 with one to two birds observed on each day.

Smith’s Longspur

A breeding species in tundra habitats in the northern portion of the Yukon, this species is infrequently observed in migration in the southern Yukon. One individual observed on May 17 provided the first record at the observatory.

Magnolia Warbler

Magnolia Warbler is typically restricted to the southeast portion of the Yukon only and Albert Creek is located near the western extent of the breeding range in the territory. Although it has been banded on a small number of occasions at the Teslin Lake Bird Observatory, it is much more common towards the Watson Lake area and further east. Prior to 2012 when Albert Creek operated annually during the fall migration season, this species was banded much more frequently as many of the local breeders likely arrive after the spring monitoring season is finished in early June. For example, the all-time banding total for this species at Albert Creek (back to 2001) is 316 individuals of which only 24 have been banded during the spring. None were banded during 2015, although one individual was observed in the count area of the final day of operation (June 6).

Cape May Warbler

The Cape May Warbler's Yukon range is primarily restricted to the southeast portion of the territory. In recent years, this species has become more common at Albert Creek and local breeding is likely given the presence of singing males on territory. Records during 2013 and 2014 included up to 10 days of singing males on territory. However, during 2015, this species was only observed on a single day (June 3). Although not banded in 2015, a total of 15 individuals have been banded to date, 60% of which have been banded in fall.

Black-and-white Warbler

Another species with a restricted range in the Yukon, Black-and-white Warbler is banded infrequently at Albert Creek where it is near the western extent of its breeding range. During 2015, this species was detected on 3 days between May 19 and June 4 with a single individual detected on all days; these detections included a second year male banded on May 19. To date, a total of 7 individuals of this species have been banded at Albert Creek, all but one of which have been during the spring. Also of interest, an adult female Black-and-white Warbler was banded at the Teslin Lake Bird Observatory on August 27, 2015.

Ovenbird

One of the least common warbler species banded at Albert Creek, Ovenbird was detected on two days in 2015 (May 27 and June 2) both of which involved single individuals banded (both second years). To date, a total of 5 individuals have been banded at Albert Creek, all but one of which have been during the spring.

Clay-colored Sparrow

Considered a rare species throughout the Yukon, this species is recorded almost annually in the southeast portion of the territory where it is considered rare (casual elsewhere in the Yukon). This species has been encountered one on previous occasion at Albert Creek during the spring of 2010 when a single individual was banded. During 2015, this species was detected on a single day (June 3) when a male was heard singing within the count area.

Swamp Sparrow

In most of the Yukon, Swamp Sparrow is rare; however, it is a regular breeding species in the southeast portion of the territory (and a highly probable breeder at Albert Creek). In the spring of 2015, a total of 6 individuals were banded between May 15 and June 3 with single birds on all days. When birds banded and observations are combined, this species was encountered on 27 days from May 9 to June 6 with a high count of 5 birds on May 20 and 27. Of the 252 individuals banded to date, 81% have been banded in fall. When the observatory used to operate during the fall migration season, higher numbers of this species were banded annually due to the relatively high number of juveniles banded.

The earliest and latest records of this species at the observatory to date are April 27 (2005) and September 21 (2006).

White-throated Sparrow

This species is observed infrequently in most of the Yukon, but is a regular breeder in the southeast Yukon as far west as the Rancheria area. In 2015, a total of 18 birds were banded and when this data is combined with observation data, a total of 99 bird days were recorded and the species was encountered on 25 days from May 13 to June 6 with a high count of 8 on May 18 and 20. Of the 405 individuals banded at Albert Creek to date, 48% have been banded in spring. The earliest and latest records of this species are May 1 (2010) and September 21 (2008). The standardized migration monitoring data collected at Albert Creek since 2007 indicate that this species is increasing at Albert Creek (Figure 9). The confidence of this trend will be increased with additional years of data collection. Aside from being a passage migrant at the observatory, this species also breeds within the count area and this trend likely represents a combination of migrants and local breeders.

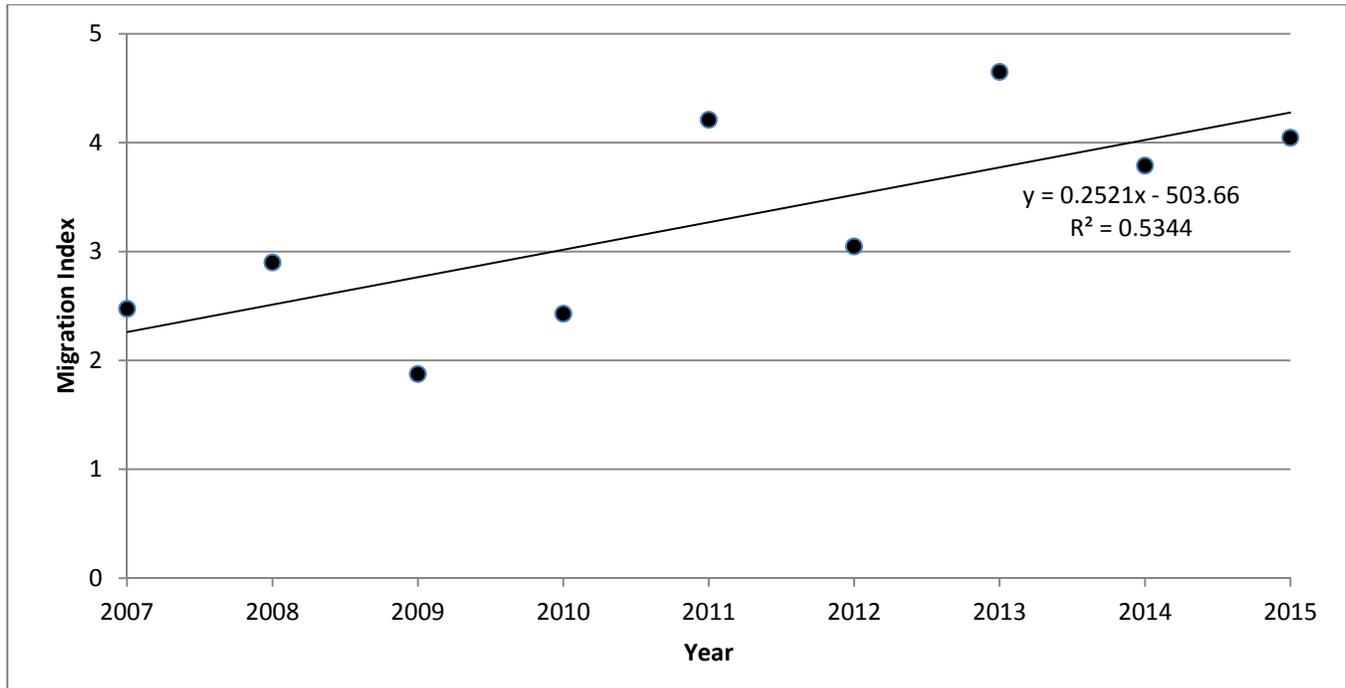


Figure 9. Summary of White-throated Sparrow standardized estimated total data during the spring from 2007 to 2015 (includes a combination of banding and observation data during the migration window of May 12 to June 2 in each year).

Western Tanager

Western Tanager is another species with a restricted Yukon range and which is a likely local breeder at Albert Creek. In the spring of 2015, three individuals were banded including one on May 31 and two on June 4. The species was detected on 25 days from May 13 to June 76 with a high count of 4 individuals on May 27 and June 4. To date, a total of 36 individuals have been banded with 55% during

the fall. The earliest and latest records of this species at the observatory are May 11 (2014) and August 31 (2005).

Rose-breasted Grosbeak

One of the least common species detected regularly at Albert Creek, Rose-breasted Grosbeak has been observed at Albert Creek on 6 occasions in total (fall of 2004 and spring of 2007, 2010 and 2012) although the species has not yet been banded. During 2015, a single individual was observed on May 21.

3.6 *Rusty Blackbirds*

As part of an ongoing project in co-operation with the other Yukon Bird Observatories field stations (Teslin Lake, McIntyre Marsh), all Rusty Blackbirds captured are fitted with a color band (light green) in addition to the regular numbered leg band. As each Rusty Blackbird study site uses a different color, the color bands help to identify the origin of a re-sighted individual without the need to recapture it. In 2014, 53 individuals were banded (17 AHY, 26 ASY, 10 SY) bringing the all-time banding total at Albert Creek to 559. When the 2015 banding and observation data are combined, a total of 176 bird days were recorded for Rusty Blackbird and the species was encountered on 28 days from April 26 to June 6 with a high count of 22 on May 3.

3.7 *Visitors and Volunteers*

Once again the observatory hosted numerous visitors and volunteers during 2015. On many days of operation, volunteer personnel were available onsite to provide valuable assistance with the observatory's operation. Long term volunteers H  l  ne Dion-Phenix and Francis Bordeleau-Martin from Quebec spent the majority of the season at the observatory and contributed considerably to the success of the operation during 2015. Table 9 and Table 10 summarize the number of hours spent at the observatory by visitors, volunteers and paid workers. Visitors were defined as those people who visited the observatory (often for a short time) and did not take part in activities at the observatory. Volunteers were those people who took part in the operation of the observatory (often extensively) without being financially compensated. Paid hours were spent by individuals being paid to be at the observatory. This category includes the Banders-In-Charge (Jukka Jantunen and Ted Murphy-Kelly) and individuals paid by other organizations (Yukon Government, Canadian Wildlife Service, etc). Note that the values shown for "paid hours" only include those spent at the observatory and do not include the extensive amount of travel to and from the site, data entry, data analysis, report writing and other communication of the observatory's results. The Watson Lake Visitor's Center and public library played a key role in directing visitors to the observatory, particularly those individuals travelling the Alaska Highway.

Table 9. Summary of paid and volunteer hours at the observatory during 2015.

Season	Paid		Volunteer	
	# of Individuals	Hours	# of Individuals	Hours
Spring	2	404.5	11	835.8

Table 10. Summary of visitor hours at the observatory during the spring 2015 season.

Season	Locals		Yukon		Canada		USA		Other International		TOTAL	
	#	Hours	#	Hours	#	Hours	#	Hours	#	Hours	#	Hours
Spring	4	8.0	12	63.3	2	2.0	3	3.5	-	-	21	76.7

The Society of Yukon Bird Observatories (SOYBO) has begun to use social media to promote the field stations (including Albert Creek) by providing regular station updates and photos of birds banded and observed. A Facebook group page (Yukon Bird Observatories) now has over 250 members and the blog page also has a number of followers. Between April 20 and June 10, 2015, SOYBO's website had 1,520 page views.

4.0 Conclusion

The results from this season's operation continue to add to the knowledge of numerous aspects of bird biology in the Yukon, including: species distribution, migration timing and local productivity. The study site has proven to be a very effective location for monitoring bird migration. The primary reason for this is the proximity to the extensive Albert Creek Marsh which is a very productive stopover and breeding area for numerous bird species. The geographic location of the observatory also allows a number of species to be monitored which are at the margin of their range and cannot be found elsewhere in the Yukon. Monitoring data collected for species such as Cape May Warbler, White-throated Sparrow and Western Tanager provide information on relative species abundance near the margin of the breeding range.

In 2015, the observatory completed its fifteenth consecutive year of operation; however, the observatory's protocols were not well developed until 2003/2004. The data collected at the observatory to date have indicated a capacity to monitor bird migration during the spring and fall. The primary long term goal of the observatory is to continue migration monitoring and collect data to facilitate the calculation of long term population trends. Although a high diversity of bird species are encountered at the observatory, not all species are suitable candidates for trend analysis. This is due to inadequate sample size of less numerous species or incomplete migration season coverage. As such, the key species for monitoring are those which are relatively common and have the majority of their migration covered by the observatory's monitoring season. Data collected to date suggest that the observatory has a high potential for monitoring a variety of bird species with a primary focus on passerines. Further data collection is required; however, species trend analysis may also be possible for other groups of birds in the future including waterfowl, waterbirds, shorebirds and raptors.

The observatory has been successful in attracting members of the public from Watson Lake and elsewhere to learn about birds and bird migration. Due to the proximity to the Alaska Highway, the observatory has also been successful in attracting tourists to the site.

4.1 Recommendations

The following list summarizes a number of recommendations for the future operation of the Albert Creek Bird Observatory.

- Continue standardized monitoring to allow for the future analysis of species trends.
- Make efforts to attract additional qualified volunteers to assist with activities at the observatory.
- Make efforts to diversify the funding base for the bird observatory to ensure long term operation.

Appendix A – Species Checklist

Table A1. Summary of birds banded and observed (✓) to date at the Albert Creek Bird Observatory. Note that observations from 2001 to 2003 are excluded from this table.

Species	2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013	2014	2015	TOTAL BANDED		
	Spring	Fall	Spring	Spring	Spring	Spring	Fall	ALL																						
Red-throated Loon							✓		✓	✓		✓		✓		✓		✓		✓	✓	✓					✓			
Common Loon							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Red-necked Grebe							✓	✓			✓									✓	✓		✓	✓	✓					
Horned Grebe									✓		✓		✓							✓	✓			✓	✓					
Greater White-fronted Goose							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Snow Goose							✓				✓	✓							✓						✓	✓	✓			
Canada Goose							✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Trumpeter Swan							✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Tundra Swan									✓		✓		✓		✓		✓		✓		✓		✓		✓	✓	✓			
Gadwall											✓				✓		✓													
American Wigeon							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Mallard							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Blue-winged Teal							✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	2	✓	1	✓	1	2	3	
Cinnamon Teal																		✓												
Northern Shoveler							✓	✓	✓		✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Northern Pintail							✓	✓	✓	✓	✓		✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓				
American Green-winged Teal							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1	✓	1	✓	✓	✓	✓	✓	✓		2	2	
Canvasback															✓		✓		✓					✓	✓					
Ring-necked Duck							✓		✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓		✓		✓	✓	✓			
Greater Scaup															✓															
Lesser Scaup							✓			✓		✓		✓		✓							✓		✓	✓				
Long-tailed Duck									✓		✓															✓				
Bufflehead							✓		✓		✓		✓	✓	✓	✓	✓	✓	2	✓	✓	✓	✓	✓	✓	✓	2		2	
Common Goldeneye							✓		✓		✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Barrow's Goldeneye							✓		✓		✓		✓	✓		✓				✓		✓	✓	✓	✓	✓				
Common Merganser							✓		✓		✓	✓	✓	✓	✓		✓		✓		✓		✓	✓	✓	✓				
Red-breaster Merganser									✓						✓															
Hooded Merganser											✓										✓									
Bald Eagle							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Northern Harrier							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1	✓	✓		
Sharp Shinned hawk				1	3	1	✓	✓	1	2	2	✓	1	4	✓	1	✓	4	✓	2	✓	7	1	2	2	1	1	10	24	34
Northern Goshawk							✓	✓	✓		✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓						
Swainson's Hawk														✓						✓										
Red-tailed Hawk							✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Rough-legged Hawk											✓	✓		✓					✓						✓					
Golden Eagle															✓					✓										
American Kestrel							✓	✓	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1		1	
Merlin							✓	✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Peregrine Falcon																					✓					✓				
Osprey							✓		✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓			✓						
Ruffed Grouse							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Spruce Grouse							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Sora										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1	✓	✓	✓		1	1	
American Coot									✓											✓										
Sandhill Crane							✓	✓		✓	✓	✓	✓	✓	✓		✓		✓	✓	✓			✓	✓	✓				
Black-bellied Plover																										✓				
American Golden-Plover													✓	✓											✓					
Semi-palmated Plover									✓		✓		✓		✓		✓					✓		✓	✓	✓				
Killdeer							✓				✓		✓	✓	✓		✓		✓		✓		✓		✓					
Greater Yellowlegs							✓		✓		✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓					
Wandering Tattler											✓		✓																	
Lesser Yellowlegs							✓	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	1		1	1	
Solitary Sandpiper					1		✓	✓	3	✓	12	✓	9	2	1	✓	2	✓	2	✓	1	2	6		2	5	2	44	4	48

Species	2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		TOTAL BANDED		
	Spring	Fall	Spring	Fall	ALL																												
Cliff Swallow								✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Barn Swallow							✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Black-capped Chickadee		4	4	5		3	5	12	2	13	✓	16	✓	10	✓	16	✓	8	2	6	✓	11	✓	9	✓	3	1	17	113	130			
Boreal Chickadee		8	5	7	6	7	1	6	1	8	3	8	✓	13	3	6	✓	27	5	14	8	48	5	2	2	16	6	59	154	213			
Red-breasted Nuthatch		3				1		✓	1		✓	✓	✓	1	✓	✓		✓	✓	1	✓	2	✓	2	✓	✓	✓	1	10	11			
Winter Wren											✓																						
Golden-crowned Kinglet										3				3		✓					✓	3				✓			9	9			
Ruby-crowned Kinglet	17			20	29	24	125	51	47	18	200	246	412	75	184	88	53	✓	121	42	93	40	55	94	51	72	34	67	816	1370	2186		
Townsend's Solitaire														✓																			
Mountain Bluebird																									✓								
Gray-cheeked Thrush			9	4	1	1	18	10	2	8	22	17	13	8	2	5	2	10	6	5		2	16	2	17	8	5	104	72	176			
Swainson's Thrush	2	1	25	7	21	65	53	104	19	133	46	93	55	137	15	70	19	43	29	66	35	74	82	31	43	21	27	449	824	1273			
Hermit Thrush		1	2	3	2	3	3	7	4	2	6	6	1	3	5	2	2	10	2	10	9	1	16		1	6	1	59	48	107			
American Robin	3		6		10	3	13	6	19	1	31	2	18	2	5	1	9	✓	17	11	19	5	21	4	15	18	58	247	35	282			
Varied Thrush				2	1	3	✓	3	2	2	3	7	✓	3	✓	5	✓	5	1	7	5	10	10	1	4	2	13	37	48	85			
American Pipit			1				✓	2		✓	5	✓	1	✓	✓	✓	✓	1	✓	✓	3	✓	1	✓	✓	5	✓	16	3	19			
Bohemian Waxwing					2		✓		6	✓	9	✓	✓	✓	2		2	✓	✓	✓	1	✓	1		✓	✓	2	25		25			
Cedar Waxwing								8						8	✓	3		1		4	1	✓		✓		✓		1	24	25			
Lapland Longspur							2	✓		✓	35	✓	1	✓	2	✓	6	✓	1	✓	3		1	✓	✓	✓	✓	1	52		52		
Smith's Longspur																															✓		
Snow Bunting														✓																			
Tennessee Warbler	1	4	12	9	17	14	48	12	51	30	60	15	21	22	22	28	8	137	26	158	23	152	78	5	19	47	49	473	586	1049			
Orange-crowned Warbler	57	12		30	137	52	286	199	105	122	214	151	251	152	339	87	170	97	177	61	75	88	288	36	78	125	162	2386	1087	3473			
Yellow Warbler	6	7	84	22	65	50	61	159	33	149	313	125	261	214	208	93	96	157	65	85	334	82	485	29	23	226	56	2293	1172	3465			
Magnolia Warbler	1	1	2	22	1	36	4	26	4	19	1	32	5	38	4	38	✓	27	✓	20	✓	24	2	8		✓	✓	24	291	315			
Cape May Warbler							✓			2	✓		2	3	3	2	1		✓	1	✓	1	✓		1	✓	✓	6	9	15			
Yellow-rumped Myrtle Warbler	73	35	9	80	143	86	268	138	91	185	364	105	113	262	434	117	505	90	776	83	217	287	571	89	61	148	257	3959	1557	5526			
Yellow-rumped Warbler											3				✓	1													3	1	4		
Townsend's Warbler		1				3	1			3		1	✓	1	4		✓	2	✓		✓	1	✓		✓	✓	✓	5	12	17			
Bay-breasted Warbler							1	1				1	✓		✓					1								1	3	4			
Blackpoll Warbler	3	8	8	8	22	13	22	44	17	30	62	32	57	41	88	19	65	36	62	16	121	28	107	23	5	34	8	676	298	974			
Black-and-white Warbler					1					1	1		1				1					1			✓		1	6	1	7			
MacGillivray's Warbler							1														1					1		2	1	3			
American Redstart		1	9	19	7	27	18	35	9	54	15	48	10	50	6	90	2	38	7	54	3	52	15	17	1	4	12	117	485	602			
Ovenbird					1							1					✓					1		1			2	4	1	5			
Northern Waterthrush	11	3	51	22	47	33	69	95	50	157	91	97	145	248	31	195	113	202	65	248	81	191	166	93	106	118	147	1185	1584	2769			
Common Yellowthroat	3	6	38	40	35	72	17	107	19	199	62	228	85	217	46	191	35	233	57	205	102	185	86	68	40	22	57	664	1751	2415			
Wilson's Warbler	16	10	189	28	384	83	502	203	552	106	398	218	369	167	182	146	274	158	249	90	125	68	259	42	228	273	266	4038	1319	5357			
American-tree Sparrow	6	1	9	19	24	26	172	66	175	150	196	223	345	116	74	61	28	117	136	31	63	19	571	2	61	13	196	2008	831	2839			
Chipping Sparrow			7	1	10	1	4	9	12	2	8	1	8	3	6	1	2	4	9	2	6	2	2		4	3	3	80	26	106			
Clay-colored Sparrow																				1								✓	1		1		
Savannah Sparrow	4		7	3	27	6	38	19	31	7	42	13	70	18	53	7	37	28	49	6	85	3	41	2	63	5	56	545	112	797			
Fox Sparrow	4		1	4	11	14	28	15	143	25	28	53	60	9	51	22	11	54	257	49	164	14	181	19	155	2	73	1014	278	1292			
Song Sparrow										1																				1	1		
Lincoln's Sparrow	16	14	30	29	39	42	42	91	51	108	23	124	120	74	27	57	32	99	60	89	66	80	193	34	101	16	94	809	841	1650			
Swamp Sparrow		4		6	4	9	2	7	1	33	4	40	5	21	5	29		17	6	20	7	16	6	2	3	5	6	51	204	255			
White-throated Sparrow	2	4	19	6	20	33	9	30	14	27	18	22	14	9	14	10	7	22	12	26	17	23	10	7	22	8	18	182	219	401			
White-crowned Sparrow	6	1	7	3	6	9	184	11	269	13	14	22	217	10	138	5	64	26	262	15	68	16	263	4	394	6	224	1728	135	1863			
Golden-crowned Sparrow					2		6	1	4		2		14	1	3		3		1		3	1	6		15		1	45	3	48			
Vesper Sparrow															1														1		1		
Slate-colored Junco	3	4	15	65	20	39	194	44	42	585	70	179	334	81	48	39	15	96	57	50	109	91	263	6	102	13	100	1283	1279	2572			
Oregon Junco													1																1		1		
Dark-eyed Junco													4					1		2	3	2	2			1		12	3	15			
Western Tanager			1			1	2	2	1	3	1	1	1	2		2	3		1	2	1	7	1		✓	1	3	16	20	38			

Species	2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013	2014	2015	TOTAL BANDED				
	Spring	Fall	Spring	Spring	Spring	Spring	Spring	Fall	ALL																							
Rose-breasted Grosbeak								✓					✓					✓				✓				✓						
Red-winged Blackbird							✓	✓	7	✓	8	✓	4	✓	2	✓	2	✓	1	✓	8	✓	1	✓	✓	✓	3	36		36		
Yellow-headed Blackbird																				✓					✓							
Rusty Blackbird	2	2		1	5	10	5	12	37	15	81	35	14	31	47	9	1	10	3	26	57	4	80	5	8	6	53	391	160	551		
Brown-headed Cowbird						1	✓			✓	✓		4		1				2		✓	✓	3		1	✓	3	13	1	14		
Gray-crowned Rosy Finch																									1			1	0	1		
Pine Grosbeak												2				✓		✓				✓	✓		✓				2	2		
Purple Finch	5		9		11		10	3	8	11	8		5	1	9		4		14	✓	8	✓	3		✓	5	8	107	15	122		
Red Crossbill										✓			✓		✓	✓	✓		✓	✓	✓	✓	✓			✓						
White-winged Crossbill							✓	✓		7	16	✓	✓	12	✓	✓	✓	1	✓	10	✓	2	✓	✓		6	✓	22	32	54		
Common Redpoll							68		2		46	1	12		54	14	✓	✓	127	✓	1	1	58		294	12	228	608	16	624		
Hoary Redpoll																									3							
Pine Siskin			6	4	2	31	2	5		✓		✓	✓	✓	2	✓	✓	✓	✓	41	✓	28	2	34	20	2	✓	16	143	159		
TOTAL BIRDS BANDED	251	147	625	540	1152	1021	2265	1839	1867	2681	2701	2585	2799	2502	2087	1676	1576	2013	2623	1770	1920	1964	4133	703	2011	1301	2339	27638	19441	47230		
TOTAL SPECIES BANDED	26	27	35	35	44	40	46	48	47	48	49	45	53	52	51	42	39	40	46	48	48	54	57	40	50	50	49	84	78	92		
TOTAL SPECIES OBSERVED	-	-	-	-	-	-	103	87	85	87	111	87	125	104	120	88	107	86	112	106	118	107	116	70	120	115	115	-	-	162		

Appendix B – Daily Species Total Summary

Table B1. Summary of 2015 estimated total data.

Species	First Date	Days Rec.	Sum of Bird Days	Last Date	High Count (#)	High Count (Date)
Red-throated Loon	27-May	1	1	-	1	27-May
Common Loon	07-May	25	30	06-Jun	2	many days
Greater White-fronted Goose	22-Apr	6	547	22-May	280	28-Apr
Snow Goose	04-May	1	24	-	24	04-May
Canada Goose	22-Apr	41	251	06-Jun	29	06-May
Trumpeter Swan	22-Apr	26	55	06-Jun	4	10-May
Tundra Swan	22-Apr	7	552	06-May	123	23-Apr
American Wigeon	25-Apr	16	198	31-May	100	05-May
Mallard	22-Apr	43	248	06-Jun	32	23-Apr
Blue-winged Teal	09-May	13	28	29-May	5	19-May
Northern Shoveler	04-May	15	40	06-Jun	6	04-May
Northern Pintail	27-Apr	4	55	01-Jun	32	27-Apr
American Green-winged Teal	23-Apr	17	37	05-Jun	10	23-Apr
<i>Unidentified Dabbling Duck</i>		4	234			
Ring-necked Duck	06-May	6	9	30-May	2	many days
Bufflehead	04-May	13	16	06-Jun	2	many days
Common Goldeneye	03-May	25	61	06-Jun	6	21-May
<i>Unidentified Goldeneye</i>		16	40			
Common Merganser	21-May	2	3	06-Jun	2	21-May
<i>Unidentified Duck</i>		3	48			
Bald Eagle	27-Apr	14	17	05-Jun	2	many days
Northern Harrier	22-Apr	15	25	12-May	3	27-Apr
Sharp-shinned Hawk	17-May	7	8	04-Jun	2	18-May
Red-tailed Hawk	24-May	1	1	-	1	24-May
<i>Unidentified Buteo</i>		3	3			
American Kestrel	27-Apr	10	11	01-Jun	2	29-May
Merlin	25-Apr	2	2	02-May	1	both days
Peregrine Falcon	19-May	1	1	-	1	19-May
<i>Unidentified Falcon</i>		1	1			

Species	First Date	Days Rec.	Sum of Bird Days	Last Date	High Count (#)	High Count (Date)
<i>Unidentified Raptor</i>		1	1			
Ruffed Grouse	25-Apr	36	65	06-Jun	3	many days
Spruce Grouse	18-May	7	10	03-Jun	3	20-May
Sora	24-May	11	13	06-Jun	2	25/28 May
Sandhill Crane	26-Apr	3	6	04-May	4	04-May
Semi-palmated Plover	24-May	1	1	-	1	24-May
Killdeer	11-May	5	5	02-Jun	1	all days
Greater Yellowlegs	16-May	4	4	05-Jun	1	all days
Lesser Yellowlegs	28-Apr	21	43	06-Jun	22	04-May
Solitary Sandpiper	06-May	30	48	06-Jun	3	many days
Spotted Sandpiper	19-May	4	4	04-Jun	1	all days
Upland Sandpiper	20-May	1	1	-	1	20-May
Whimbrel	19-May	1	1	-	1	19-May
Least Sandpiper	20-May	1	1	-	1	20-May
Long-billed Dowitcher	12-May	1	2	-	2	12-May
Wilson's Snipe	26-Apr	40	89	06-Jun	4	many days
Mew Gull	10-May	14	22	06-Jun	2	many days
Herring Gull	26-Apr	15	47	15-May	6	03-May
Bonaparte's Gull	23-May	2	2	25-May	1	both days
Arctic Tern	03-Jun	1	4	-	4	03-Jun
Barred Owl	22-Apr	15	16	03-Jun	2	27-May
Common Nighthawk	06-Jun	1	1	-	1	06-Jun
Belted Kingfisher	02-May	33	46	06-Jun	2	many days
Yellow-bellied Sapsucker	30-Apr	35	137	06-Jun	8	16-May
Hairy Woodpecker	26-Apr	17	17	03-Jun	1	all days
American Three-toed Woodpecker	27-Apr	10	11	06-Jun	2	19-May
Black-backed Woodpecker	24-May	2	2	03-Jun	1	both days
Northern Flicker	26-Apr	37	54	06-Jun	3	13-May
Pileated Woodpecker	15-May	8	8	06-Jun	1	all days
<i>Unidentified Woodpecker</i>		1	1			
Olive-sided Flycatcher	20-May	4	4	03-Jun	1	all days

Species	First Date	Days Rec.	Sum of Bird Days	Last Date	High Count (#)	High Count (Date)
Western Wood-Pewee	16-May	4	4	06-Jun	1	all days
Yellow-bellied Flycatcher	03-Jun	1	1	-	1	03-Jun
Alder Flycatcher	26-May	10	23	06-Jun	8	03-Jun
Least Flycatcher	18-May	18	32	06-Jun	3	25-May
Hammond's Flycatcher	04-May	31	60	06-Jun	5	20-May
Warbling Vireo	11-May	27	194	06-Jun	13	25-May
Gray Jay	25-Apr	37	87	04-Jun	6	23-May
American Crow	22-Apr	23	26	06-Jun	2	many days
Common Raven	22-Apr	43	170	06-Jun	17	05-May
Tree Swallow	04-May	34	414	06-Jun	40	24-May
Violet-green Swallow	16-May	4	6	01-Jun	3	16-May
Bank Swallow	19-May	15	60	04-Jun	20	25-May
Cliff Swallow	18-May	4	86	01-Jun	80	01-Jun
Barn Swallow	01-Jun	1	1	-	1	01-Jun
Black-capped Chickadee	22-Apr	44	86	06-Jun	3	many days
Boreal Chickadee	23-Apr	28	47	04-Jun	3	many days
Red-breasted Nuthatch	06-May	17	19	03-Jun	2	09-May
Ruby-crowned Kinglet	22-Apr	45	236	06-Jun	19	27-Apr
Gray-cheeked Thrush	15-May	4	5	25-May	2	25-May
Swainson's Thrush	10-May	24	88	06-Jun	9	28-May
Hermit Thrush	07-May	2	2	10-May	1	both days
American Robin	24-Apr	44	294	06-Jun	20	03-May
Varied Thrush	25-Apr	41	71	06-Jun	6	26-May
American Pipit	24-Apr	14	17	20-May	2	many days
Bohemian Waxwing	25-Apr	31	76	04-Jun	8	06-May
Cedar Waxwing	12-May	1	2	-	1	12-May
Lapland Longspur	28-Apr	6	19	13-May	8	28-Apr
Smith's Longspur	17-May	1	1	-	1	17-May
Tennessee Warbler	17-May	21	194	06-Jun	18	27-May
Orange-crowned Warbler	27-Apr	23	189	03-Jun	40	12-May

Species	First Date	Days Rec.	Sum of Bird Days	Last Date	High Count (#)	High Count (Date)
Yellow Warbler	09-May	24	85	06-Jun	12	26-May
Magnolia Warbler	06-Jun	1	1	-	1	06-Jun
Cape May Warbler	03-Jun	1	1	-	1	03-Jun
Myrtle Warbler	26-Apr	36	316	06-Jun	70	09-May
Townsend's Warbler	13-May	1	1	-	1	13-May
Blackpoll Warbler	12-May	20	42	05-Jun	6	26-May
Black-and-white Warbler	19-May	3	3	04-Jun	1	all days
American Redstart	24-May	12	37	06-Jun	6	03-Jun
Ovenbird	27-May	2	2	02-Jun	1	both days
Northern Waterthrush	09-May	29	263	06-Jun	29	15-May
Common Yellowthroat	12-May	25	122	06-Jun	11	26/27 May
Wilson's Warbler	05-May	27	328	05-Jun	82	15-May
American Tree Sparrow	22-Apr	21	425	12-May	62	28-Apr
Chipping Sparrow	11-May	24	58	06-Jun	5	16/19 May
Clay-coloured Sparrow	03-Jun	1	1	-	1	03-Jun
Savannah Sparrow	26-Apr	24	80	30-May	11	12-May
Fox Sparrow	25-Apr	43	176	06-Jun	20	6/7 May
Lincoln's Sparrow	26-Apr	42	196	06-Jun	11	12-May
Swamp Sparrow	09-May	27	76	06-Jun	5	20/27 May
White-throated Sparrow	13-May	25	99	06-Jun	8	18/20 May
White-crowned Sparrow	25-Apr	20	376	15-May	48	07-May
Golden-crowned Sparrow	03-May	8	11	13-May	2	9/10/12 May
Slate-coloured Junco	23-Apr	31	201	01-Jun	32	27-Apr
Western Tanager	13-May	25	50	06-Jun	4	27 May/4 Jun
Rose-breasted Grosbeak	21-May	1	1	-	1	21-May
Red-winged Blackbird	30-Apr	37	128	06-Jun	6	04-May
Rusty Blackbird	26-Apr	28	176	06-Jun	22	03-May
Brown-headed Cowbird	06-May	20	39	06-Jun	3	many days
Purple Finch	24-Apr	44	97	06-Jun	6	14-May
White-winged Crossbill	24-May	3	3	03-Jun	1	all days

Species	First Date	Days Rec.	Sum of Bird Days	Last Date	High Count (#)	High Count (Date)
Common Redpoll	22-Apr	19	733	27-May	120	03-May
Pine Siskin	17-May	12	15	06-Jun	2	many days
<i>Unidentified Small Passerine</i>		1	40			