

Teslin Lake Bird Observatory Final Report 2015



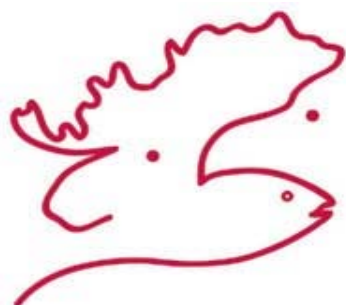
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Society of Yukon Bird Observatories
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**Environment
Canada**

**Environnement
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**Yukon Fish and Wildlife
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**Yukon
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Yukon
Health and Social Services



Cover Photo: The observatory's first (and a Yukon first record) Blackburnian Warbler banded on September 15, 2015 (Photo: Jukka Jantunen).

The Teslin Lake Bird Observatory is operated by the **Society of Yukon Bird Observatories** (SOYBO; PO Box 30056, Whitehorse, YT, Y1A 5M2). SOYBO was established in 2010 to serve as an umbrella society to coordinate bird monitoring activities and associated educational programs at the Yukon Bird Observatories field stations. The objectives of SOYBO are: (1) contribute to the conservation of migratory birds in western North America, (2) to help people learn about the natural history and conservation of Yukon avifauna, and, (3) to work with other societies, organizations and individuals with similar objectives. For further information, visit the SOYBO website at www.yukonbirdobservatories.org

SUMMARY

During 2015, 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 and the only stations located within the core of Canada's Boreal Forest.

The Teslin Lake Bird Observatory completed its eighth consecutive year of fall migration monitoring in 2015. The field station operated for a total of 76 days between July 26 and October 19. The observatory has followed the same operating procedures since standardized migration monitoring began during the fall of 2009.

Crews followed standard methods to mist net, handle, band and record information from captured birds. They banded a total of 4,186 birds of 51 species with 7,265 net hours (57.62 birds/100 net hours). Alder Flycatcher, Yellow Warbler, Wilson's Warbler, Orange-crowned Warbler and Myrtle Warbler were the five most common species banded, accounting for over 78% of all individuals banded. These have been among the top species banded in previous years although the banding total of 1,153 Alder Flycatchers was the highest to date and surpassed the previous high of 827 in 2012.

Visual migration and lake counts were conducted to collect monitoring data for bird species not adequately sampled by mist netting (for example diurnal raptors, loons and grebes). Between July 27 and October 19, personnel spent 194.6 hours and observed 42,446 (218 birds per hour). Of these, 4,211 individuals were one of 13 diurnal raptor species, including two regional species of interest for monitoring - Swainson's Hawk and American Kestrel. The remaining visual migrants included a number of species with the most common species being Greater White-fronted Goose, Tundra Swan, unidentified passerines, Sandhill Crane, unidentified swans, Harlan's Red-tailed Hawk and American Robin/Varied Thrush; collectively, these species accounted for 75% of all visual migrants observed.

Building upon testing of methods in previous years, audio equipment was used to broadcast recorded calls to lure and band Boreal Owls at two sites, the standard count area and a second location approximately 1.5 km southeast of the observatory. On 3 nights between August 21 and September 8, 3 Boreal Owls were banded with 77 net hours of effort.

Noteworthy results from 2015 included:

- The number of birds banded was the highest to date but the capture rate of birds per 100 net hours (57.62) was slightly below the highest value of 61.4 during 2009.
- Numerous species were banded in relatively high numbers with Alder Flycatcher, Ruby-crowned Kinglet, Orange-crowned Warbler, Yellow Warbler and Wilson's Warbler reaching new season records.
- New species banded at the observatory included a Blackburnian Warbler (first Yukon record) and a Black-and-white Warbler (first record at the study site). New species observed included an unidentified *Chaetura* swift (Chimney or Vaux's swift).
- To date a total of 27,459 birds of 92 species have been banded at the observatory and 198 species have been observed.
- The visual counting effort was consistent with the amount of effort in previous years and the total number of birds observed (218 birds/hour) tied the previous high set during 2011.

- A total of 4,211 raptors and 22,560 waterfowl were observed on the visual migration counts with the most common species being Harlan's Red-tailed Hawk and Tundra Swan respectively.
- The lake counts tallied a total of 395 bird days of loons (3 species), 1,328 bird days of grebes (2 species) and 2,583 bird days of gulls/terns/jaegers (7 species).
- A total of 18 volunteers spent a total of 1,804 hours at the observatory and a total of 54 individuals visited the observatory totaling 143 visitor hours.

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1.0 Introduction

This report describes methods and results of work done at the Teslin Lake Bird Observatory from July 26 to October 19 in 2015, the eighth year of fall operation at this site. No new activities were undertaken at the observatory in 2015.

Previous annual reports and the database of band recoveries 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 member stations from across Canada that collect standardized bird monitoring data and collaborate on research projects. The Yukon Bird Observatories are the northernmost stations and are the only stations located within the core of Canada's western Boreal Forest.

Many of the birds banded and observed at Teslin Lake are highly migratory, spending the winter months as far south as Central and South America. In addition to the knowledge gained from band recoveries, the observatory also continues to gather baseline data of birds (and their migration) in the Teslin 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, some 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 and monitoring 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 Teslin Lake Bird Observatory

The goals of the Teslin Lake Bird Observatory are to:

- Gather baseline information on birds and bird migration in the Teslin area.
- Collect data to facilitate the long term monitoring (*i.e.* trend analysis) of birds in the southern Yukon.
- Conduct and participate in specific studies such as feather collecting for stable isotope analysis and color banding.
- 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 Teslin.

1.3 Objectives of the 2015 Season

The objectives of the 2015 field season at the Teslin Lake Bird Observatory were to:

- Continue the fall monitoring work using previously established protocols,
- Collect an additional year of bird monitoring data to be used for future trend analysis,
- Further refine the techniques to capture and band owls,
- Collect information on the molt timing of adult passerines banded, and,
- Compare 2015 bird migration results to the previous 4 to 7 years of similarly collected data.

1.5 Acknowledgements

The 2015 operation of the Teslin Lake Bird Observatory would not have been possible without financial assistance from the following organizations/groups: Environment Canada (Canadian Wildlife Service), Yukon Fish & Wildlife Enhancement Trust Fund, Teslin Renewable Resources Council, Yukon Health and Social Services (Youth Investment Fund) and EDI Environmental Dynamics Inc. Parks Yukon provided use of a space in the Teslin Lake campground for an extended period of time to allow our long term volunteers a place to camp for the duration of the 2015 season.

Jukka Jantunen's excellent bird identification skills ensured high quality data collection, particularly during the visual migration counts which are challenging to complete with a high level of accuracy and consistency. Barney Smith provided editorial comments on the draft version of this report.

We appreciate the help from the following volunteers without whom the operation of the observatory would not have been possible:

- more than 50 days – Hélène Dion-Phenix, Francis Bordeleau-Martin;
- 20 to 30 days – Allyn Esau, Emma Feenstra;
- 10 to 20 days – Ted Murphy-Kelly;
- 5 to 10 days – Terry Skjonsberg, Julie Bauer, Hilary Cooke;
- 1 to 5 days – Gwen Baluss, Shanti Morrison, Remi Veilleux, Andrea Sidler, Cameron Eckert, Nick Guenette, Lila Tauzer, Sheelagh Fromer.

2.0 Methods

2.1 Study Site

Teslin Lake is a 125 km long by 2-5 km wide lake in the south central Yukon near the border with British Columbia. The standard count area is located near the outlet of 10 Mile Creek at the site known locally as Ten-mile Point; this area is located on the east shore within the north third of the lake. The lake falls in a natural trench that runs to the northwest and serves as a migration route for many bird species coming from breeding areas to the north in Yukon and Alaska. The site falls within the Yukon Southern Lakes Ecoregion (Boreal Cordillera Ecozone)¹.

During the 2005 season, the observatory was located on the shoreline of Nisutlin Bay; however, issues associated with land tenure of the site led to a new site being used since 2006. The current site is located on 10 Mile point approximately 10 km northwest of the community of Teslin. The observatory is located in the riparian zone between Teslin Lake and the Yukon Government Campground (Figure 1). The vegetation within the site is a mixture featuring a transition from bare gravel lakeshore to shrubs and larger deciduous trees. Also within the site is a small wetland area connected to Teslin Lake which has seasonally fluctuating water levels. The area is dominated by willow (*Salix* spp.) and alder (*Alnus* spp.) with some mature white spruce (*Picea glauca*), trembling aspen (*Populus tremuloides*) and balsam poplar (*P. balsamifera*) scattered throughout.

2.2 General Methods

The methods for the operation of the bird observatory follow the Teslin Lake 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 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. 2011. Teslin Lake Bird Observatory (TLBO) Field Protocol (version 2). Society of Yukon Bird Observatories.



Figure 1. Overview of the Teslin Lake Bird Observatory (60.2319 °N, -132.9159 °W). The numbers and red lines are mist nets, each 12 m long with the exception of net 28 which is 18 m in length. There is a campground bordering the mist netting area on the south side (right hand side of the photo). The red line with the “C” is the non-standard canopy net.

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

- Band: new birds banded.
- Recaptures: previously banded birds, not included if recaptured on the original day of banding.
- Visual Migrants
 - Migration Watch: birds observed in obvious migration flight, only includes individuals observed during the visual migration counts.
 - Incidental: birds observed in obvious migration flight, only includes individuals observed incidentally (i.e., not during the visual migration counts).
- Observed: birds observed, but not in obvious migration flight; includes incidental observations and the lake counts.

Using the categories outlined above, the Bander-In-Charge estimates the total number of individuals 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). The DET data will provide the basis for future trend analysis of the data collected at the observatory.

During 2015, the operation of the Teslin Lake Bird Observatory was led by the Primary Bander in Charge Jukka Jantunen. Jukka was responsible for overseeing all activities at the observatory including the capture/banding of birds, supervising volunteers, conducting the visual migration watches and recording the daily estimated total data. Ted Murphy-Kelly was Co-Station Manager which included station logistics and staffing. Ben Schonewille was also a Co-Station Manager, and looked after the data entry, analysis and preparation of this report. Board members of the Society of Yukon Bird Observatories helped administer the Yukon Bird Observatories.

Site infrastructure is minimal at this site. A narrow trail connects the banding table to the nets and to the station access point via the Yukon Government campground. There is no covered blind from which to watch birds and nets are removed at the end of the season and are stored away from the site. The site is partially within the high water mark of Teslin Lake and on land owned by the Yukon Government as a component of the campground reserve. To date this level of activity has not required any permitting aside from the federal and territorial permits required for the capture and banding of birds.

2.3 Mist Netting

The primary method of monitoring the movement of birds through the study site is the use of mist nets for the purpose of capturing and banding birds. The observatory operates with 22 standard mist nets and one non-standard mist net (Figure 1). No non-standard nets were used in 2015; note that in previous years a trial canopy net (net ID = C on Figure 1) was used. All nets are 30 mm mesh, 4 panels tall, and 12 m in length, with the exception of net 28 which is 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 favourable. If full effort is not possible, then the number of nets operated is reduced rather than reducing the duration of effort.

2.4 Visual Migration Watch

Visual migration counts are conducted on all days of operation to supplement the banding data. All watches are conducted from the observation site (Figure 1) and involve scanning the sky with binoculars and a spotting scope to observe and count all birds flying past the site. The protocol states that as a minimum, 10 minutes of watch shall be conducted per hour (6 hours) followed by a 1 hour watch at the end of the mist netting period. On many days of operation the visual count effort is substantially more. The visual migration counts aim to monitor diurnal migrating species such as raptors and large waterfowl. Most nocturnal migrants such as most warblers, sparrows and thrush are well monitored by mist netting. However, for some species which are not adequately covered by mist netting, the visual counts allow for monitoring data to be collected for these species.

Whenever possible, additional information on age, sex and/or color morph is collected for the birds observed during the visual migration watches. Particularly for raptors, the information can supplement the data collected by providing information on the proportion of younger birds.

2.5 Lake Counts

Completed in conjunction with the visual migration counts, a thorough lake count is performed daily from the observation site with a spotting scope to enumerate all birds on or over Teslin Lake which are visible from the predetermined viewing location. These counts target a wide range of species including; loons, grebes, some waterfowl, gulls and some species of shorebirds.

2.6 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. Birds in obvious directed migration, e.g. flying overhead in flocks or raptors passing overhead, were recorded as ‘incidental migrants’.

2.7 Molt Scoring

As supplementary information, in order to assess the timing of molt, we rate the growth of new flight feathers in adult birds that are banded. Although information on the prebasic molt (amount of juvenile plumage remaining) is collected for hatch year birds, a particular emphasis was placed upon collecting wing molt scores for molting adult individuals because this would tell us about the timing of the molt as it relates to the timing of migration in various species of adult birds.

Wing molt score is achieved by assigning each individual wing flight feather a score from zero (old feather remaining) to five (new feather fully grown) and adding them together. Birds that have not yet started to molt have a cumulative score of zero whereas individuals which have completed molt would have a score of 75 (based on 9 primary flight feathers) or 80 (10 primary flight feathers).

2.8 Special Projects

2.8.1 Owl Banding

Based on owl capture methods used in southern Canada to capture Northern Saw-whet Owls that we had tested in previous years on Boreal Owls, we decided to do more dedicated trials using these methods to build upon the success of this program during 2014. This method uses nocturnal call playback in the vicinity of a mist net array.

During 2015, we broadcasted only Boreal Owl calls using an iPod connected to a portable speaker system with an internal battery. We broadcast within the standard count area at the bird observatory at two locations: (1) one night at nets 1 and 2 due to windy conditions at outer tip, (2) along the lakeshore between nets 6 and 10. On most nights, five 12 m nets were used in the standard count area. At this site the owl calls were broadcast constantly for between 1.5 and 4.5 hours beginning at dusk on the following days: August 21, 25 and September 8.

We also broadcast in a second location in a regenerating lodgepole pine stand 1.5 km southeast of the standard count area. This secondary site is located on the north side of the area known locally as the “Cottage Lots Gravel Pit”. Up to 4 nets were used at this site and the owl calls were broadcast constantly for between 1.5 and 4.5 hours beginning at dusk on the following days: August 21, 25 and September 8.

2.9 Public Engagement

To attract members of the public to the observatory, we put up posters at various common buildings in Teslin including the Nisutlin Trading Post, the Yukon Motel, the Teslin Tlingit Council Administration Office and the Post Office. We also worked with the Teslin Renewable Resources Council to host a public BBQ and information session at the observatory on September 3, 2015 which the majority of Teslin School also attended. We also advertised the observation through digital media including the Yukon Bird Observatories blog, Facebook page and website. Interested individuals could also find articles in the Yukon News in May and September, on the Yukon Government Wildlife viewing program calendars and media advertising. During December 2015, bird observatory personnel (Ben Schonewille and Ted Murphy-Kelly) gave a talk on the Yukon Bird Observatories at the Beringia Centre in Whitehorse, as hosted by the Yukon Science Institute.

3.0 Results & Discussion

3.1 Station Operation

The 2015 fall season included a total of 76 field days between July 26 and October 19. Standardized mist netting occurred on 63 days between July 26 and September 30; opportunistic banding occurred until October 7. Between October 7 and 19, activities at the observatory were limited to visual migration counts, lake counts and incidental observations.

A total of 4,186 birds of 51 species were banded (excluding special projects) and 137 species were observed (Table 1, Table 2). The all-time total number of birds banded at Teslin Lake Bird Observatory is now 27,459 birds of 92 species and 198 species/forms have been observed (Appendix A). New species added to the station checklist during 2015 included: unidentified swift (Chimney/Vaux's), Blackburnian Warbler and Black-and-white Warbler.

Table 1. Summary statistics for the 2015 fall season.

Week	Date	Days Operated ¹	Birds Banded				Visual Counts		Total Species Observed
			#	Species	Net Hours	#/100 Net Hours	# of Visual Migrants ²	Counting Hours	
1	23 – 29 Jul	4	123	25	522.50	23.54	559	6.05	61
2	30 Jul – 5 Aug	7	296	26	767.75	38.55	658	10.50	69
3	6 – 12 Aug	7	260	25	889.00	29.25	681	7.67	67
4	13 – 19 Aug	7	492	27	857.50	57.37	447	6.17	71
5	20 – 26 Aug	7	595	30	737.00	80.73	3,529	11.58	71
6	27 Aug – 2 Sep	7	420	29	526.75	79.73	13,911	41.75	85
7	3 – 9 Sep	7	959	35	844.50	113.56	1,196	8.57	86
8	10 – 16 Sep	5	446	31	563.25	79.18	2,450	12.68	79
9	17 – 23 Sep	7	323	25	766.00	42.17	4,854	25.83	62
10	24 – 30 Sep	6	249	21	554.75	44.89	7,588	32.72	24
11	1 – 7 Oct	5	23	10	236.00	9.75	7,712	23.58	24
12	8 – 14 Oct	3	-	-	-	-	163	2.25	6
13	15 – 21 Oct	4	-	-	-	-	650	6.08	15
ALL	26 Jul – 19 Oct	76	4,186	51	7265.00	57.62	44,368	193.77	137

¹ Requires a minimum of 3 hours onsite with full estimated totals recorded (does not require mist netting if weather conditions are adverse).

² Note this total includes visual migrants counted during the visual counts and incidental visual migrants observed.

Table 2. Birds banded during the 2015 fall season (not including special projects).

Common Name	Scientific Name	# Banded	# Banded / 1000 Net Hrs
Sharp-shinned Hawk	<i>Accipiter striatus</i>	25	3.42
Solitary Sandpiper	<i>Tringa solitaria</i>	3	0.41
Belted Kingfisher	<i>Ceryle alcyon</i>	6	0.82
Downy Woodpecker	<i>Picoides pubescens</i>	1	0.14
Olive-sided Flycatcher	<i>Contopus cooperi</i>	2	0.27
Western Wood-Pewee	<i>Contopus sordidulus</i>	4	0.55
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	11	1.51
Alder Flycatcher	<i>Empidonax alnorum</i>	1,058	144.76
Least Flycatcher	<i>Empidonax minimus</i>	4	0.55
Hammond's Flycatcher	<i>Empidonax hammondi</i>	21	2.87
Dusky Flycatcher	<i>Empidonax oberholseri</i>	2	0.27
Say's Phoebe	<i>Sayornis saya</i>	2	0.27
Warbling Vireo	<i>Vireo gilvus</i>	10	1.37
Common Raven	<i>Corvus corax</i>	1	0.14
Gray Jay	<i>Perisoreus canadensis</i>	1	0.14
Black-capped Chickadee	<i>Poecile atricapillus</i>	31	4.24
Mountain Chickadee	<i>Poecile gambeli</i>	4	0.55
Boreal Chickadee	<i>Poecile hudsonicus</i>	131	17.92
Red-breasted Nuthatch	<i>Sitta canadensis</i>	9	1.23
Golden-crowned Kinglet	<i>Regulus satrapa</i>	2	0.27
Ruby-crowned Kinglet	<i>Regulus calendula</i>	284	38.86
Gray-cheeked Thrush	<i>Catharus minimus</i>	11	1.51
Swainson's Thrush	<i>Catharus ustulatus</i>	68	9.30
Hermit Thrush	<i>Catharus guttatus</i>	8	1.09
American Robin	<i>Turdus migratorius</i>	3	0.41
Varied Thrush	<i>Ixoreus naevius</i>	2	0.27
American Pipit	<i>Anthus rubescens</i>	6	0.82
Northern Waterthrush	<i>Parkesia noveboracensis</i>	53	7.25
Tennessee Warbler	<i>Oreothlypis peregrina</i>	8	1.09
Orange-crowned Warbler	<i>Oreothlypis celata</i>	331	45.29
Common Yellowthroat	<i>Geothlypis trichas</i>	89	12.18
Black-and-white Warbler	<i>Mniotilta varia</i>	1	0.14
American Redstart	<i>Setophaga ruticilla</i>	47	6.43
Yellow Warbler	<i>Setophaga petechia</i>	556	76.07
Blackpoll Warbler	<i>Setophaga striata</i>	99	13.55
Myrtle Warbler	<i>Setophaga coronata</i>	311	42.55
Townsend's Warbler	<i>Setophaga townsendi</i>	2	0.27
Blackburnian Warbler	<i>Setophaga fusca</i>	1	0.14
Wilson's Warbler	<i>Cardellina pusilla</i>	386	52.81
American Tree Sparrow	<i>Spizella arborea</i>	137	18.74
Chipping Sparrow	<i>Spizella passerina</i>	29	3.97
Savannah Sparrow	<i>Passerculus sandwichensis</i>	55	7.53
Fox Sparrow	<i>Passerella iliaca</i>	42	5.75
Lincoln's Sparrow	<i>Melospiza lincolni</i>	65	8.89
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	23	3.15
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	2	0.27
Slate-colored Junco	<i>Junco hyemalis</i>	211	28.87
Rusty Blackbird	<i>Euphagus carolinus</i>	18	2.46
Brown-headed Cowbird	<i>Molothrus ater</i>	1	0.14
Common Redpoll	<i>Acanthis flammea</i>	8	1.09
Pine Siskin	<i>Spinus pinus</i>	1	0.14
TOTAL		4,186	572.74

Weather conditions largely influence the activities at the observatory (Table 3). Windy conditions and periods of prolonged precipitation reduce the mist netting effort. Weather conditions also influence

the number of birds counted on the visual migration counts due to challenges associated with visibility and the dynamic nature of bird migration in relation to wind patterns. The 2015 season saw temperatures that were very similar to previous years and the amount of wind was similar to previous years but below average (Table 4). The amount of days with precipitation (21) was below average; however, it is important to note that 2015 included a number of days with rain outside of the count period and for this reason, these values may misrepresent the overall weather patterns during this year.

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

Weather Parameter	Week							
	1	2	3	4	5	6	7	8
Average Opening Temperature (°C)	8.8	8.1	9.4	8.1	6.7	5.0	3.6	4.3
Average Closing Temperature (°C)	13.0	10.3	16.8	15.5	13.8	7.3	11.6	9.2
Average Opening Wind (Beaufort scale)	0.8	0.9	1.1	1.4	1.9	2.4	0.4	2.2
Average Closing Wind (Beaufort scale)	3.0	1.8	2.4	3.0	2.8	3.0	1.9	2.5
Days with Rain (during count period)	1	1	2	2	1	4	2	2
Days with Snow (during count period)	0	0	0	0	0	0	0	0
Weather Parameter	Week					TOTAL		
	9	10	11	12	13			
Average Opening Temperature (°C)	1.9	4.9	-4.1	-1.0	1.3	4.4		
Average Closing Temperature (°C)	8.0	7.5	5.3	6.4	7.8	10.2		
Average Opening Wind (Beaufort scale)	1.3	1.9	1.0	1.2	2.0	1.4		
Average Closing Wind (Beaufort scale)	2.4	2.8	2.3	2.2	3.0	2.5		
Days with Rain (during count period)	2	1	0	0	1	19		
Days with Snow (during count period)	0	0	0	1	1	2		

Table 4. Comparison of weather conditions during 2015 as compared to previous years.

Weather Parameter	Annual Average						2010-2015 Average
	2010	2011	2012	2013	2014	2015	
Average Opening Temperature (°C)	4.4	3.5	2.6	6.0	4.7	4.4	4.3
Average Closing Temperature (°C)	13.0	10.4	10.7	14.4	11.8	10.2	11.8
Average Opening Wind (Beaufort scale)	2.3	1.7	1.7	1.5	1.4	1.3	1.7
Average Closing Wind (Beaufort scale)	2.8	2.6	2.9	2.7	2.3	2.5	2.6
Days with Rain (during count period)	20	33	17	14	32	19	22
Days with Snow (during count period)	3	4	6	0	5	2	3

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 incorporates 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.

Among the top 15 species banded during 2014, 12 were captured in above average numbers, 2 below average and 1 species on average (Table 5). Among the species banded in above average numbers, Alder Flycatcher was banded in the most notable numbers with a season banding total of 1,058 compared to the long term average of 665 and the previous high of 827 in 2012. The most notable species banded in below average numbers was Slate-colored Junco of which 211 were banded in 2015 as compared to the 2009-2015 average of 322.

Table 5. The 15 most common bird species banded in 2015 as compared to 2009–2014 totals (numbers in brackets indicate the annual ranking in birds banded. The prefix “T” indicates a tied in annual banding totals.

Species	2015	2014	2013	2012	2011	2010	2009	2009-2014 Average
Alder Flycatcher	1,058 (1)	506 (1)	770 (1)	827 (1)	637 (1)	620 (2)	631 (2)	665
Yellow Warbler	556 (2)	504 (2)	333 (3)	225 (2)	310 (3)	471 (3)	325 (4)	361
Wilson’s Warbler	386 (3)	164 (5)	122 (7)	134 (T5)	133 (6)	177 (7)	161 (8)	149
Orange-crowned Warbler	331 (4)	149 (6)	124 (6)	88 (8)	57 (14)	271 (5)	180 (6)	145
Myrtle Warbler	311 (5)	178 (4)	163 (4)	195 (3)	142 (5)	673 (1)	284 (5)	273
Ruby-crowned Kinglet	284 (6)	69 (9)	125 (5)	134 (T5)	86 (8)	109 (8)	175 (7)	116
Slate-colored Junco	211 (7)	140 (7)	341 (2)	116 (7)	331 (2)	420 (4)	582 (3)	322
American Tree Sparrow	137 (8)	22 (14)	19 (17)	17 (22)	77 (10)	21 (19)	54 (11)	35
Boreal Chickadee	131 (9)	3 (T31)	23 (16)	142 (4)	233 (4)	0 (-)	831 (1)	205
Blackpoll Warbler	99 (10)	61 (10)	87 (8)	87 (9)	58 (13)	194 (6)	107 (10)	99
Common Yellowthroat	89 (11)	82 (8)	65 (9)	45 (13)	72 (12)	70 (11)	113 (9)	75
Swainson’s Thrush	68 (12)	49 (11)	55 (10)	41 (14)	85 (9)	53 (13)	49 (13)	55
Lincoln’s Sparrow	65 (13)	9 (T25)	9 (23)	9 (T23)	27 (20)	14 (25)	16 (23)	14
Savannah Sparrow	55 (14)	17 (T15)	18 (18)	15 (25)	23 (21)	18 (23)	18 (22)	17
Northern Waterthrush	53 (15)	48 (12)	46 (12)	47 (11)	42 (15)	54 (12)	53 (12)	48

Among the top 10 species in 2015, the majority of birds banded across all species were hatch year individuals (Table 6) which is consistent with previous years. Numerous species showed a lower proportion of hatch year birds compared to previous years. This may be due to an increased capture rate of adults as opposed to a decreased capture rate of younger birds; however, additional years of data collected would be required to further investigate this.

Table 6. Age ratios (% hatch year) for the top 10 species banded during the fall of 2015.

Species	2015	2014	2013	2012	2011	2010	2009	2009-2014 Average
Alder Flycatcher	73	85	84	81	72	90	75	81
Yellow Warbler	48	48	68	61	71	73	72	66
Wilson’s Warbler	71	82	84	78	72	93	91	83
Orange-crowned Warbler	62	82	81	84	79	90	81	83
Myrtle Warbler	76	90	81	83	70	95	86	84
Ruby-crowned Kinglet	81	93	79	96	81	92	97	90
Slate-colored Junco	69	94	94	89	81	96	81	89
American Tree Sparrow	69	90	89	82	81	90	94	85
Boreal Chickadee	100	100	100	94	100	-	99	99
Blackpoll Warbler	64	84	91	90	88	92	90	89

The peak period for banding occurred during week 7 (September 3-9) with a weekly total of 959 birds (113.56 birds/100 net hours; Figure 2). The daily banding totals during this period were dominated by Yellow, Orange-crowned and Wilson's warblers.

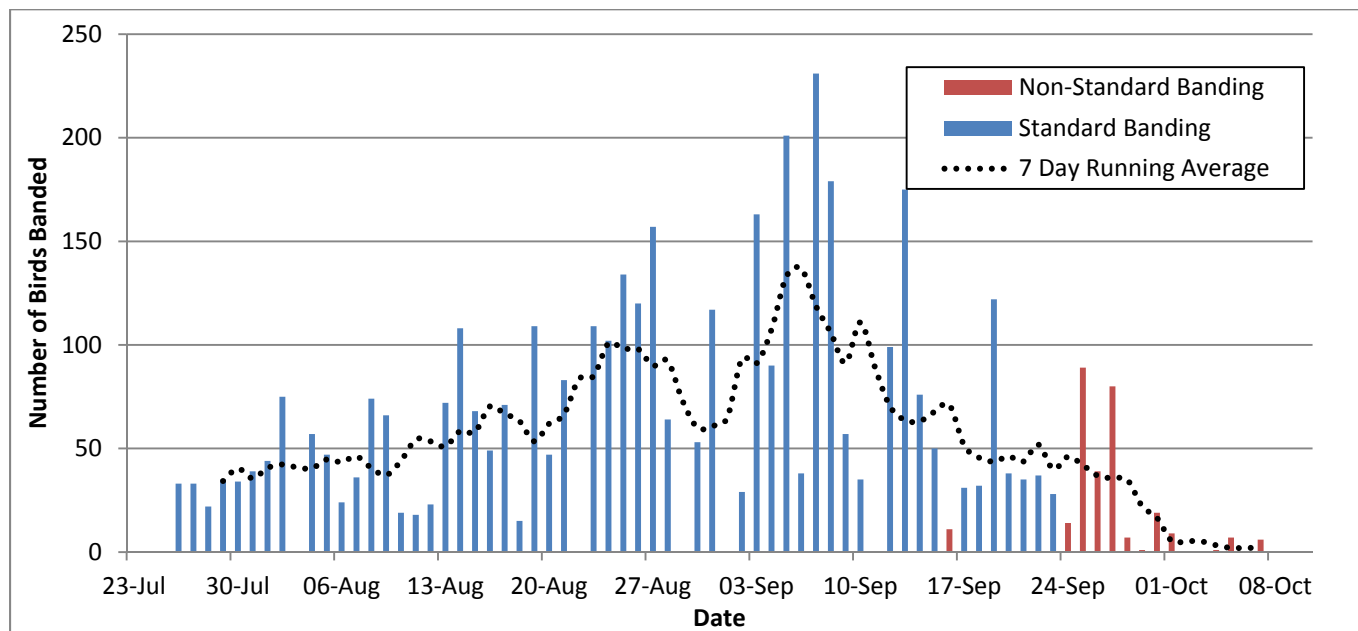


Figure 2. Summary of birds banded per day during the fall of 2015.

The 2015 banding total of 4,186 birds was the highest on record and surpassed the previous annual banding record of 3,956 during 2009. When the amount of mist netting effort is taken into consideration, the number of birds/100 net hours in 2015 (57.6) was well above the 2008-2014 average of 43.64 but below the record high of 61.4 and 59.9 in 2009 and 2008, respectively (Figure 3).

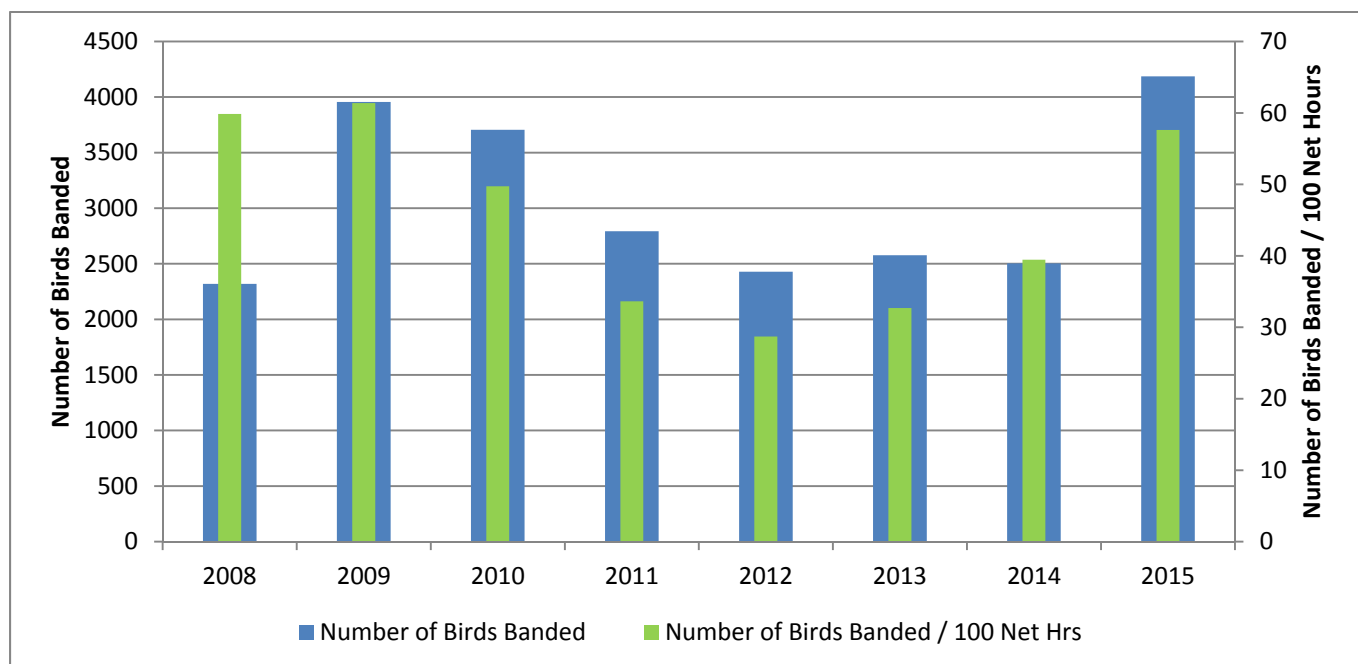


Figure 3. Summary of birds banded during the fall from 2008 to 2015.

The high level of consistency in effort across all standard mist nets (Figure 4) demonstrates the adherence to the observatory's monitoring protocol. Note that nets 7, 10, 18 and 20 are located on the sparsely vegetated shoreline and are more frequently closed midway through the daily count period due to wind. Net 28 stands out in Figure 4 as it is an 18 m net meaning that the effort is multiplied by 1.5; this net is also frequently closed due to wind.

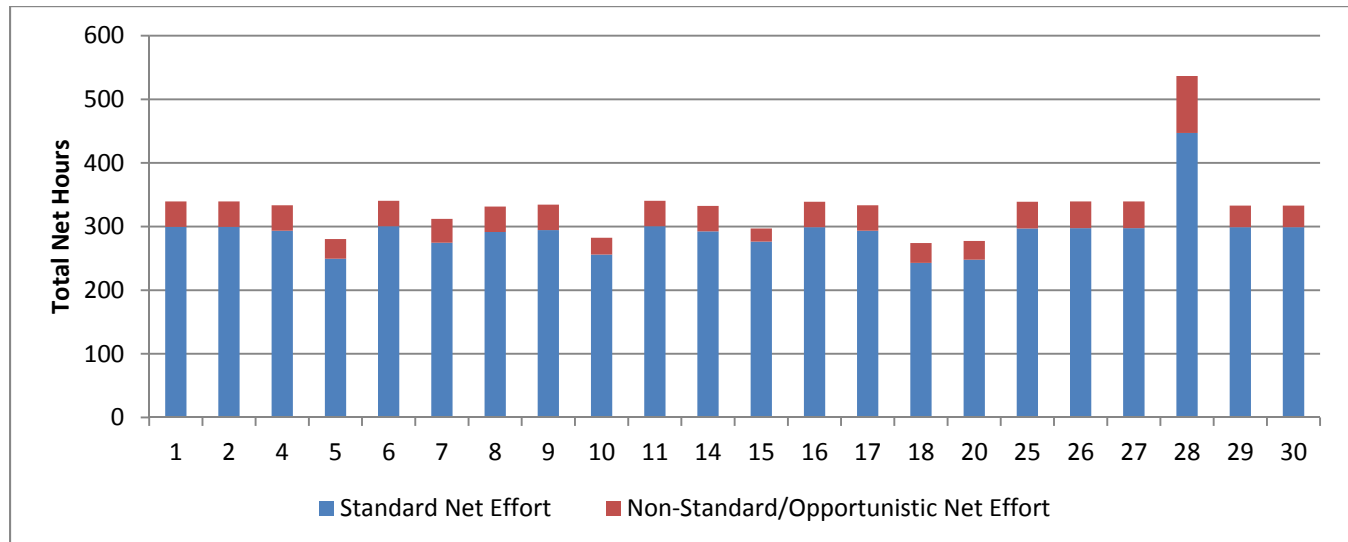


Figure 4. Summary of hours per mist net during the fall of 2015 (note net 28 is an 18 m net whereas all other nets are 12m).

The majority of birds and species moving through the count area that are captured in the nets pass directly along the shoreline of Teslin Lake. We see this in the highest capture rates in mist nets 10, 18 and 28 (Figure 5) which are closest to the lake edge. This pattern is consistent with previous years. Although a portion of the mist nets placed away from the lakeshore and in taller vegetation (nets 5, 25 to 27) catch fewer birds per net-hour, these nets capture species such as Swainson's Thrush and Varied Thrush which are not typically caught on the lakeshore.

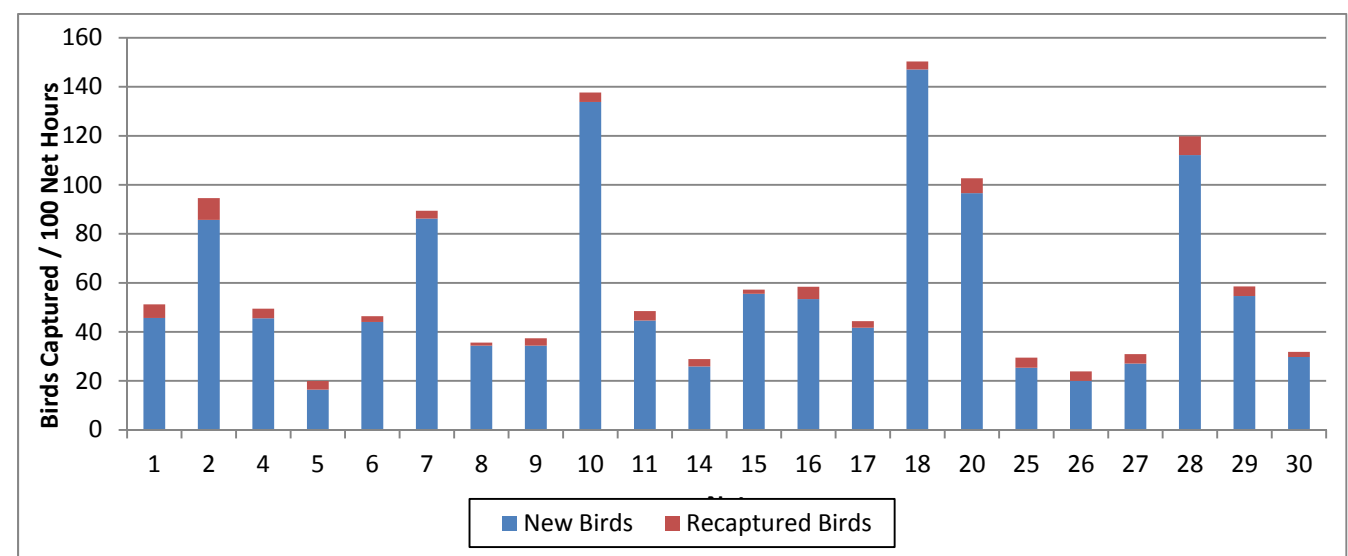


Figure 5. Number of birds banded per mist net during the fall of 2015.

3.3 Migration Timing

The standardized monitoring at the observatory can be used to investigate the migration timing of numerous species. This section is separated into the following subsections; (3.1.1) generalized migration timing of species banded and (3.1.2) species-specific migration timing.

3.3.1 Generalized Migration Timing

Generalized migration timing during 2015 as compared to the 2008 to 2014 average for temperate, neotropical and irruptive migrants/year round residents is presented in Figure 6. During 2015, the peak in fall migration occurred in early September which was 1-2 weeks later than average. The higher capture rate of neotropical migrants during September was apparent and helped to explain the high overall banding captures during 2015.

Temperate migrants typically migrate later than neotropical migrants and this was once again the case in 2015. The peak capture of temperate migrants occurred during mid-September which is consistent with data from previous years. Irruptive migrants banded during 2015 were dominated by Boreal Chickadees which were primarily captured between late August and late September.

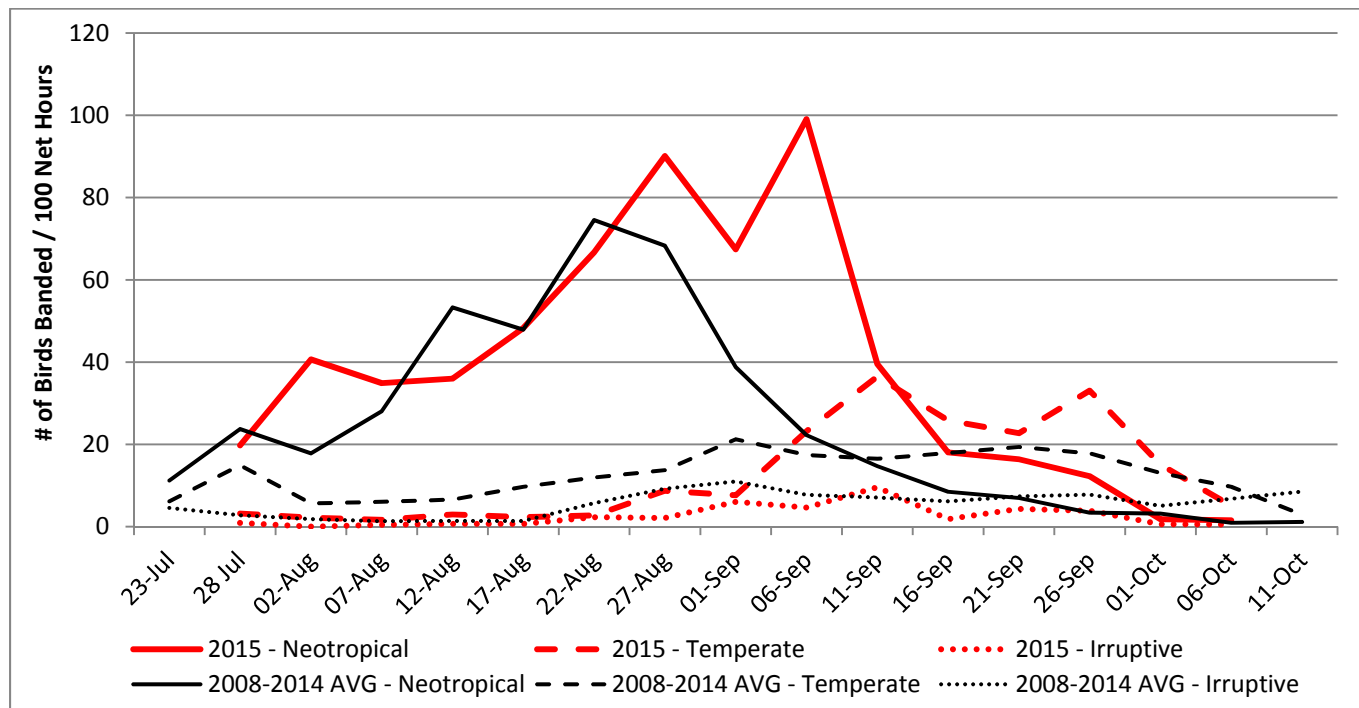


Figure 6. Generalized migration timing by species group during 2015 as compared to the average timing from 2008 to 2014.

3.3.2 Species Specific Migration Timing

Species specific migration timing was graphically compiled for 33 species using the daily species total data which incorporates the number of birds captured and observed on each day of operation. The full set of migration timing figures for the species listed below are shown in Appendix C. These species

were chosen due to a sufficient number of days observed for each species and have been presented in a similar matter in previous years' annual reports.

- Greater White-fronted Goose
- Trumpeter Swan
- Tundra Swan
- Northern Harrier
- Sharp-shinned Hawk
- Red-tailed Hawk
- Rough-legged Hawk
- Golden Eagle
- American Kestrel
- Alder Flycatcher
- Ruby-crowned Kinglet
- American Robin
- Varied Thrush
- Bohemian Waxwing
- Orange-crowned Warbler
- Yellow Warbler
- Myrtle Warbler
- Wilson's Warbler
- Slate-colored Junco
- Rusty Blackbird

3.4 Band Repeats, Returns & Recoveries

The proportion of birds caught that had been previously banded at the site in 2015 (band repeats) was relatively low (3.6%) during the 2015 season (Table 7), and was lower than during previous years (4.4% in 2014, 5.2% in 2013, 4.6% in 2012, 4.6% in 2011 and 4.7% in 2010). These results indicate that there continues to be a very high turnover of migrants through the study site, particularly for species banded in high numbers. For example, a total of 1,058 Alder Flycatchers were banded and only 4 individuals were recaptured (0.4 %) on subsequent days. For the purpose of migration monitoring, this is the preferred scenario as there is a limited amount of double counting the same individuals on consecutive days.

Table 7. Summary of band repeats during the fall of 2015.

Species	# of Individuals Recaptured	% of 2015 Original Bandings	Maximum # of Days From Original Banding	Average # of Days From Original Banding
Belted Kingfisher	2	33.3	15	9.0
Alder Flycatcher	4	0.3	5	2.5
Hammond's Flycatcher	1	4.7	2	-
Warbling Vireo	1	10.0	1	-
Gray Jay	1	100.0	17	-
Black-capped Chickadee	8	25.8	8	3.0
Boreal Chickadee	4	3.1	2	1.3
Red-breasted Nuthatch	2	22.2	2	2.0
Ruby-crowned Kinglet	8	2.8	3	1.4
Swainson's Thrush	3	4.4	4	3.0
Hermit Thrush	1	12.5	15	-
Northern Waterthrush	11	20.8	13	4.6
Orange-crowned Warbler	1	0.3	2	-
Blackpoll Warbler	4	4.0	12	5.0
Myrtle Warbler	12	3.9	10	3.3
Yellow Warbler	26	4.7	5	1.5
Common Yellowthroat	6	6.7	4	1.8
American Redstart	9	19.1	10	3.1
Wilson's Warbler	11	2.9	5	2.0
American Tree Sparrow	15	10.9	7	2.9
Chipping Sparrow	2	6.9	2	1.5
Savannah Sparrow	4	7.3	12	4.8
Lincoln's Sparrow	1	1.5	1	-
Fox Sparrow	3	7.1	3	2.0
White-crowned Sparrow	2	8.7	2	1.5
Slate-colored Junco	8	3.8	12	5.6
TOTAL	150	3.6	17	3.0

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 13 band returns representing 6 species (Table 8). The 2015 band returns likely

represent individuals which breed near the observatory as indicated by the recapture dates that are relatively early during the season. A Yellow Warbler originally banded as an after hatch year bird on August 17, 2013 and recaptured on September 13 may have been a migrant individual.

Table 8. Summary of band returns during the fall of 2015.

Species	Band Number	Banded		Recaptured
		Date	Age – Sex ¹	Date in 2015
Gray Jay	1013-51291	21 Sep 2010	AHY – U	12 Sep 2015
Warbling Vireo	2610-93009	27 Jul 2011	AHY – U	27 Jul 2015
Black-capped Chickadee	2560-33581	25 Jul 2013	ASY – U	17 Sep 2015
Black-capped Chickadee	2560-33587	25 Jul 2013	HY – U	8 Aug 2015
Black-capped Chickadee	2610-90865	29 Aug 2013	HY – U	12 Aug 2015
Northern Waterthrush	2730-88530	29 Jul 2014	AHY – U	27 Jul 2015
Yellow Warbler	2610-90019	17 Aug 2013	AHY – M	13 Sep 2015
Yellow Warbler	2730-88506	28 Jul 2014	AHY – M	11 Aug 2015
Slate-colored Junco	2401-65043	22 Jul 2011	AHY – M	31 Aug 2015
Slate-colored Junco	2401-65122	25 Aug 2011	HY – M	21 Aug 2015
Slate-colored Junco	2511-91857	28 Jul 2014	HY – F	28 Jul 2015
Slate-colored Junco	2511-91862	3 Aug 2014	AHY – U	20 Aug 2015
Slate-colored Junco	2511-91897	26 Aug 2014	HY – F	3 Sep 2015

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

Foreign band recoveries are a very infrequent event; to date the observatory has had five such recoveries and also recovered one bird from another SOYBO study site (Table 9). The most recent recovery was an American Robin banded in August 2014 which was recovered near Dunburn, Saskatchewan in early April 2015. The longest distance band recovery to date is an Alder Flycatcher banded at Teslin Lake on August 24, 2009 and recaptured at Tacarcuna Nature Reserve in Colombia on April 29, 2011.

Table 9. Summary of foreign band returns at TLBO to date.

Species	Banded		Recovered	
	Location	Date	Location	Date
Yellow Warbler	Texas, USA	12 May 2008	Teslin Lake	9 Sep 2009
Alder Flycatcher	Teslin Lake	25 Aug 2008	SW Saskatchewan	12 Jun 2009
Sharp-shinned Hawk	Teslin Lake	14 Aug 2009	Boise, Idaho, USA	9 Oct 2010
Alder Flycatcher	Teslin Lake	24 Aug 2009	Sapzurro, Choco, Colombia	29 Apr 2011
Myrtle Warbler	Teslin Lake	7 Sep 2010	McIntyre Marsh Bird Banding Station – Whitehorse, YT	25 May 2013
American Robin	Teslin Lake	8 Aug 2014	Dunburn, Saskatchewan	11 Apr 2015

3.5 Molt Scoring

As supplementary information, data was collected on the stage of molt for large proportion of the birds banded. Although information on the prebasic molt (amount of juvenile plumage remaining) was collected for hatch year birds, a particular emphasis was placed upon collecting wing molt scores for molting adult individuals as this provides information on the progress of molt in relation to migration timing for various species.

Wing molt score is achieved by assigning each individual wing flight feather a score from zero (old feather remaining) to five (new feather fully grown) and adding them together. Note that birds symmetrically molt their wing feathers; however, the scores collected are typically on the right wing. During 2015, a total of 304 molt scores were obtained from 263 individuals of 23 species (Table 10). No additional analysis is provided here; however, additional analysis could be conducted to compare the stage of molt in comparison to timing. This can be done to compare the timing of molt between species and/or sex within species. For example, females typically molt later than males due to the energetic requirements for females which are typically greater than that for males.

Table 10. Summary of wing molt scores collected from adult birds during the fall of 2015.

Species	Number of Individuals Scored	Total Number of Molt Scores
Sharp-shinned Hawk	1	1
Belted Kingfisher	1	2
Hammond's Flycatcher	5	5
Black-capped Chickadee	3	11
Ruby-crowned Kinglet	5	7
Swainson's Thrush	7	7
Hermit Thrush	2	2
American Robin	1	1
Northern Waterthrush	7	12
Orange-crowned Warbler	30	31
Myrtle Warbler	50	63
Yellow Warbler	39	40
Blackpoll Warbler	18	18
Black-and-white Warbler	1	1
Common Yellowthroat	16	16
American Redstart	21	27
Wilson's Warbler	17	17
American Tree Sparrow	6	6
Chipping Sparrow	1	1
Savannah Sparrow	3	3
Lincoln's Sparrow	2	2
Slate-colored Junco	20	24
Rusty Blackbird	7	7
TOTAL	263	304

3.6 Visual Migration Counts

The visual migration counts provide a method of estimating relative numbers of individuals in the migrant species that would not be caught in mist nets. The counts are especially useful in observing raptors in migration and also serve as a method for monitoring waterbirds, waterfowl and some species of passerines. Note that birds seen during the migration counts which are not in active migration flight are not included in this section. Birds “in active migration flight” typically show a directed flight over the count area and do not appear to linger within the count area.

During the fall 2015 season, visual migration counts (standard & nonstandard) were conducted for 194.6 hours (Figure 7). Non-standard counts were limited to days when the total amount of observing effort was insufficient to constitute standard effort or to days where the allowable duration of standard effort was too high (i.e., extra effort).

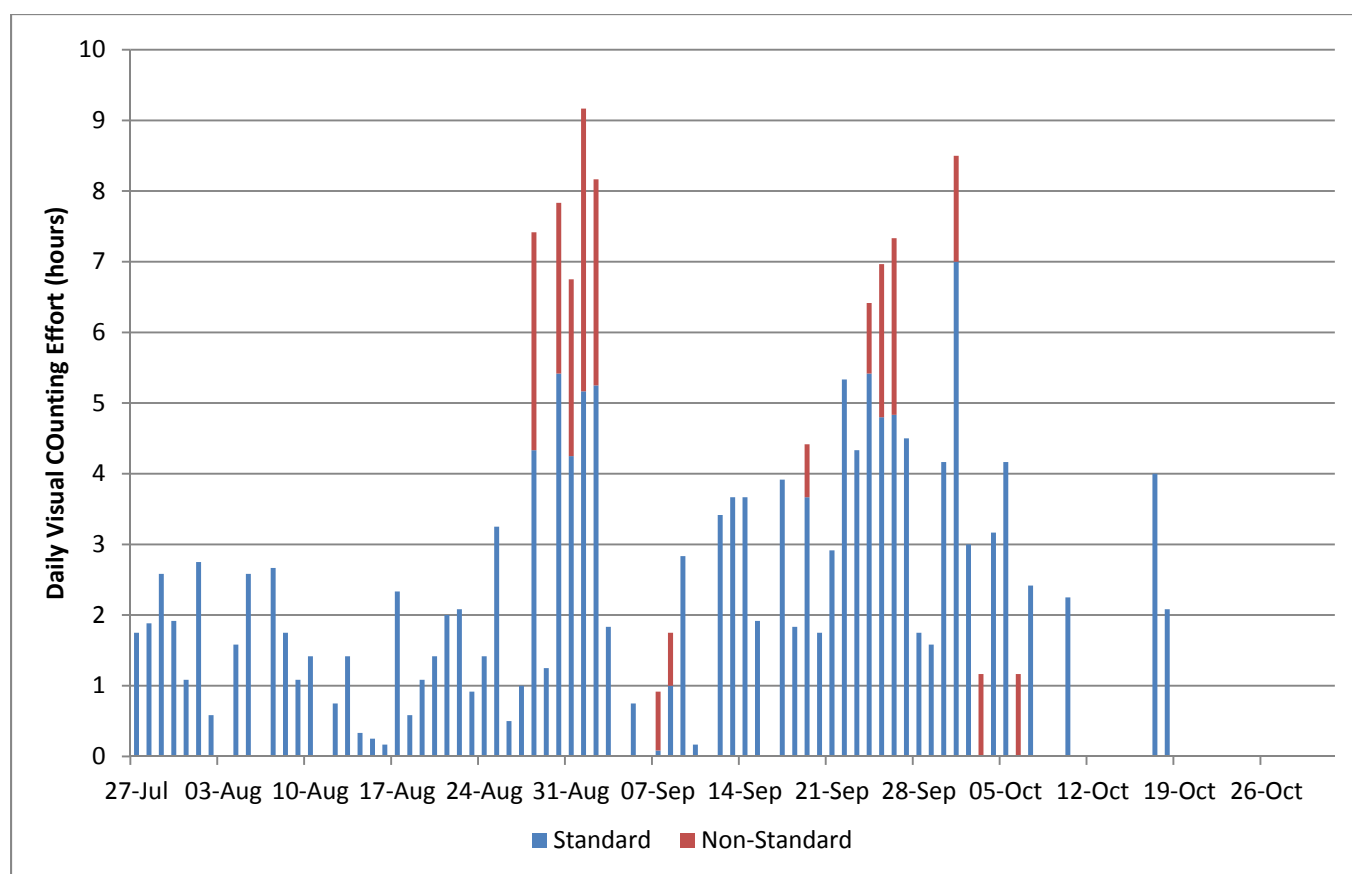


Figure 7. Visual counting effort, in hours each day, over the duration of the 2015 season.

The highest number of visual migrants observed was during week 6 (August 27 to September 2) due to a large movement of raptors and a variety of other species. The weather during this period included an early season snowstorm which appeared to cause a large movement of birds. When considering the amount of watching effort (194.6 hours), the number of birds observed per hour during 2015 tied the previous high of 218 birds/hr which was set during 2011 (Table 11).

Table 11. Summary of birds observed on the visual migration counts from 2009 to 2015.

Group	2015	2014	2013	2012	2011	2010	2009	2009-2015 Average
Waterbirds ¹ & shorebirds	3,878	721	2,166	1,583	1,072	3,491	4,927	2,281
Waterfowl	22,560	28,556	7,852	35,044	31,548	22,258	8,219	19,960
Raptors	4,211	2,300	2,466	1,977	3,680	1,710	1,612	2,326
Passerines ²	11,797	23,397	28,839	21,408	37,951	16,277	11,000	19,187
TOTAL BIRDS OBSERVED	42,446	54,974	41,323	60,012	74,251	43,736	25,758	43,754
TOTAL BIRDS OBSERVED / HR	218	197	147	169	218	188	201	180
Visual Counting Effort (hrs)	194.6	279.0	280.9	354.8	340.6	232.4	128.1	235.7

¹ Waterbirds include loons, grebes, gulls and cranes.

² Includes woodpeckers.

There are, however, considerable differences between years in observational effort and some differences in the distribution of observational effort by week. Observations per hour for raptors and waterbirds show record high counts during 2015 as compared to previous years (Figure 8). We provide additional detail in the following sections.

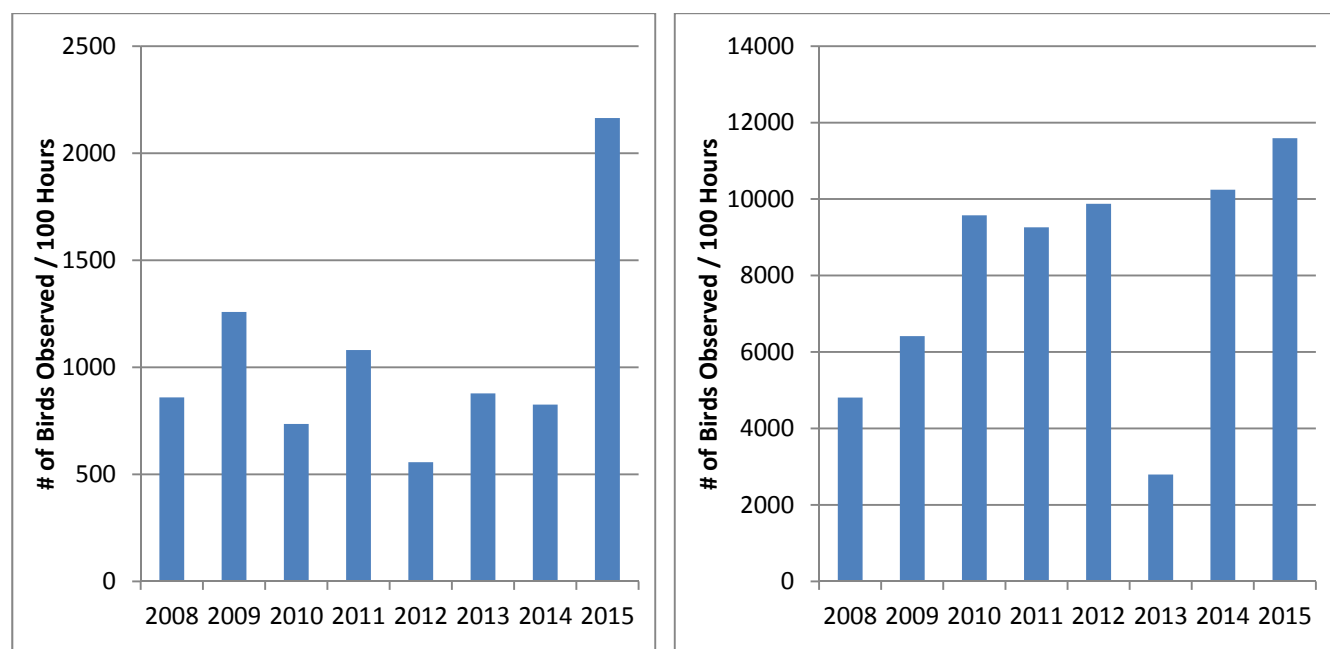


Figure 8. Number of raptors (left) and waterfowl (right) observed per 100 watching hours during 2015.

3.6.1 Waterbirds (loons, grebes, gulls)

We counted a total of 3,966 waterbirds of 12 species during 2015 including 193 loons, 3 grebes, 3,498 cranes, and 236 gulls/terns/jaegers (Table 12). Most species of waterbirds are better suited to being monitored through the lake counts (Section 3.5) or through the daily estimated totals which combine all monitoring methods (visual migration and lake counts). However, Sandhill Cranes are effectively monitored by the visual counts and the number of this species observed in 2015 was notably high.

Table 12. Summary of waterbird visual migrants observed during 2015.

Species	Total # Counted		
	Migration Counts	Incidental Migrants	TOTAL
Red-throated Loon	8	11	19
Pacific Loon	21	0	21
Common Loon	6	0	6
<i>Unidentified Loon</i>	146	1	147
Horned Grebe	3	0	3
Red-necked Grebe	16	3	0
Sandhill Crane	3,389	109	3,498
Mew Gull	17	0	17
Herring Gull	8	0	8
Thayer's Gull	108	0	108
<i>Unidentified Large Gull</i>	8	0	8
Bonaparte's Gull	11	9	20
Arctic Tern	74	14	88
Parasitic Jaeger	4	0	4
TOTAL	3,819	147	3,966

3.6.2 Waterfowl (geese, swans and ducks)

As in previous years, the visual migration counts were an effective and efficient way to monitor waterfowl migration. Although in some cases, portions of the large flocks of swans and/or geese were left as unidentified, most species were identified to species. We counted a total of 23,407 waterfowl during 2015 including 12,492 geese, 8,469 swans and 2,446 ducks (Table 13). Among the geese observed, Greater White-fronted Goose accounted for just over 75% of all individuals. In terms of swans, Tundra Swans were more common than Trumpeter Swans and accounted for 96% of the swans identified to species. The top 6 duck species observed included the following: Lesser Scaup (20% of all ducks), Northern Pintail (16%), Mallard (15%), American Wigeon (12%), Surf Scoter (10%) and Canvasback (8%).

Table 13. Summary of waterfowl visual migrants observed during 2015.

Species	Total # Counted		
	Migration Counts	Incidental Migrants	TOTAL
Greater White-fronted Goose	9,042	442	9,484
Snow Goose	767	0	767
Canada Goose	638	56	694
<i>Unidentified Goose</i>	1,547	0	1,547
Trumpeter Swan	207	35	242
Tundra Swan	5,435	116	5,551
<i>Unidentified Swan</i>	2,676	0	2,676
American Wigeon	227	15	242
Mallard	246	48	294
Gadwall	0	1	1
Northern Shoveler	112	18	130
Northern Pintail	298	28	326
American Green-winged Teal	58	11	69

Species	Total # Counted		
	Migration Counts	Incidental Migrants	TOTAL
<i>Unidentified Dabbling Duck</i>	76	0	76
Canvasback	167	1	168
Redhead	2	0	2
Ring-necked Duck	5	0	5
Greater Scaup	30	0	30
Lesser Scaup	392	9	401
<i>Unidentified Scaup</i>	223	0	223
Surf Scoter	199	5	204
White-winged Scoter	57	0	57
Long-tailed Duck	3	0	3
Common Goldeneye	6	0	6
<i>Unidentified Goldeneye</i>	16	3	19
Common Merganser	54	10	64
<i>Unidentified Duck</i>	77	49	126
TOTAL	22,560	847	23,407

3.6.3 Raptors

Most species of raptors are well monitored by the visual migration counts. In 2015, we counted a total of 4,250 raptors during the visual counts and as incidental “other visual migrants” representing 13 species (Table 14). The most numerous species observed were Harlan’s Red-tailed Hawk (47% of all raptors), Sharp-shinned Hawk (16%), Northern Harrier (15%), American Kestrel (4%) and Golden Eagle (3%).

Table 14. Summary of raptor visual migrants observed during 2015.

Species	Total # Counted		
	Migration Counts	Incidental Migrants	TOTAL
Bald Eagle	55	0	55
Northern Harrier	612	21	633
Sharp-shinned Hawk	689	8	697
Northern Goshawk	6	0	6
Swainson’s Hawk	107	1	108
Red-tailed Hawk (unspecified)	120	0	120
Red-tailed Hawk (Harlan’s)	1,992	3	1,995
Rough-legged Hawk	144	1	45
<i>Unidentified Buteo</i>	24	0	24
Golden Eagle	136	0	136
<i>Unidentified Eagle</i>	2	0	2
American Kestrel	171	3	174
Merlin	49	0	49
Gyr Falcon	0	1	1
Peregrine Falcon	53	1	54
<i>Unidentified Falcon</i>			
Osprey	51	0	51
TOTAL	4,211	39	4,250

A breakdown of color morph data collected from 2010 to 2015 is shown in Table 15 and Table 16 for Rough-legged and Red-tailed hawks, respectively. The majority of Rough-legged Hawks observed were classified as light morph individuals. By far the most common Red-tailed Hawk was the Harlan's dark morph, while the Harlan's light morph was the second most common. These patterns have been very consistent from year to year. The observation of possible western and eastern Red-tailed Hawks are also notable given the limited information on these subspecies in the Yukon.

Table 15. Summary of color morph data recorded for Rough-legged Hawks observed on visual migration counts from 2010 to 2015. Note that additional individuals with an undetermined color morph are excluded.

Year	Dark Morph (%)	Light Morph (%)
2010	21.7	78.3
2011	13.5	86.5
2012	18.8	81.2
2013	11.1	88.9
2014	11.8	88.2
2015	8.5	91.5

Table 16. Summary of color morph data recorded for Red-tailed Hawks observed on visual migration counts from 2010 to 2015. Note that additional individuals with an undetermined color morph are excluded.

Year	Harlan's Dark Morph	Harlan's Light Morph	Western Dark Morph	Western Light Morph	Western (Color Undetermined)	Eastern
2010	95.1	4.3	0.5 (2 birds)			-
2011	95.0	4.6	0.1 (1 bird)	0.1 (1 bird)		0.2 (2 birds)
2012	92.0	7.1	0.3 (1 bird)			0.6 (2 birds)
2013	88.4	10.3	0.6 (3 birds)			0.6 (3 birds)
2014	91.3	7.1	0.7 (4 birds)		0.3 (2 birds)	0.5 (3 birds)
2015 ¹	91.0	8.6	0.3 (7 birds)			0.1 (2 birds)

¹ One additional leucistic individual was observed and not included in this table.

We could reliably determine the age and sex of five species of visual migrants when viewing conditions were suitable (Table 17). Over the 5 years, most raptor species show consistently low proportions of juveniles. We note that the high proportion of juvenile Rough-legged Hawks (59.3%) as compared to the previous high of 30.1% in 2012 and the 2010 to 2014 average of 23.5%.

Table 17. Summary of age and sex data collected for raptors observed on visual migration counts from 2010 to 2015. Note that additional individuals with an undetermined color morph age/sex categories are excluded.

Species	Year	Proportion of Individuals Counted (%)							
		Adult			Sub - adult	Immature	Juvenile	Female Plumaged (juv/female)	Not Determined
		Male	Female	Not Determined					
Bald Eagle	2010	-	-	42.3	32.1	11.6	14.1	-	
	2011	-	-	14.7	37.3	33.3	14.7	-	
	2012	-	-	54.3	33.7	12.0	0.0	-	
	2013	-	-	28.2	58.3	6.3	7.3	-	
	2014	-	-	35.6	40.2	11.5	12.6	-	
	2015	-	-	14.5	60.0	14.5	10.9	-	-
Golden Eagle	2010	-	-	68.2	12.6	8.3	10.9	-	
	2011	-	-	52.3	18.7	18.0	11.0	-	
	2012	-	-	74.5	9.2	12.3	4.1	-	
	2013	-	-	63.7	26.7	5.0	4.6	-	
	2014	-	-	77.3	8.5	7.8	6.4	-	
	2015	-	-	40.2	27.1	22.4	10.3	-	-
Northern Harrier	2010	11.3	12.2	-	-	-	37.1	39.3	
	2011	8.9	10.7	-	-	-	26.5	53.9	
	2012	13.9	13.1	-	-	-	26.4	46.6	
	2013	12.0	14.3	-	-	-	22.3	51.5	
	2014	16.4	16.4	-	-	-	19.5	47.7	
	2015	6.8	8.2	-	-	-	22.1	62.9	
Rough-legged Hawk	2010	38.0	23.0	11.5	-	-	27.6	-	
	2011	28.3	37.1	21.0	-	-	15.2	-	
	2012	25.7	25.7	18.9	-	-	30.1	-	
	2013	28.9	35.6	17.1	-	-	18.6	-	
	2014	24.6	33.9	15.4	-	-	26.1	-	
	2015	10.5	24.4	5.8			59.3	-	-
Red-tailed Hawk ¹	2013	-	-	94.0	-	-	6.0	-	
	2014	-	-	89.3	-	-	10.7	-	
	2015	-	-	86.9	-	-	13.1	-	-

3.6.4 Shorebirds

We recognize that, as a group, shorebirds are not well monitored at this observatory due to the relatively low numbers of individuals observed (Table 18). In 2015, we counted a total of only 59 shorebirds of nine species. This information can easily continue to be collected as incidental observations when counting other species (raptors, waterfowl, etc).

Table 18. Summary of shorebird visual migrants observed during 2015.

Species	Total # Counted		
	Migration Counts	Incidental Migrants	TOTAL
American Golden-Plover	3	0	3
Semi-palmated Plover	0	4	4
Least Sandpiper	1	2	3
Baird's Sandpiper	1	0	1
<i>Unidentified Small Sandpiper ('peep')</i>	7	0	7
Pectoral Sandpiper	32	3	35
<i>Unidentified Dowitcher</i>	1	0	1
Upland Sandpiper	1	0	1
Red-necked Phalarope	1	0	1
Wilson's Snipe	5	0	5
<i>Unidentified Shorebird</i>	7	0	7
TOTAL	59	9	68

3.6.5 Owls, Woodpeckers and Passerines

A wide variety of passerines (11,797 individuals of 41 species) were counted during the 2015 visual migration counts (Table 19). A very large proportion of the passerines observed were large thrushes (American Robin, Varied Thrush, unidentified large thrush), Rusty Blackbirds, Yellow-rumped Warblers or unidentified small passerines. It is important to note that the species composition of the unidentified small passerines varies by the time of the season. For example, early season unidentified small passerines are likely Yellow-rumped, Blackpoll and Yellow warblers whereas later season individuals are likely Dark-eyed Juncos and other sparrow/finch species.

For most passerines, standard mist netting/banding provide the primary component of the daily species total; however, it can also be supplemented by the visual migration counts. For some species which migrate diurnally and are not captured in sufficient numbers by mist nets, and can be identified with relative ease when in flight, the migration counts likely provide the most reliable data. These include species such as the swallows, Townsend's Solitaire, American Robin, Varied Thrush, American Pipit, Bohemian Waxwing, Rusty Blackbird, Pine Grosbeak, Common Redpoll, Pine Siskin and White-winged Crossbill.

Table 19. Summary of owls, woodpecker and passerine visual migrants observed during 2015.

Species	Total # Counted		
	Migration Counts	Incidental Migrants	TOTAL
Belted Kingfisher	6	0	6
Downy Woodpecker	1	0	1
Hairy Woodpecker	1	0	1
American Three-toed Woodpecker	4	1	5
Northern Flicker	4	0	4
<i>Unidentified Woodpecker</i>	5	0	5
Northern Shrike	2	0	2
Gray Jay	1	0	1
Alder Flycatcher	23	4	27
<i>Unidentified Empidonax Flycatcher</i>	2	0	2
Western Wood-Pewee	2	1	3
<i>Unidentified Large Flycatcher</i>	4	0	4
Say's Phoebe	5	2	7
Tree Swallow	1	0	1
Violet-green Swallow	1	0	1
Bank Swallow	253	30	283
Cliff Swallow	50	2	52
Barn Swallow	1	0	1
<i>Unidentified Swallow</i>	398	39	437
Black-capped Chickadee	11	3	14
Boreal Chickadee	27	72	99
Mountain Bluebird	7	0	7
Townsend's Solitaire	25	0	25
American Robin	1,960	2	1,962
Varied Thrush	440	15	455
<i>Unidentified Large Thrush</i>	1,892	0	1,892
American Pipit	102	23	125
Bohemian Waxwing	265	39	304
Lapland Longspur	26	31	57
Orange-crowned Warbler	0	3	3
Yellow Warbler	61	24	85
Myrtle Warbler	390	79	469
Blackpoll Warbler	7	7	14
Northern Waterthrush	3	0	3
American Redstart	1	0	1
<i>Unidentified Warbler</i>	58	7	65
American Tree Sparrow	2	5	7
Chipping Sparrow	10	38	48
Savannah Sparrow	9	5	14
White-crowned Sparrow	3	0	3
Slate-colored Junco	99	7	106
<i>Unidentified Sparrow</i>	16	4	20
Rusty Blackbird	344	40	384
<i>Unidentified Blackbird</i>	1	0	1
Pine Grosbeak	136	18	154
Red Crossbill	4	11	15
White-winged Crossbill	9	11	20
<i>Unidentified Crossbill</i>	9	0	9
Pine Siskin	15	4	19
Common Redpoll	90	109	199
<i>Unidentified Small Finch</i>	40	7	47
<i>Unidentified Small Passerine</i>	4,971	236	5,207
TOTAL			

3.7 Lake Counts

The lake counts provide monitoring data for various species of loons, grebes, waterfowl and gulls/terns/ jaegers. The majority of loons and grebes counted at the observatory are observed on the lake counts and this was once again the case during 2015 with a total of 395 loons and 1,328 grebes (Table 20). Geese and swans were observed in very low numbers during the lake counts; these species are typically observed flying over the site only (i.e. are visual migrants). However, for some duck species (scoters and mergansers), the lake counts record data to supplement the visual migration counts (Table 20). Only small numbers of dabbling and diving ducks are seen mostly due to scarcity of suitable stopover and feeding habitats near the observatory. As a group, gulls, terns and jaegers are well monitored through the use of the lake counts; species of this group are the most commonly recorded birds using this method. Herring Gulls in particular were observed in high numbers during 2015 with over 2,000 bird days counted (Table 20).

Table 20. Summary of waterbirds (left) and waterfowl (right) observed on the lake counts during 2015. One bird day represents one individual on one day; two bird days could represent single birds on two days or two birds on the same day.

Species	Total # of Bird Days	Species	Total # of Bird Days
Pacific Loon	105	Greater White-fronted Goose	1
Common Loon	288	Canada Goose	144
<i>Unidentified Loon</i>	2	Trumpeter Swan	1
Horned Grebe	93	Tundra Swan	33
Red-necked Grebe	1,235	<i>Unidentified Swan</i>	4
Mew Gull	214	American Wigeon	20
Herring Gull	2,057	Mallard	53
Thayer's Gull	83	Northern Pintail	5
<i>Unidentified Large Gull</i>	60	Lesser Scaup	14
Glaucous Gull	8	<i>Unidentified Scaup</i>	1
Bonaparte's Gull	26	Surf Scoter	12
Arctic Tern	127	Long-tailed Duck	17
Parasitic Jaeger	8	Common Goldeneye	28
		Barrow's Goldeneye	4
		<i>Unidentified Goldeneye</i>	44
		Common Merganser	145
		Red-breasted Merganser	243
		<i>Unidentified Duck</i>	51
TOTAL	4,306	TOTAL	820

3.8 Special Projects

3.8.1 Owl Banding

Call playback was used to target owls on 3 evenings (77 net hours) and a total of 3 Boreal Owls were banded (Table 21). The number of owls was considerably lower than during 2014 when 40 Boreal and 2 Northern Saw-whet owls were banded during 10 evenings of effort. The capture rate of 3.9 owls/100

net hours during 2015 was also considerably lower than during 2014 (25.0 owls/100 net hours). These differences between years are not unexpected given that owl populations and reproductive output are known to vary from year to year due to changes in prey (small mammal) abundance. These differences between years are likely to be exacerbated within the owl banding results as most owls captured are juvenile birds and these individuals are most likely to migrate/errupt during years when the owls have high breeding success. There was also high variation in the captures between different evenings in 2014 and we may need to increase the number of evenings of sampling during future years. It is also important to note that there was considerably less effort in 2015 as compared to 2014 and this was attributed largely to unfavorable weather conditions.

Table 21. Summary of 2015 owl banding results.

Site	Species	Date			TOTAL
		21 Aug	25 Aug	8 Sep	
Standard Count Area	Total Net Hours	9	15	20	44
	Boreal Owl (banded)	1	1	0	2
Cottage Lots Gravel Pit	Total Net Hours	7	14	12	33
	Boreal Owl (banded)	0	0	1	1
Both Sites Combined	Total Net Hours	16	29	32	77
	Boreal Owl (banded)	1	1	1	3

3.9 *Interesting & Notable Captures / Observations*

The vast majority of birds banded and observed at Teslin Lake in 2015 were species which are common and widespread north and west of the study site. These common species will be the primary focus of the long term species t-trend analysis to be conducted following additional years of data collection. In addition to common species, the observatory continues to add to the knowledge base for rare and uncommon bird species in the Yukon, and some interesting patterns are outlined in the following sections

Swainson's Hawk

Prior to the start of visual migration counts at the observatory in 2008, fall records of this species in the Yukon were very sparse. Since the start of visual migration counts, the species has been documented annually at the observatory in low numbers; however, the numbers observed during 2015 far surpassed the counts from previous years. A total of 108 individuals were observed on the visual migration counts on 6 days between August 28 and September with a high count of 52 on August 31. The numbers observed in previous years included: 13 – 2014, 3 – 2013, 12 – 2012, 23 – 2011, 10 – 2010, 17 – 2009 and 3 – 2008. This species appears to be a relatively early migrant compared to other raptor species with nearly all records between August 20 and September 5.

Black Turnstone

Considered a casual migrant in the southern Yukon, this species is typically associated with marine environments during breeding (western Alaska) or wintering (west coast of North America from

southern Alaska to Baja California). During 2015, a single individual was observed on the south beach on August 12. This species has been observed on one occasion previously (August 27, 2012).

Glaucous Gull

An arctic nesting gull species, Glaucous Gull has also been observed at the site annually since the fall of 2008 with a total of 72 records to date (Table 22).

Table 22. Summary of Glaucous Gull observations from 2008 to 2015.

Year	Number of Days Observed	Total Bird Days	First Date Observed	Last Date Observed
2008	2	2	August 27	September 19
2009	2	2	August 1	August 29
2010	2	2	October 4	October 18
2011	13	13	September 16	October 24
2012	29	29	August 18	October 26
2013	13	13	August 27	September 19
2014	3	3	September 23	October 2
2015	8	8	September 2	October 19
ALL	72	72	August 1	October 19

Parasitic Jaeger

Prior to the initiation of fall migration monitoring at Teslin Lake in 2008, fall migration records of this species in the southern Yukon were limited to a few incidental sightings primarily from large lakes. It has become apparent that this species is a regular fall migrant on Teslin Lake; however, the number of individuals observed is variable between years. The number of individuals observed during 2015 (12) tied the previous low (2011) and was well below the season high of 72 bird days during 2008 (Table 23).

Table 23. Summary of Parasitic Jaeger observations from 2008 to 2015.

Year	Number of Days Observed	Total Bird Days	First Date Observed	Last Date Observed
2008	28	72	August 7	September 24
2009	11	16	August 24	September 25
2010	20	37	September 1	October 15
2011	9	12	September 2	October 11
2012	21	35	August 8	October 1
2013	25	53	August 24	September 23
2014	21	39	August 6	September 27
2015	4	12	August 31	September 12
ALL	135	264	August 8	October 15

Unidentified 'Chaetura' Swift

On August 28, an unidentified swift was observed during the visual migration count. The individual was observed at a long distance and could not be identified to species; however, it was determined to be of the Chaetura genus (Vaux or Chimney swift). There is one existing Yukon record of a Vaux

Swift from the southwest Yukon and no records of Chimney Swift. The breeding range of Vaux's Swift includes much of the Pacific Northwest and reaches its northern limit at the southern end of the Alaskan Panhandle. Chimney Swift on the other hand is a species of eastern North America with its westernmost breeding range reaching central Saskatchewan.

Yellow-bellied Flycatcher

Yellow-bellied Flycatcher is likely the least understood *Empidonax* flycatcher in the Yukon in terms of distribution and abundance. Partially due to identification difficulties with other closely related species, there are relatively few records of this species during migration aside from the Teslin Lake and Albert Creek bird observatories where nearly all of the records are of birds captured in the mist nets. This species is a late spring and an early fall migrant; the latest record to date is September 4 (Table 24).

Table 24. Summary of Yellow-bellied Flycatchers banded from 2008 to 2015.

Year	Number Banded		Earliest Date	Latest Date
	Juvenile	Adult		
2008	9	1	August 11	August 22
2009	8	0	August 4	August 23
2010	11	0	July 29	August 25
2011	7	0	August 12	September 4
2012	8	1	August 2	August 23
2013	11	0	August 11	August 26
2014	2	1	July 30	August 15
2015	11	0	July 29	August 28
TOTAL	67	3	July 29	September 4

Dusky Flycatcher

Dusky Flycatcher is a high elevation breeder in the southern Yukon where it is at the northern extent of its breeding range. Lowland records of this species in migration are sparse and the observatory captures this species irregularly, but annually, in fall (Table 25). During 2015, a total of 2 juveniles were banded bringing the all-time banding total to 28 individuals in fall; nearly all of which have been juveniles.

Table 25. Summary of Dusky Flycatchers banded from 2008 to 2015.

Year	Number Banded		Earliest Date	Latest Date
	Juvenile	Adult		
2008	1	0	September 13	-
2009	6	0	August 8	August 25
2010	3	0	August 11	September 5
2011	4	2	August 1	August 17
2012	3	0	August 8	September 30
2013	3	0	August 23	September 12
2014	4	0	August 6	September 13
2015	2	0	August 24	September 8
TOTAL	26	2	August 1	September 30

Blackburnian Warbler

The observatory's first Blackburnian Warbler was banded on September 15 and this individual was determined to be a hatch year male (Photo 1). This individual provided the first Yukon record of this species which is known to occur in the Peace area of northeastern BC where it is considered a rare species.



Photo 1. Hatch year Blackburnian Warbler banded at TLBO on September 15, 2015.

Black-and-white Warbler

An adult female Black-and-white Warbler banded on August 29 provided the first record of this species at the observatory (Photo 2); presumably the same bird was also observed in the count area on August 27. The bird was in heavy molt at the time of capture and this, combined with the timing of the capture, suggest that this individual likely spent the summer months in the vicinity of the observatory. The breeding range of the species includes the extreme southeast Yukon and it is captured irregularly, but almost annually, at the Albert Creek Bird Observatory near Watson Lake. There are also a small number of records from elsewhere in the Yukon including the Whitehorse area and Swede Johnson Creek near the Kluane River.



Photo 2. Adult Black-and-white Warbler banded at TLBO on August 29, 2015.

American Redstart

In the Yukon, American Redstart is most common in the southeast portion of the territory; however, it occurs annually in lower numbers further west near Teslin, Whitehorse and Haines Junction. Following the establishment of the fall migration monitoring at the observatory in 2008, it became apparent that this species is much more common in the region than initially thought. To date, 250 individuals have been banded at the station in fall, of which 180 have been juveniles (Table 26). This species is most frequently observed during late July and August although there are a few records in mid to late September and even early October (latest October 5 - 2015). In 2015, the species was observed on 42 days (76 bird days) from July 26 to October 5 and a total of 47 individuals (25 juvenile, 22 adult) were banded.

Table 26. Summary of American Redstarts banded at the observatory from 2008 to 2015.

Year	# of Days Observed	# of Bird Days	# Banded		Early Date ¹	Late Date	High Count
			Juvenile	Adult			
2008	13	15	5	5	7 Aug	18 Sep	2 – many
2009	26	99	34	9	1 Aug	19 Sep	9 – 6 Aug
2010	24	47	25	5	16 Jul	6 Sep	6 – 26 Jul
2011	36	137	28	12	16 Jul	26 Sep	10 – 30/31 Jul
2012	28	66	12	10	22 Jul	16 Sep	8 – 5 Aug
2013	30	62	28	5	25 Jul	11 Sep	4 – 25/29 Jul
2014	23	48	23	2	28 Jul	5 Sep	6 – 31 Jul
2015	42	76	25	22	26 Jul	5 Oct	5 – 29 Jul
TOTAL	180	474	180	70	16 Jul	5 Oct	-

¹ Note that during 2008 and 2009, the observatory did not begin fall migration monitoring until August 7 and August 1, respectively.

3.9.1 Chickadees

Chickadees are considered year-round residents, but the observatory has documented Boreal Chickadee irruptions in five of the last eight years with variation in the magnitude of irruptions between years (Table 27). The high number of individuals banded and observed in some years indicates that a substantial number of birds are involved in these irruptions. The relative proportion of the species encountered is likely an indication of the relative abundance in the southern Yukon; however, it is possible that certain species may be more likely to stage fall irruptions. Of particular interest, nearly all chickadees banded are hatch year individuals. Also note that Black-capped Chickadee is the only chickadee species which breeds within the study site and therefore a portion of the individuals banded are probable local residents/offspring.

Table 27. Summary of chickadees banded and observed at the observatory from 2008 to 2015.

Year		Boreal Chickadee	Black-capped Chickadee	Mountain Chickadee	Chestnut-backed Chickadee	Hybrid Chickadee
2008	# Banded	128	57	15	1	1
	# of Bird Days	293	172	20	1	1
2009	# Banded	831	26	11	-	-
	# of Bird Days	1,612	221	24	-	-
2010	# Banded	-	22	-	-	-
	# of Bird Days	12	295	-	-	-
2011	# Banded	233	92	2	-	-
	# of Bird Days	486	270	3	1	-
2012	# Banded	142	65	1	-	12
	# of Bird Days	230	231	5	-	-
2013	# Banded	24	33	-	-	-
	# of Bird Days	40	209	1	-	-
2014	# Banded	3	16	-	-	-
	# of Bird Days	9	157	-	-	-
2015	# Banded	131	31	4	-	-
	# of Bird Days	304	169	11	-	-

3.10 Species of Conservation Concern

In conjunction with the other Yukon Bird Observatories field stations, all Rusty Blackbirds captured were fitted with a color band (light blue) in addition to the regular numbered leg band. As each observatory uses a different color, the color bands help to identify the origin of a re-sighted individual without the need to recapture it. Additionally, from 2008 to 2010 a feather was collected from each Rusty Blackbird captured. Feather samples were analyzed for stable isotopes in an effort to make linkages between breeding and wintering grounds of this species. During the fall of 2015, 21 individuals were banded (20 hatch year, 1 after hatch year) and the species was observed on 46 days with a total of 522 bird days.

In addition to Rusty Blackbirds, other species of conservation concern (COSEWIC and Yukon General Status) encountered included the following (numbers in brackets - # banded/# of bird days): Horned Grebe (0/96), American Kestrel (0/180), Peregrine Falcon (0/57), Red-necked Phalarope (0/1), Common Nighthawk (0/4), Olive-sided Flycatcher (1/2) and Bank Swallow (0/283).

3.11 Visitors and Volunteers

Once again the observatory hosted numerous visitors and volunteers. On most days of operation, adequate personnel were available onsite to assist with the banding operation. This was largely due to the commitment of long-term volunteers who provide valuable assistance at the observatory. During 2015, the observatory hosted two new long term volunteers, Francis Bordeleau-Martin and H  l  ne Dion-Phenix from Quebec. Qualified volunteers such as Francis and H  l  ne are necessary to allow for the observatory to be successful over the long term. During 2015, the observatory recorded a

total of 1,804 hours of observer effort (paid and volunteer) by 18 individuals. A total of 54 individuals visited the observatory and tallied a total of 143 visitor hours. 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 which 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 Bander In Charge (Jukka Jantunen). 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 Teslin Renewable Resources Council also hosted a community barbeque and banding demonstration on September 3, 2015. A total of 32 individuals visited the observatory on this date including most of the students from Teslin School.

Table 28. Hours spent at the observatory by volunteers and paid observers during 2015.

Paid		Volunteer	
# of Individuals	Hours	# of Individuals	Hours
1	533	17	1,267

Table 29. Hours spent at the observatory by visitors during 2015.

Locals		Yukon		Canada		USA		Other International	
#	Hours	#	Hours	#	Hours	#	Hours	#	Hours
23	48.5	13	27.0	5	5.3	8	4.3	4	2.5

In comparison to previous years, the total number of volunteer hours was the highest recorded to date (Figure 9). The total visitor hours were slightly below average but similar to previous years.

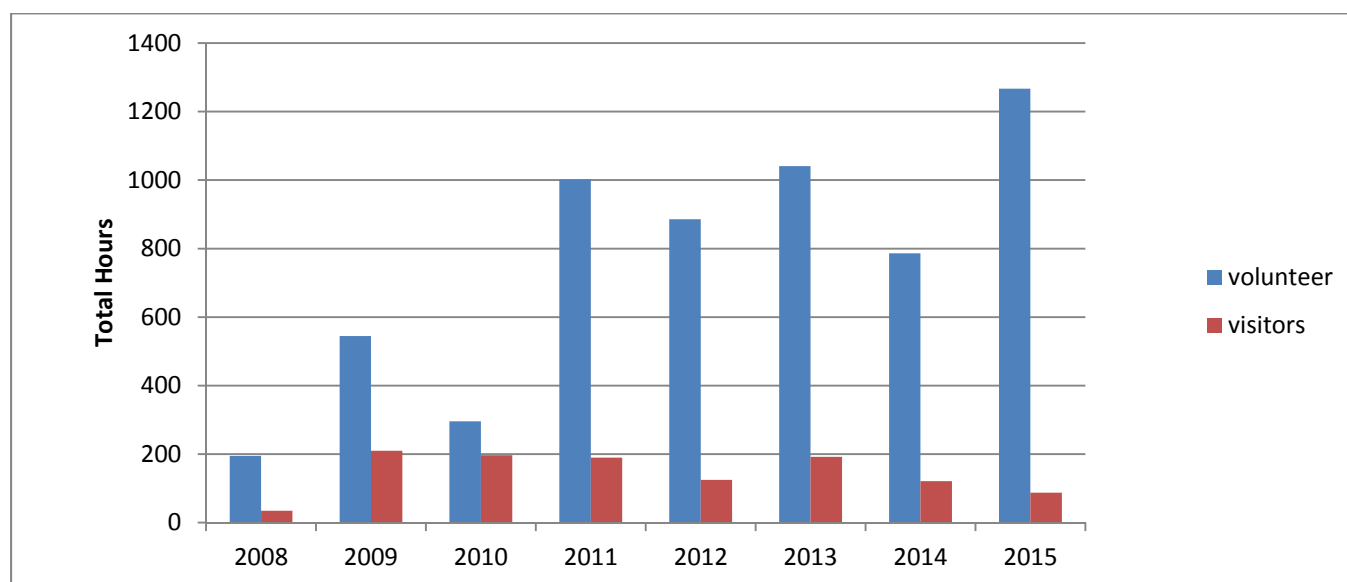


Figure 9. Volunteer and visitor hours at the observatory from 2008 to 2015.

4.0 Conclusion

The results from the operation of the Teslin Lake Bird Observatory in 2015 have continued to add to the knowledge of numerous aspects of bird biology in the Yukon, including: species distribution, migration timing and productivity. The location of the study site has proven to be effective for monitoring songbird migration. The primary reason for this is the close proximity of the site to Teslin Lake. As the lake is a very large body of water which runs in a north/south direction, it acts as a funnel for migrants. Additionally, most migrating birds are hesitant to cross the lake and many birds concentrate along the lakeshore and pass directly through and over the study site. On numerous occasions, flocks of migrating birds have been observed moving along the lakeshore and thus have yielded some very impressive banding and observation totals at the observatory.

Following seven years of fall migration monitoring at the observatory, the ability to monitor songbirds has been well demonstrated by the large numbers of migrants observed and banded on an annual basis. The results gathered this season also confirm the previous assumption that few birds stopover at the study site for extended periods of time. The majority of birds simply pass through the site while in migration and this is supported by the low proportion of band repeats within each season.

The visual migration and lake counts increase the number of bird species which may be monitored at the observatory and are now a key component of the observatory's activities. Together they serve to collect monitoring data for species not banded (or banded only in low numbers) including: waterfowl, loons/grebes, gulls/terns, raptors and some species of passerines, particularly American Robin, Varied Thrush, American Pipit, Rusty Blackbird, Common Redpoll and Pine Siskin. The raptors are a primary focus of these counts as these species are readily observed and identified from a distance. The ability to collect data on ages and color morphs of these species make this data even more valuable.

Over the long term, the data collected at the observatory will be used to calculate species trends to determine the status on bird populations. Given the location of the observatory, the birds counted at the site are known to originate in the Yukon and Alaska. Species trend data from this relatively small catchment area will be useful when used in combination with more southerly bird observatories which monitor birds from a much larger catchment area. For trend analysis to be possible, the observatory must continue to operate on an annual basis for at least 10 years (until 2017) and continue monitoring using standardized methods (i.e., follow the monitoring protocol) that are consistent with what has been done during the previous six years.

The observatory continues to be successful in attracting members of the public to the observatory to learn about birds and bird migration. During 2015, numerous individuals visited the observatory and were given an introduction to birds, their migration and methods used for ornithological data collection.

4.1 Recommendations

The following list summarizes a number of recommendations for the future operation of the Teslin Lake Bird Observatory.

- Continue standardized monitoring to allow for the future analysis of species trends.
- Continue the owl banding program with more regular and frequent effort.
- Continue to expand species specific banding projects at the observatory, particularly for species such as woodpeckers and potentially raptors which are under captured in the standard mist nets.
- Work with project partners to build an interpretive sign in the adjacent campground to attract camp ground visitors to the observatory,
- 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. Birds banded and observed (✓) at Teslin Lake Bird Observatory from 2008 to 2012. Note that observations were not collected during the fall of 2005, 2006 and 2007; observatory was located at a different location on Nisutlin Bay during 2005.

SPECIES	2005		2006		2007		2008		2009	2010	2011	2012	2013	2014	2015	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall			
Red-throated Loon	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Pacific Loon								✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Common Loon	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Yellow-billed Loon										✓	✓	✓		✓		-	-	-
Horned Grebe								✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Red-necked Grebe	✓		✓					✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Western Grebe											✓					-	-	-
Double-crested Cormorant							✓									-	-	-
Greater White-fronted Goose	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Bean Goose										✓						-	-	-
Snow Goose					✓		✓	✓		✓	✓	✓	✓	✓	✓	-	-	-
Canada Goose	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Cackling Goose												✓				-	-	-
Trumpeter Swan	✓		✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	-	-	-
Tundra Swan			✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Bewick’s Tundra Swan										✓	✓					-	-	-
Gadwall	✓						✓								✓	-	-	-
American Wigeon	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Mallard	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Blue-winged Teal							✓									-	-	-
Northern Shoveler	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Northern Pintail	✓				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
American Green-winged Teal	✓		✓					✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Canvasback								✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Redhead									✓	✓				✓	✓	-	-	-
Ring-necked Duck	✓						✓	✓		✓	✓	✓	✓	✓	✓	-	-	-
Greater Scaup								✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Lesser Scaup							✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Harlequin Duck							✓	✓		✓	✓	✓	✓	✓		-	-	-
Surf Scoter	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
White-winged Scoter	✓							✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Long-tailed Duck							✓			✓	✓	✓	✓	✓	✓	-	-	-
Bufflehead	✓				✓					✓	✓	✓	✓	✓		-	-	-
Common Goldeneye	✓		✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Barrow’s Goldeneye							✓		✓	✓	✓		✓	✓	✓	-	-	-
Hooded Merganser									✓	✓		✓				-	-	-
Common Merganser	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Red-breasted Merganser	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-

SPECIES	2005		2006		2007		2008		2009	2010	2011	2012	2013	2014	2015	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall			
*Bald Eagle	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Northern Harrier	✓		✓		✓		1	✓	✓	✓	✓	✓	✓	✓	✓	1	-	1
Sharp Shinned hawk	✓		✓		2		1	10	23	14	7	13	6	14	25	3	112	115
Northern Goshawk							✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Swainson’s Hawk							✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Red-tailed Hawk			✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Rough-legged Hawk							✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Golden Eagle							✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
American Kestrel	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Merlin					✓		✓	✓	✓	✓	2	1	✓	✓	✓	-	3	3
Gyr Falcon									✓	✓		✓		✓	✓	-	-	-
Peregrine Falcon					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Turkey Vulture														✓		-	-	-
Osprey	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Ruffed Grouse	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Spruce Grouse	✓						✓		✓	✓	✓	✓	✓	✓	✓	-	-	-
Sandhill Crane								✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Black-bellied Plover											✓			✓		-	-	-
American Golden-Plover							✓			✓	✓		✓		✓	-	-	-
Semipalmated Plover	✓				✓			✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Killdeer	✓		✓		✓		✓			✓	✓					-	-	-
Greater Yellowlegs			✓		✓		✓		✓		✓		✓			-	-	-
Lesser Yellowlegs	✓		✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	-	-	-
Solitary Sandpiper	✓		✓	2	✓		✓	2	5	1	3	3	2	1	3	-	22	22
Wandering Tattler										✓						-	-	-
Spotted Sandpiper	1		2		1		1	✓	✓	1	2	✓	1	✓	✓	5	4	9
Upland Sandpiper													✓		✓	-	-	-
Black Turnstone												✓			✓	-	-	-
Sanderling								✓	✓	✓	✓	✓		✓	✓	-	-	-
Semipalmated Sandpiper								✓	✓	✓	✓	✓	✓		✓	-	-	-
Western Sandpiper											✓					-	-	-
Least Sandpiper					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Baird’s Sandpiper							✓	✓	✓		✓		✓		✓	-	-	-
Pectoral Sandpiper					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Stilt Sandpiper													✓			-	-	-
Short-billed Dowitcher							✓								✓	-	-	-
Long-billed Dowitcher								✓	✓	✓	✓	✓		✓	✓	-	-	-
Wilson’s Snipe	✓		✓		✓		1	1	1	✓	✓	✓	✓	1	✓	1	3	4
Red-necked Phalarope									✓	✓	✓	✓	✓	✓	✓	-	-	-

SPECIES	2005		2006		2007		2008		2009	2010	2011	2012	2013	2014	2015	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall			
Little Gull										✓	✓					-	-	-
Mew Gull	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
California Gull										✓		✓				-	-	-
Herring Gull	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Thayer’s Gull								✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Glaucous-winged Gull										✓	✓					-	-	-
Glaucous Gull								✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Bonaparte’s Gull	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Sabine’s Gull								✓	✓	✓	✓	✓		✓		-	-	-
Black-legged Kittiwake										✓				✓		-	-	-
Arctic Tern	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Parasitic Jaeger								✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Long-tailed Jaeger													✓			-	-	-
Great Horned Owl								✓	✓	✓	✓			✓	✓	-	-	-
Northern Hawk Owl									✓	✓	✓	✓	✓	✓		-	-	-
Short-eared Owl			✓							✓	✓	✓				-	-	-
Boreal Owl											4			40	✓	-	44	44
Northern Saw-whet Owl														2		-	2	2
Common Nighthawk								✓	✓	✓	✓		✓	✓	✓	-	-	-
Pacific Swift										✓						-	-	-
Rufous Hummingbird					✓											-	-	-
Belted Kingfisher	✓		✓	8	✓		✓	8	6	5	6	6	2	9	6	-	56	56
Yellow-bellied Sapsucker	2		2		2		1		✓		3	1	1			7	5	12
Downy Woodpecker	✓		✓					2	1	3	7			1	1	-	15	15
Hairy Woodpecker	2		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	2	-	2
Three-toed Woodpecker	✓							✓	✓	✓	✓	✓	1	✓	✓	-	1	1
Black-backed Woodpecker								✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Northern Flicker	1		✓		1		✓	✓	✓	1	1	✓	3	✓	✓	2	5	7
Pileated Woodpecker	✓															-	-	-
Olive-sided Flycatcher	✓		11		✓		6		✓	✓	1	✓	✓	✓	2	17	3	20
Western Wood-pewee	3		2		2		✓	3	6	5	10	3	4	4	4	7	39	46
Yellow-bellied Flycatcher	2	2	1		1			9	8	11	7	9	11	3	11	4	71	75
Alder Flycatcher	17	9	41	18	10	5	9	811	631	620	637	827	770	506	1058	77	5892	5969
Least Flycatcher	3		4		3		2	2	1	3	10	3	6	2	4	12	31	43
Hammond’s Flycatcher	7		5		11		18	6	12	17	28	7	12	8	21	41	111	152
Dusky Flycatcher	2				2			1	6	3	6	3	3	4	2	4	28	32
Pacific-slope Flycatcher												1				-	1	1
Eastern Phoebe			1													1	-	1
Say’s Phoebe			2		2		1	1	1	1	✓	✓	✓	✓	2	5	5	10

SPECIES	2005		2006		2007		2008		2009	2010	2011	2012	2013	2014	2015	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall			
Northern Shrike	✓								✓	1	1	1	1	1	✓	-	5	5
Warbling Vireo	13		1	4	✓		1	9	10	19	17	15	48	12	10	15	144	159
Gray Jay	5		✓		1		✓		5	4	✓	✓	✓	1	1	6	11	17
Steller’s Jay											✓					-	-	-
Black-billed Magpie					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Common Raven	✓		✓		✓		✓	✓	1	1	✓	✓	✓	✓	1	-	3	3
Horned Lark			3		✓		✓		✓	✓						3	-	3
Tree Swallow	5		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	5	-	5
Violet-green Swallow	✓		✓		✓		✓	✓		✓	✓	✓			✓	-	-	-
Bank Swallow	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Cliff Swallow	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Barn Swallow	✓		✓		✓			✓	1	✓	✓	✓	✓	✓		-	1	1
Black-capped Chickadee	✓	4	4	3	2		2	57	26	22	92	65	31	16	31	8	347	355
Mountain Chickadee							2	15	11		2	1	✓		4	2	33	35
Chestnut-backed Chickadee								1			✓					-	1	1
Boreal Chickadee	2		3		2		8	138	831	✓	233	142	23	3	131	15	1501	1516
Hybrid Chickadee			1					1								1	1	2
Red-breasted Nuthatch	✓				✓		1	3	2	2	5	12	6	3	9	1	42	43
Brown Creeper											✓					-	-	-
Winter Wren	1										✓			1		1	1	2
American Dipper														✓		-	-	-
Golden-crowned Kinglet		1					✓		10	2	1	3	1		2	-	20	20
Ruby-crowned Kinglet	25	7	51	3	27		72	29	175	109	86	134	125	69	284	175	1021	1196
Mountain Bluebird	✓				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Townsend's Solitaire								✓	1	✓	1	1	✓	✓	✓	-	3	3
Gray-cheeked Thrush	4	2	2		5		1	1	2	8	2	4	2	10	11	12	42	54
Swainson's Thrush	99	7	39	10	48		21	19	49	53	85	41	55	49	68	207	436	643
Hermit Thrush	1		1		✓		1	1	7	12	12	3	2	1	8	3	46	49
American Robin	27	1	36	5	17		4	✓	27	9	11	✓	4	9	3	84	69	153
Varied Thrush	✓		1		2		✓	3	12	5	2	2	5	3	2	3	34	37
European Starling							✓									-	-	-
American Pipit	✓		2		✓		1	1	3	✓	2	✓	2	✓	6	3	14	17
Bohemian Waxwing	✓		40		✓		23	✓	✓	✓	1	✓	✓	✓	✓	63	1	64
Cedar Waxwing									✓	2			8	✓		-	10	10
Lapland Longspur	✓		✓		✓		5	✓	✓	✓	✓	✓	✓	✓	✓	5	-	5
Smith’s Longspur									✓				✓			-	-	-
Snow Bunting										✓	✓	✓	✓	✓		-	-	-
Northern Waterthrush	4	1	14	10	11		4	46	53	54	42	47	46	48	53	33	400	433
Tennessee Warbler	4		4		6		2		9	40	4	1	1	1	8	16	64	80

SPECIES	2005		2006		2007		2008		2009	2010	2011	2012	2013	2014	2015	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall			
Orange-crowned Warbler	16	6	26	1	47		61	101	180	271	57	88	124	149	331	150	1308	1458
Nashville Warbler								1				1				-	2	2
MacGillvary's Warbler	1		1					1	3	2		1	1			2	8	10
Common Yellowthroat	1		17	4	11	6	21	66	113	70	72	45	65	82	89	50	612	662
American Redstart			6	4	1			10	43	30	39	21	33	25	47	7	252	259
Cape May Warbler							1					1				1	1	2
Magnolia Warbler	1							1			✓	1	1			1	3	4
Yellow Warbler	10	6	50	19	37	3	31	486	325	471	310	225	333	504	556	128	3238	3366
Blackpoll Warbler	3	2	21	4	10		5	47	107	194	58	87	87	61	99	39	746	785
Myrtle Warbler	60	3	63	5	29		78	49	284	673	142	195	163	178	311	230	2003	2233
Audubon`s Warbler										✓	1					-	1	1
Yellow-rumped Warbler							1	1								1	1	2
Townsend's Warbler			✓				1	✓	8	10	6	6	7	10	2	1	49	50
Blackburnian Warbler															1		1	1
Black-and-white Warbler															1		1	1
Wilson's Warbler	116	8	54	5	63		151	113	161	177	133	134	122	164	386	384	1403	1787
American-tree Sparrow	220		13	1	72		41	19	54	21	77	17	19	22	137	346	367	713
Chipping Sparrow	28		4	1	6		3	6	24	18	28	17	20	15	29	41	158	199
Brewer's Sparrow				1					1		2					-	4	4
Savannah Sparrow	11	2	2	2	24		10	14	18	18	23	25	18	17	55	47	192	239
Fox Sparrow	106		3		17		26	11	28	28	17	6	7	17	42	152	156	308
Song Sparrow										1						-	1	1
Lincoln's Sparrow	9	1	6		39		21	5	16	15	27	9	9	9	65	75	156	231
Swamp Sparrow										1						-	1	1
White-throated Sparrow			✓		1											1	-	1
White-crowned Sparrow	86	3	13		579		311	1	33	36	34	22	16	15	23	989	183	1172
Golden-crowned Sparrow	1				16		9						1	1	2	26	4	30
Slate-colored Junco	165	12	139	5	135		224	182	582	420	331	116	341	140	209	663	2338	3001
Dark-eyed Junco					9		31	11	✓	✓	✓	✓			2	40	13	53
Western Tanager			1						1		✓	✓				1	1	2
Red-winged Blackbird	✓		1		1		✓		✓		✓	✓	✓			2	-	2
Rusty Blackbird	19		3		2	1	✓	11	30	20	16	9	14	10	18	24	129	153
Brown-headed Cowbird	1		✓		✓		✓			✓	1		✓	2	1	1	4	5
Pine Grosbeak			2					✓	✓	✓	✓	✓	✓	✓	✓	2	-	2
Purple Finch	27		3		6		1	✓	✓	10	1	2	1	3	✓	37	17	54
Red Crossbill	3						✓	✓	✓	✓	✓	✓	✓	✓	✓	3	-	3
White-winged Crossbill			5					2	2	100	1	2	5	2	✓	5	114	119
Common Redpoll	✓		107		1		22	✓	6	1	75	47	✓	1	8	130	138	268
Hoary Redpoll					3						2			✓		3	2	5

SPECIES	2005		2006		2007		2008		2009	2010	2011	2012	2013	2014	2015	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall			
Pine Siskin	28		1				✓	1	1	91	10	3	8	303	1	29	418	447
Evening Grosbeak														✓		-	-	-
TOTAL SPECIES BANDED	43	18	48	21	43	4	45	48	53	52	57	51	51	48	51	70	78	89
TOTAL BIRDS BANDED	1142	77	814	115	1267	15	1238	2319	3956	3706	2793	2429	2,577	2,510	4,186	4461	24728	29189

Appendix B – Daily Species Total Summary

-Species	First Date	ALL OBS		Last Date	HIGH COUNT	
		# of Days	Bird Days		#	Date
Red-throated Loon	26-Jul	37	108	10-Oct	11	04-Sep
Pacific Loon	26-Jul	36	126	05-Oct	15	04-Sep
Common Loon	26-Jul	54	294	10-Oct	17	21-Aug
<i>Unidentified Loon</i>	28-Aug	9	145	17-Oct	115	24-Sep
<i>Unidentified Large Loon</i>	01-Oct	1	4	-	4	01-Oct
Horned Grebe	27-Jul	38	96	19-Oct	8	25-Sep
Red-necked Grebe	27-Jul	65	1254	18-Oct	103	17-Aug
Greater White-fronted Goose	07-Aug	18	9465	23-Sep	6686	28-Aug
Snow Goose	21-Sep	5	767	26-Sep	471	24-Sep
Canada Goose	17-Aug	21	838	25-Sep	176	19-Sep
<i>Unidentified Goose</i>	01-Aug	13	1547	24-Sep	908	25-Aug
Trumpeter Swan	20-Sep	12	245	18-Oct	84	17-Oct
Tundra Swan	21-Sep	15	5583	18-Oct	4382	01-Oct
<i>Unidentified Swan</i>	10-Sep	15	2680	18-Oct	1724	01-Oct
Gadwall	26-Jul	1	1	-	1	26-Jul
American Wigeon	17-Aug	15	262	01-Oct	102	25-Sep
Mallard	26-Jul	33	347	05-Oct	90	24-Sep
Northern Shoveler	07-Aug	14	130	01-Oct	27	01-Oct
Northern Pintail	31-Jul	25	331	17-Oct	70	20-Aug
American Green-winged Teal	28-Jul	12	69	29-Sep	20	02-Aug
Unidentified Dabbling Duck	21-Sep	3	76	04-Oct	46	01-Oct
Canvasback	26-Jul	7	168	01-Oct	69	25-Sep
Redhead	24-Sep	1	2	-	2	24-Sep
Ring-necked Duck	14-Sep	4	5	07-Oct	2	14-Sep
Greater Scaup	31-Aug	5	30	07-Oct	15	01-Oct
Lesser Scaup	05-Sep	15	415	17-Oct	115	25-Sep
<i>Unidentified Scaup</i>	07-Aug	6	224	07-Oct	152	01-Oct
Surf Scoter	29-Jul	20	216	07-Oct	50	09-Aug
White-winged Scoter	28-Jul	8	57	17-Oct	24	02-Oct
Long-tailed Duck	05-Oct	3	21	18-Oct	12	18-Oct
Common Goldeneye	29-Sep	4	34	18-Oct	21	18-Oct
Barrow's Goldeneye	02-Aug	2	4	17-Oct	3	02-Aug
<i>Unidentified Goldeneye</i>	07-Aug	11	63	18-Oct	10	06-Sep
Common Merganser	26-Jul	27	209	18-Oct	20	28-Aug
Red-breasted Merganser	26-Jul	35	243	17-Oct	29	31-Aug
<i>Unidentified Duck</i>	29-Jul	13	177	01-Oct	43	26-Sep
Bald Eagle	28-Jul	49	129	19-Oct	13	01-Oct
Northern Harrier	29-Jul	46	635	18-Oct	69	28-Aug
Sharp-shinned Hawk	28-Jul	48	761	05-Oct	90	26-Sep

-Species	First Date	ALL OBS		Last Date	HIGH COUNT	
		# of Days	Bird Days		#	Date
Northern Goshawk	07-Aug	30	46	19-Oct	4	01-Oct
Swainson's Hawk	28-Aug	6	108	04-Sep	52	31-Aug
Red-tailed Hawk	28-Aug	19	121	05-Oct	49	01-Sep
Harlan's Red-tailed Hawk	28-Jul	39	2013	05-Oct	536	01-Sep
Rough-legged Hawk	22-Sep	13	148	19-Oct	45	26-Sep
<i>Unidentified Buteo</i>	22-Sep	4	24	01-Oct	11	01-Oct
Golden Eagle	02-Sep	14	136	10-Oct	39	26-Sep
<i>Unidentified Eagle</i>	23-Sep	2	2	01-Oct	1	both days
American Kestrel	02-Aug	29	180	17-Oct	37	02-Sep
Merlin	29-Jul	47	93	12-Sep	13	26-Sep
Gyr Falcon	17-Sep	1	1	-	1	17-Sep
Peregrine Falcon	15-Aug	20	57	01-Oct	12	01-Sep
Osprey	30-Aug	17	49	01-Oct	8	22-Sep
Ruffed Grouse	29-Jul	43	64	19-Oct	3	many days
Spruce Grouse	21-Sep	1	1	-	1	21-Sep
Sandhill Crane	13-Aug	11	3498	01-Oct	906	01-Sep
American Golden Plover	28-Aug	2	3	01-Sep	2	28-Aug
Semipalmated Plover	31-Jul	8	17	23-Aug	9	31-Jul
Lesser Yellowlegs	26-Jul	2	4	27-Jul	3	27-Jul
Solitary Sandpiper	26-Jul	9	10	28-Aug	2	26-Jul
Spotted Sandpiper	26-Jul	53	102	26-Sep	8	07-Aug
Upland Sandpiper	01-Sep	1	1	-	1	01-Sep
Black Turnstone	12-Aug	1	1	-	1	12-Aug
Sanderling	24-Aug	3	4	09-Sep	2	24-Aug
Semipalmated Sandpiper	24-Aug	1	1	-	1	24-Aug
Least Sandpiper	27-Jul	8	9	17-Aug	2	01-Aug
Baird's Sandpiper	30-Aug	2	2	02-Sep	1	all days
<i>Unidentified 'Peep'</i>	01-Aug	1	10	-	10	01-Aug
Pectoral Sandpiper	28-Aug	7	36	21-Sep	21	28-Aug
Short-billed Dowitcher	16-Aug	4	4	19-Aug	1	all days
<i>Unidentified Dowitcher</i>	28-Aug	1	1	-	1	28-Aug
Red-necked Phalarope	01-Aug	1	1	-	1	01-Aug
Wilson's Snipe	16-Aug	9	13	27-Sep	4	21-Aug
<i>Unidentified Shorebird</i>	01-Aug	3	7	28-Aug	4	24-Aug
Mew Gull	26-Jul	43	231	13-Sep	20	23-Aug
Herring Gull	26-Jul	75	2065	18-Oct	120	30-Jul
Thayer's Gull	10-Aug	36	191	18-Oct	26	24-Sep
Glaucous Gull	02-Sep	8	8	19-Oct	1	all days
<i>Unidentified Lagre Gull</i>	20-Aug	4	68	22-Sep	30	21-Sep

-Species	First Date	ALL OBS		Last Date	HIGH COUNT	
		# of Days	Bird Days		#	Date
Bonaparte's Gull	26-Jul	17	46	27-Aug	8	29-Jul
Arctic Tern	26-Jul	22	212	01-Sep	39	29-Jul
Parasitic Jaeger	31-Aug	4	12	12-Sep	5	31-Aug
Great Horned Owl	04-Aug	3	3	12-Aug	1	all days
Common Nighthawk	06-Aug	3	4	27-Aug	2	27-Aug
<i>Unidentified 'Chaetura' Swift</i>	28-Aug	1	1	-	1	28-Aug
Belted Kingfisher	26-Jul	44	71	23-Sep	4	01-Sep
Downy Woodpecker	23-Aug	4	4	14-Sep	1	all days
Hairy Woodpecker	30-Aug	6	8	25-Sep	3	04-Sep
American Three-toed Woodpecker	07-Sep	9	9	04-Oct	1	all days
Black-backed Woodpecker	17-Aug	2	2	17-Oct	1	all days
Northern Flicker	30-Jul	10	10	25-Sep	1	all days
<i>Unidentified Woodpecker</i>	08-Aug	5	5	20-Sep	1	all days
Olive-sided Flycatcher	27-Jul	1	2	27-Aug	1	both days
Western Wood-Pewee	30-Jul	5	7	07-Sep	3	31-Aug
Unidentified Contopus Flycatcher	13-Aug	3	4	12-Sep	2	24-Aug
Yellow-bellied Flycatcher	29-Jul	13	14	28-Aug	2	08-Aug
Alder Flycatcher	26-Jul	47	1174	17-Sep	90	25-Aug
Least Flycatcher	04-Aug	4	4	26-Aug	1	all days
Hammond's Flycatcher	26-Jul	19	25	23-Sep	3	31-Aug
Dusky Flycatcher	17-Aug	3	3	08-Sep	1	all days
<i>Unidentified Empidonax Flycatcher</i>	26-Jul	3	4	21-Aug	2	21-Aug
Say's Phoebe	24-Aug	11	19	09-Sep	7	27-Aug
Northern Shrike	06-Aug	5	5	17-Oct	1	all days
Warbling Vireo	27-Jul	12	16	14-Sep	2	1, 11 Aug
Gray Jay	30-Jul	17	34	19-Oct	4	05-Sep
Black-billed Magpie	02-Sep	35	38	19-Oct	3	14-Sep
Common Raven	26-Jul	79	357	19-Oct	26	28-Aug
Tree Swallow	29-Jul	1	1	-	1	29-Jul
Violet-green Swallow	29-Jul	1	1	-	1	29-Jul
Bank Swallow	26-Jul	12	283	27-Sep	78	01-Aug
Cliff Swallow	27-Jul	8	52	04-Sep	18	28-Jul
<i>Unidentified Swallow</i>	26-Jul	16	492	28-Aug	119	29-Jul
Black-capped Chickadee	26-Jul	64	169	17-Oct	18	30-Aug
Mountain Chickadee	17-Sep	5	11	02-Oct	3	28-Sep
Boreal Chickadee	14-Aug	36	304	17-Oct	47	03-Sep
Red-breasted Nuthatch	26-Jul	19	25	15-Sep	3	30-Jul
Golden-crowned Kinglet	04-Sep	4	8	25-Sep	4	04-Sep
Ruby-crowned Kinglet	26-Jul	56	370	14-Oct	48	19-Sep

-Species	First Date	ALL OBS		Last Date	HIGH COUNT	
		# of Days	Bird Days		#	Date
Mountain Bluebird	12-Sep	3	7	27-Sep	4	21-Sep
Townsend's Solitaire	04-Aug	13	25	25-Sep	4	24-Aug
Gray-cheeked Thrush	23-Aug	8	11	27-Sep	3	07-Sep
Swainson's Thrush	26-Jul	33	87	10-Oct	10	21-Aug
Hermit Thrush	17-Aug	10	11	15-Oct	2	08-Sep
American Robin	26-Jul	40	1991	07-Oct	536	24-Sep
Varied Thrush	17-Aug	29	469	28-Sep	147	12-Sep
<i>Unidentified Large Thrush</i>	21-Aug	24	1892	05-Oct	759	23-Sep
American Pipit	01-Aug	54	387	14-Oct	43	24-Aug
Bohemian Waxwing	06-Aug	15	364	14-Oct	60	02-Oct
Lapland Longspur	24-Aug	28	69	15-Oct	10	04-Sep
Tennessee Warbler	27-Jul	9	11	13-Oct	3	29-Jul
Orange-crowned Warbler	26-Jul	53	406	01-Oct	37	03-Sep
Yellow Warbler	27-Jul	61	888	30-Sep	65	05-Sep
Yellow-rumped 'Myrtle' Warbler	26-Jul	69	1196	10-Oct	161	12-Sep
Townsend's Warbler	28-Jul	5	6	30-Aug	2	05-Aug
Blackburnian Warbler	15-Sep	1	1	-	1	15-Sep
Blackpoll Warbler	26-Jul	44	171	12-Sep	9	17 aug, 8 Sep
Black-and-white Warbler	29-Aug	2	2	31-Aug	1	all days
American Redstart	26-Jul	42	76	05-Oct	5	29-Jul
Northern Waterthrush	26-Jul	41	111	13-Sep	6	04-Aug
Common Yellowthroat	28-Jul	48	118	10-Oct	10	7, 8 Oct
Wilson's Warbler	26-Jul	64	451	04-Oct	27	05-Sep
<i>Unidentified Warbler</i>	02-Aug	11	74	15-Sep	26	14-Aug
American Tree Sparrow	19-Aug	41	243	18-Oct	33	07-Sep
Chipping Sparrow	26-Jul	18	100	18-Sep	48	31-Jul
Savannah Sparrow	30-Jul	48	120	07-Oct	8	07-Sep
Fox Sparrow	19-Aug	30	59	14-Oct	6	09-Sep
Lincoln's Sparrow	26-Jul	31	71	07-Oct	9	13, 14 Sep
Gambel's White-crowned Sparrow	29-Jul	27	45	15-Oct	5	09-Sep
Golden-crowned Sparrow	07-Sep	2	2	13-Sep	1	both days
Slate-colored Junco	26-Jul	67	521	18-Oct	58	14-Sep
<i>Unidentified Dark-eyed Junco</i>	29-Jul	2	2	02-Aug	1	both days
<i>Unidentified Sparrow</i>	05-Aug	5	22	25-Sep	11	25-Sep
Rusty Blackbird	01-Aug	46	522	19-Oct	53	02-Sep
Brown-headed Cowbird	30-Jul	3	3	04-Aug	1	all days
<i>Unidentified Blackbird</i>	01-Aug	1	1	-	1	01-Aug
Pine Grosbeak	09-Sep	26	199	19-Oct	32	27-Sep
Purple Finch	29-Jul	4	5	04-Aug	2	29-Jul

-Species	First Date	ALL OBS		Last Date	HIGH COUNT	
		# of Days	Bird Days		#	Date
Red Crossbill	26-Jul	7	23	10-Aug	12	30-Jul
White-winged Crossbill	26-Jul	9	28	14-Aug	6	28-Jul
<i>Unidentified Crossbill</i>	27-Jul	2	16	12-Sep	9	27-Jul
Pine Siskin	30-Jul	14	34	10-Oct	13	14-Sep
Common Redpoll	04-Aug	28	230	18-Oct	49	14-Oct
<i>Unidentified Small Finch</i>	02-Sep	5	47	04-Oct	152	01-Oct
<i>Unidentified Small Passerine</i>	26-Jul	63	5223	04-Oct	551	26-Sep

Appendix C – Migration Timing Figures

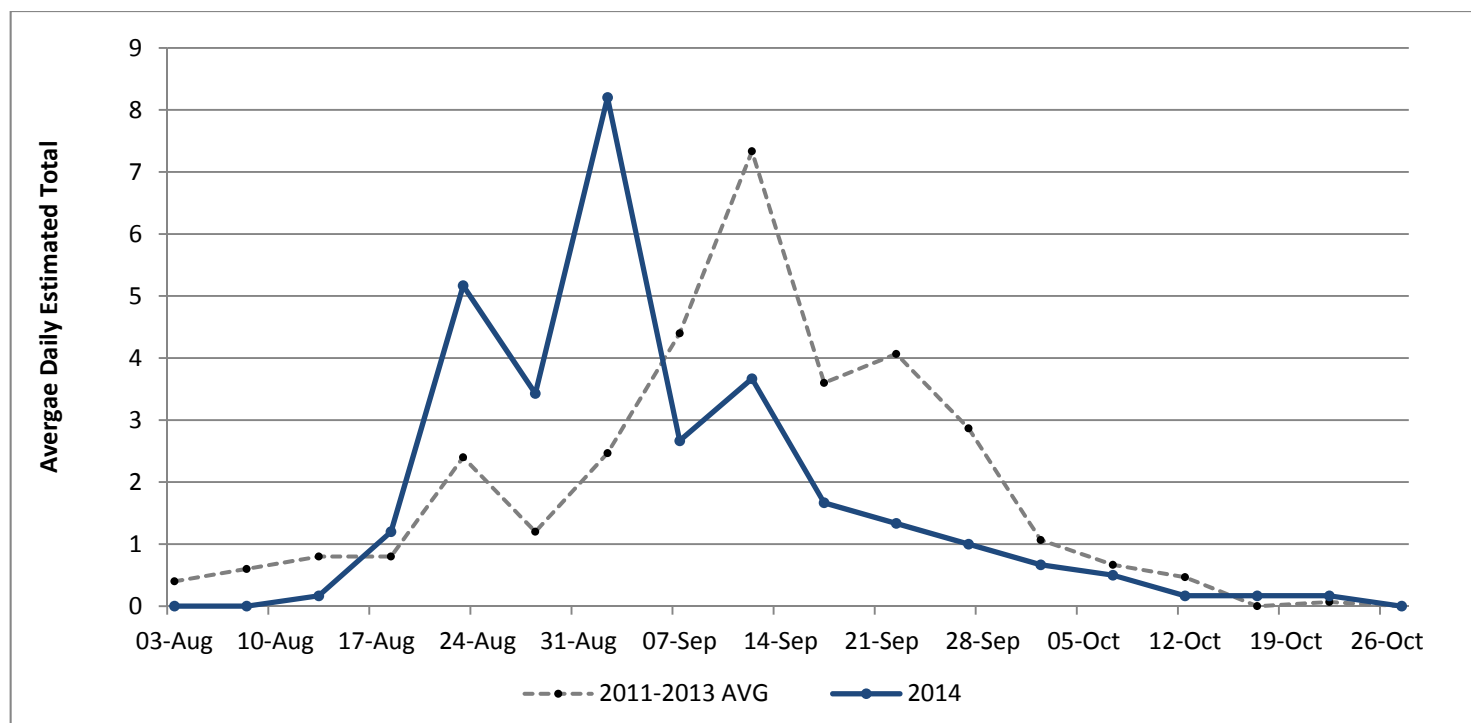


Figure C1. Red-throated Loon migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

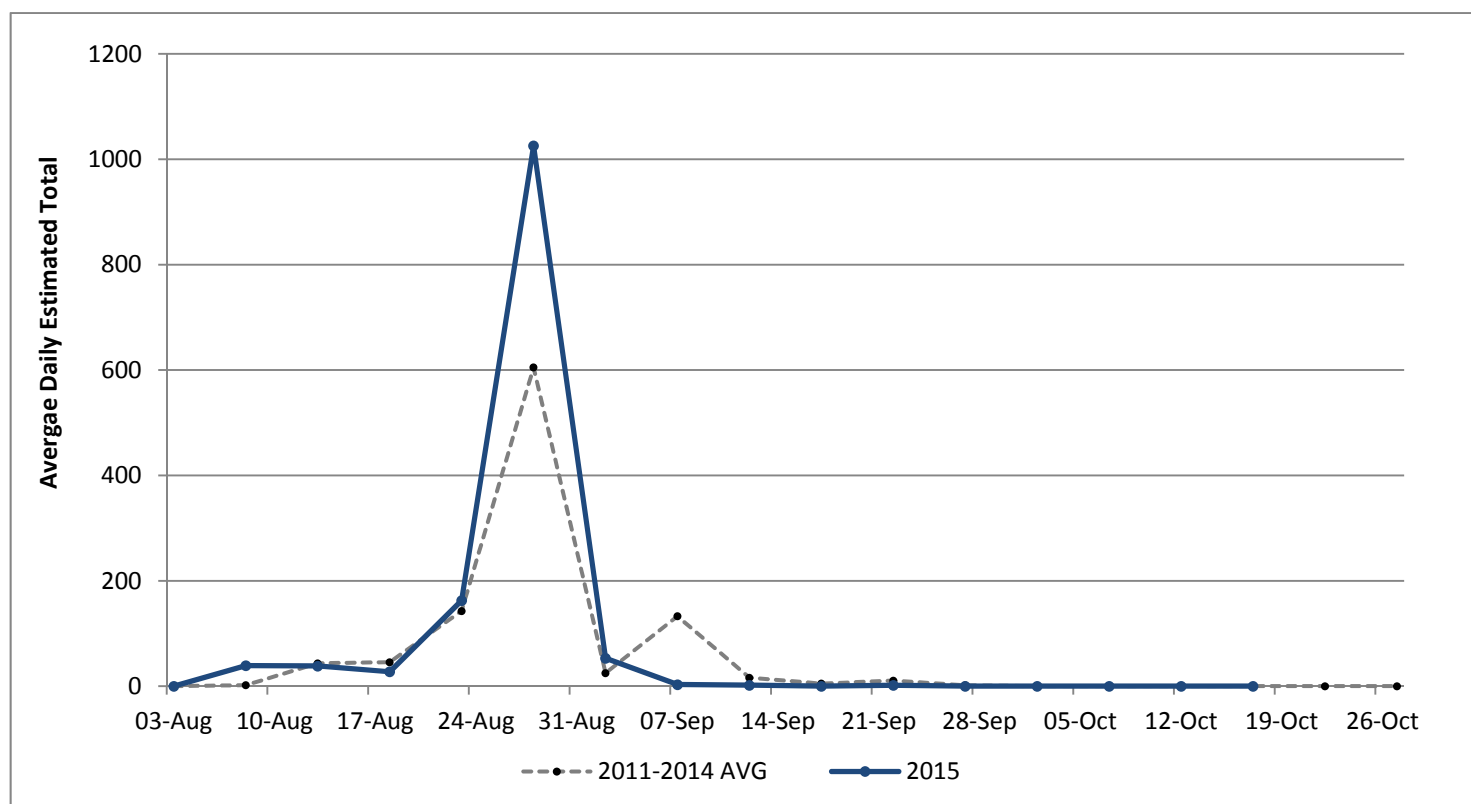


Figure C2. Greater White-fronted Goose migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

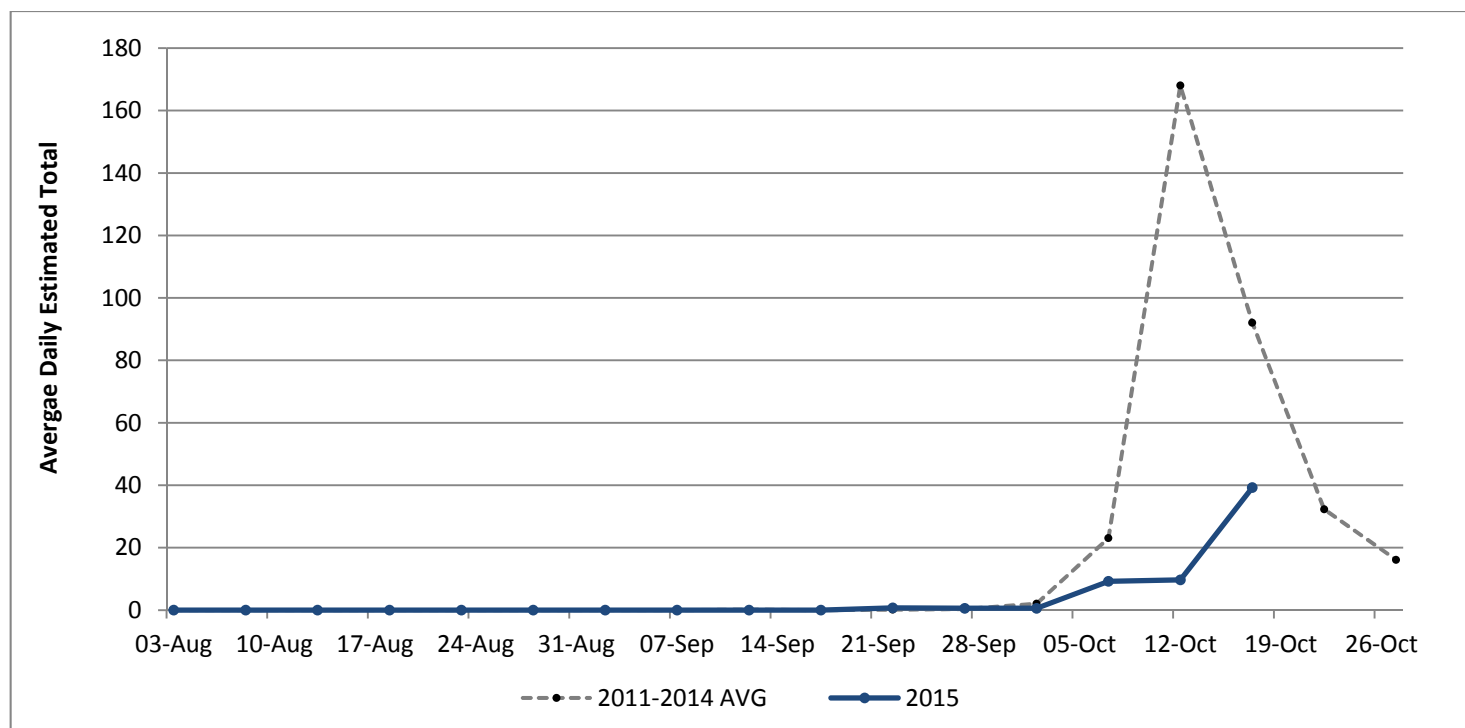


Figure C3. Trumpeter Swan migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

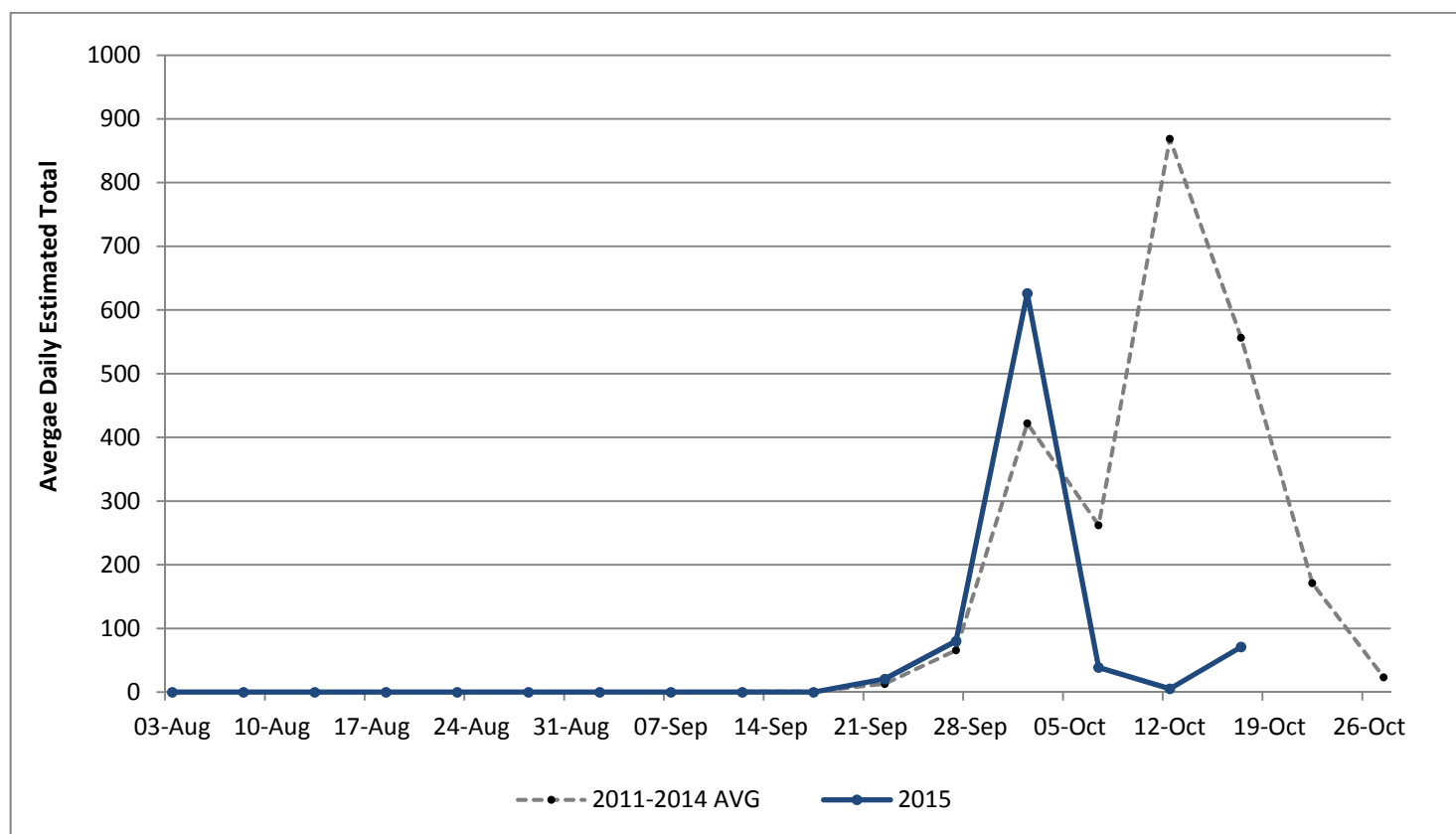


Figure C4. Tundra Swan migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

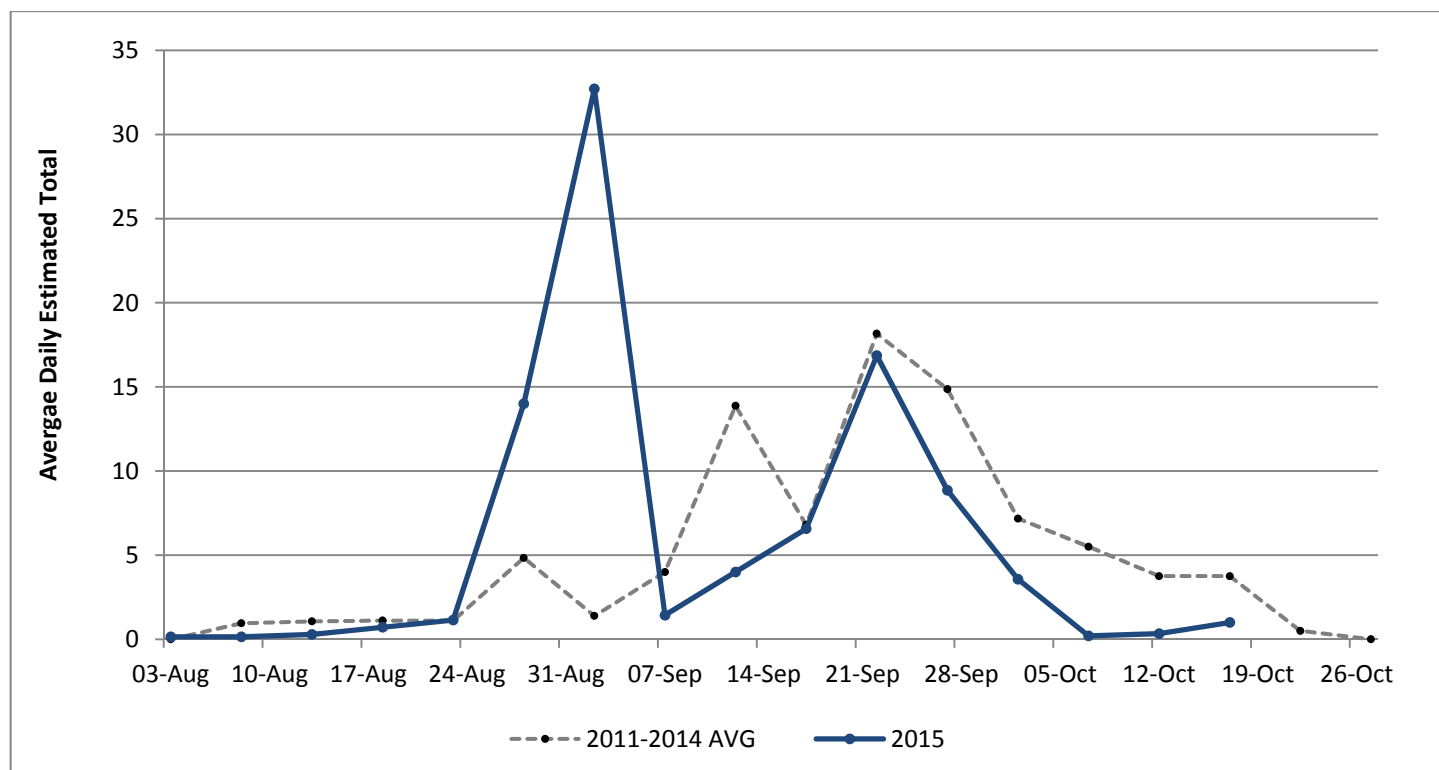


Figure C5. Northern Harrier migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

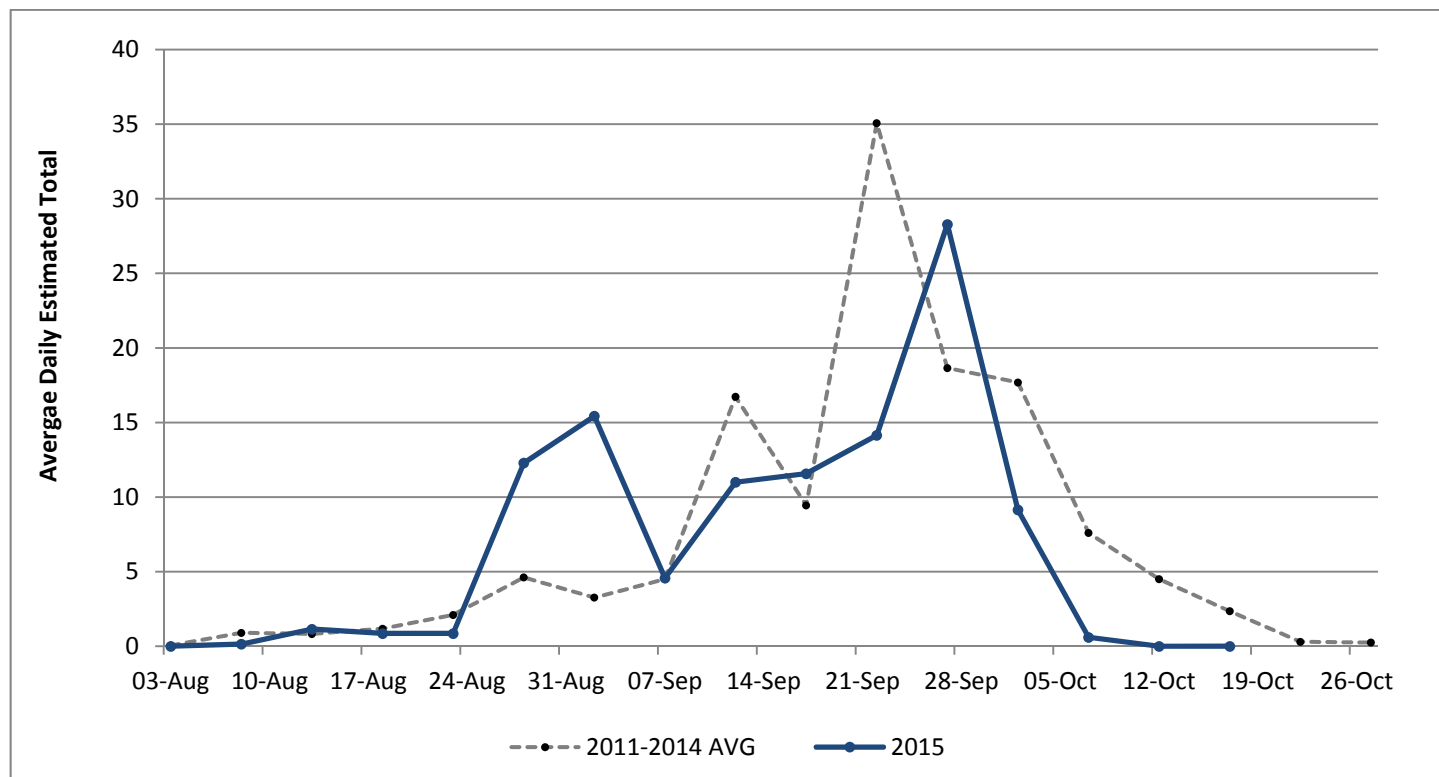


Figure C6. Sharp-shinned Hawk migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

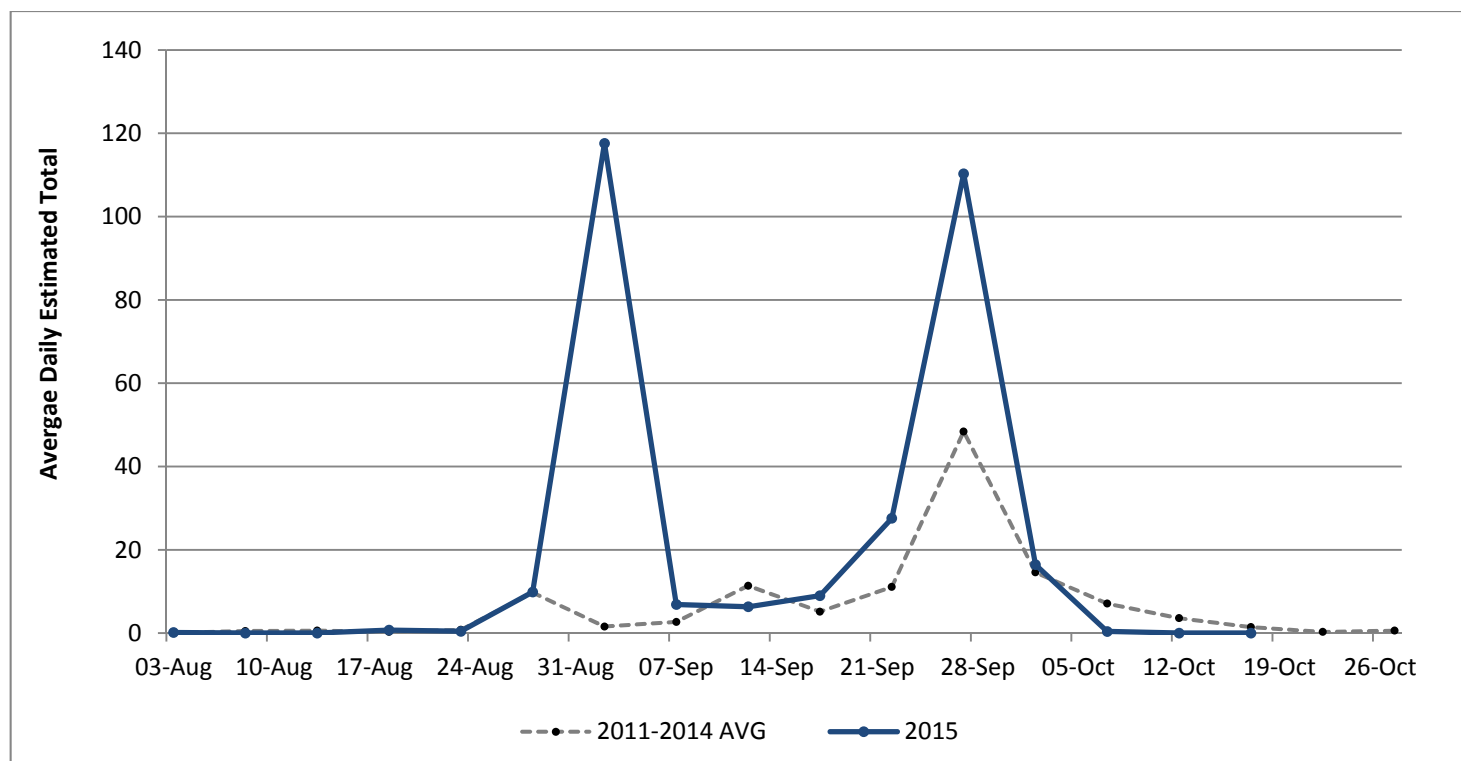


Figure C7. Red-tailed Hawk migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

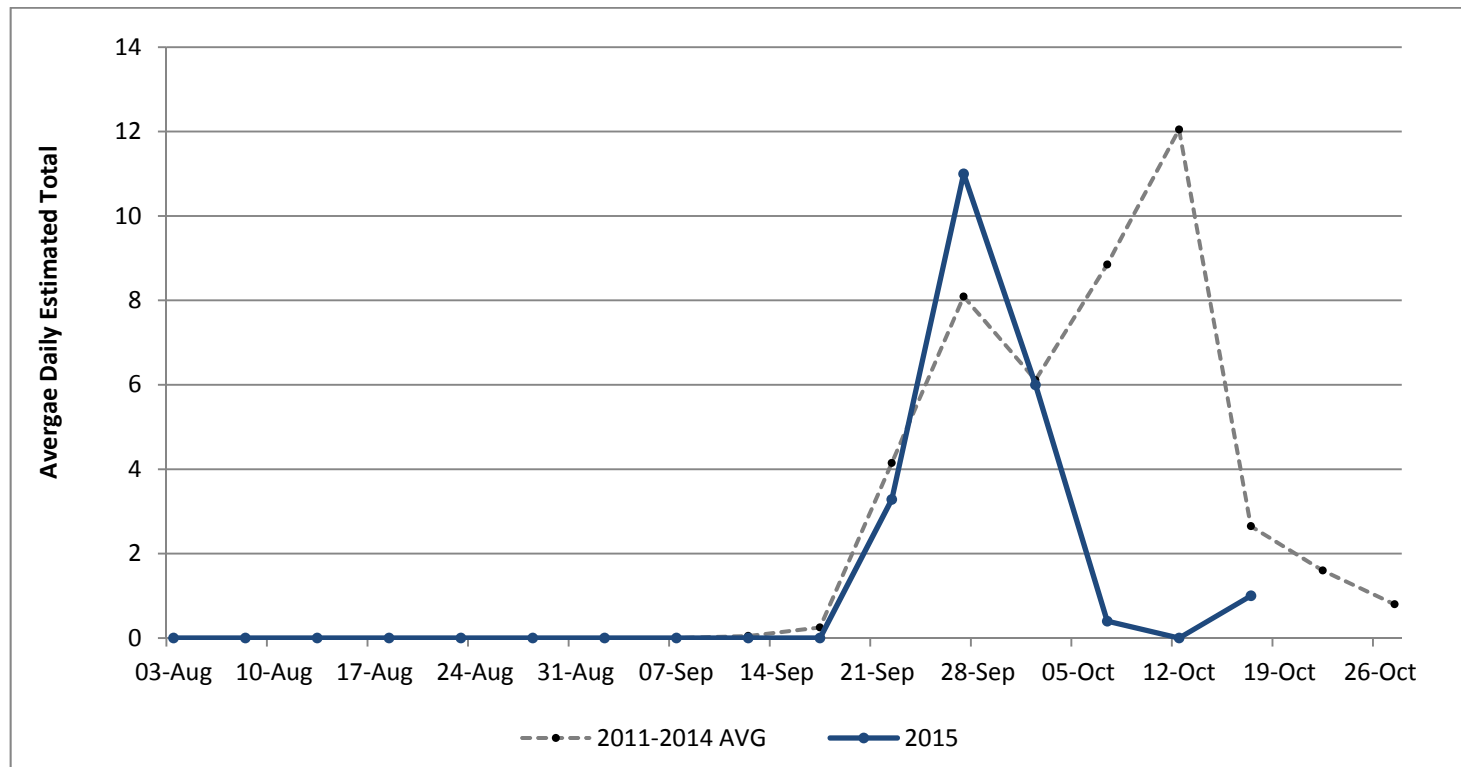


Figure C8. Rough-legged Hawk migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

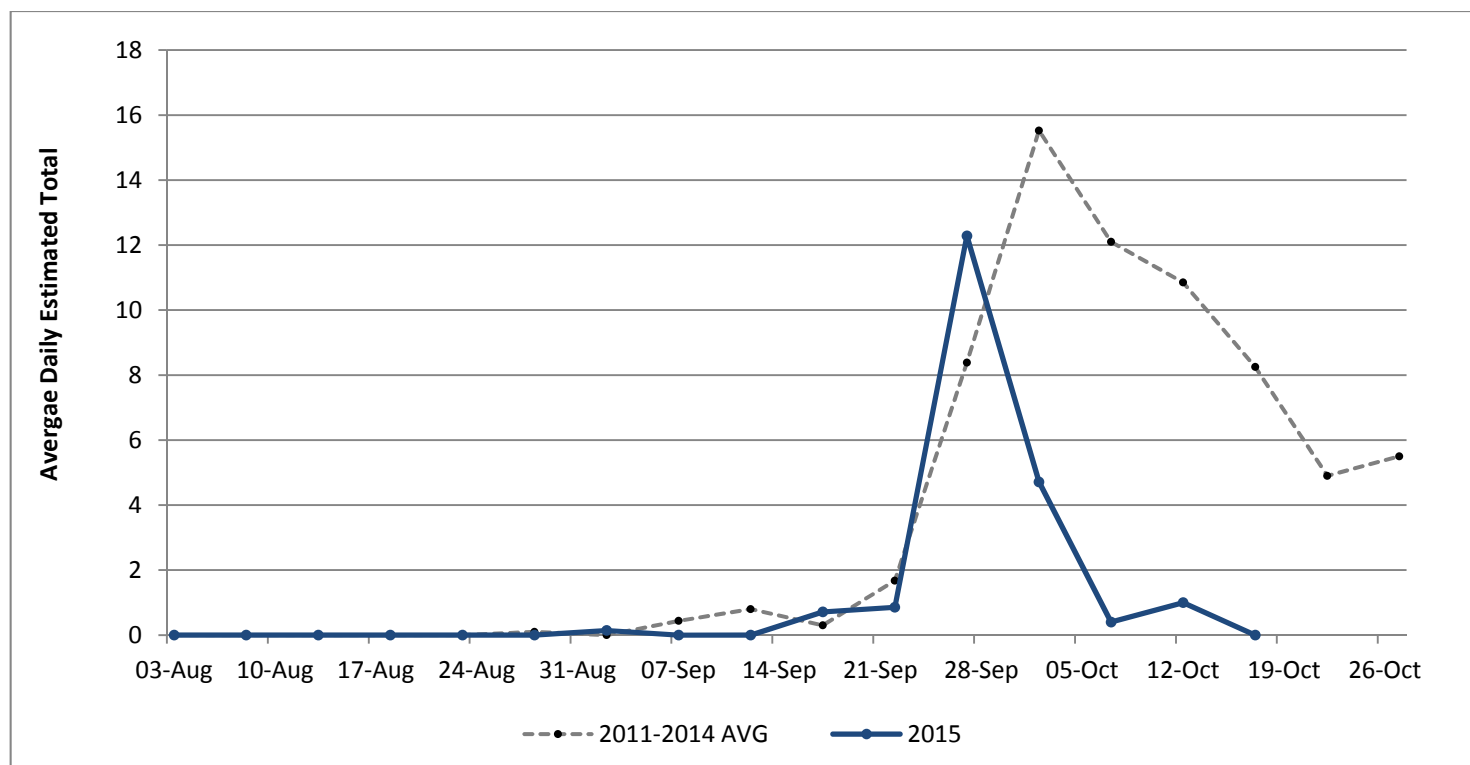


Figure C9. Golden Eagle migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

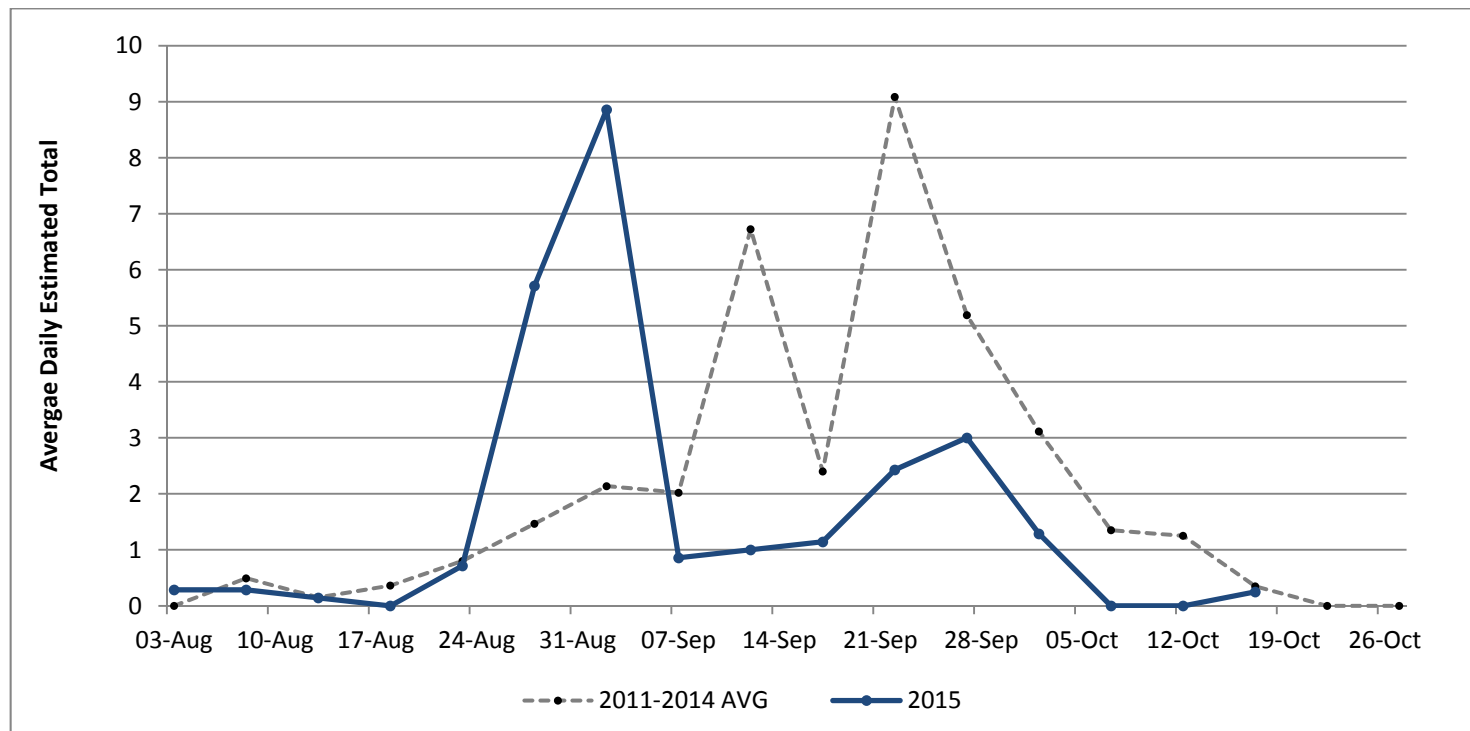


Figure C10. American Kestrel migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

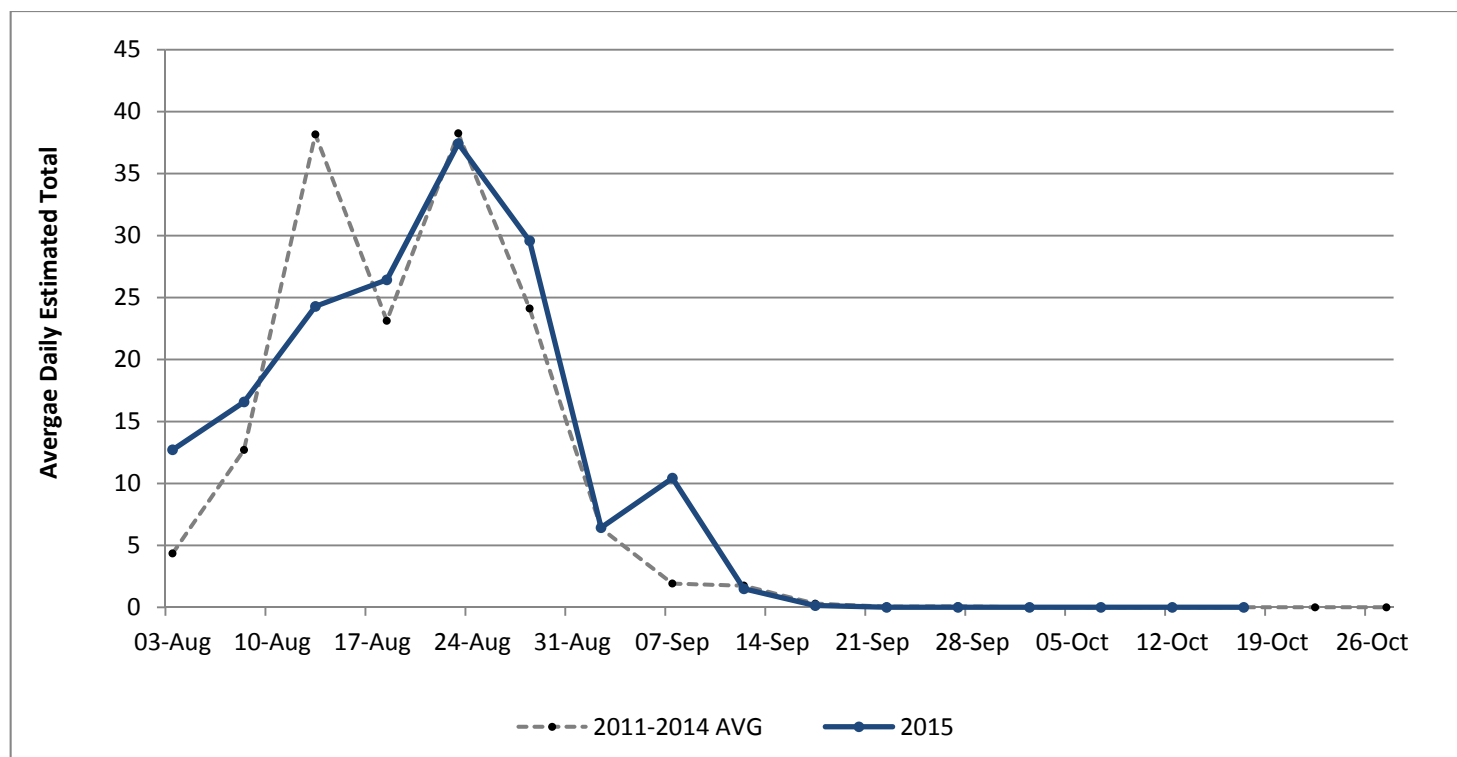


Figure C11. Alder Flycatcher migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

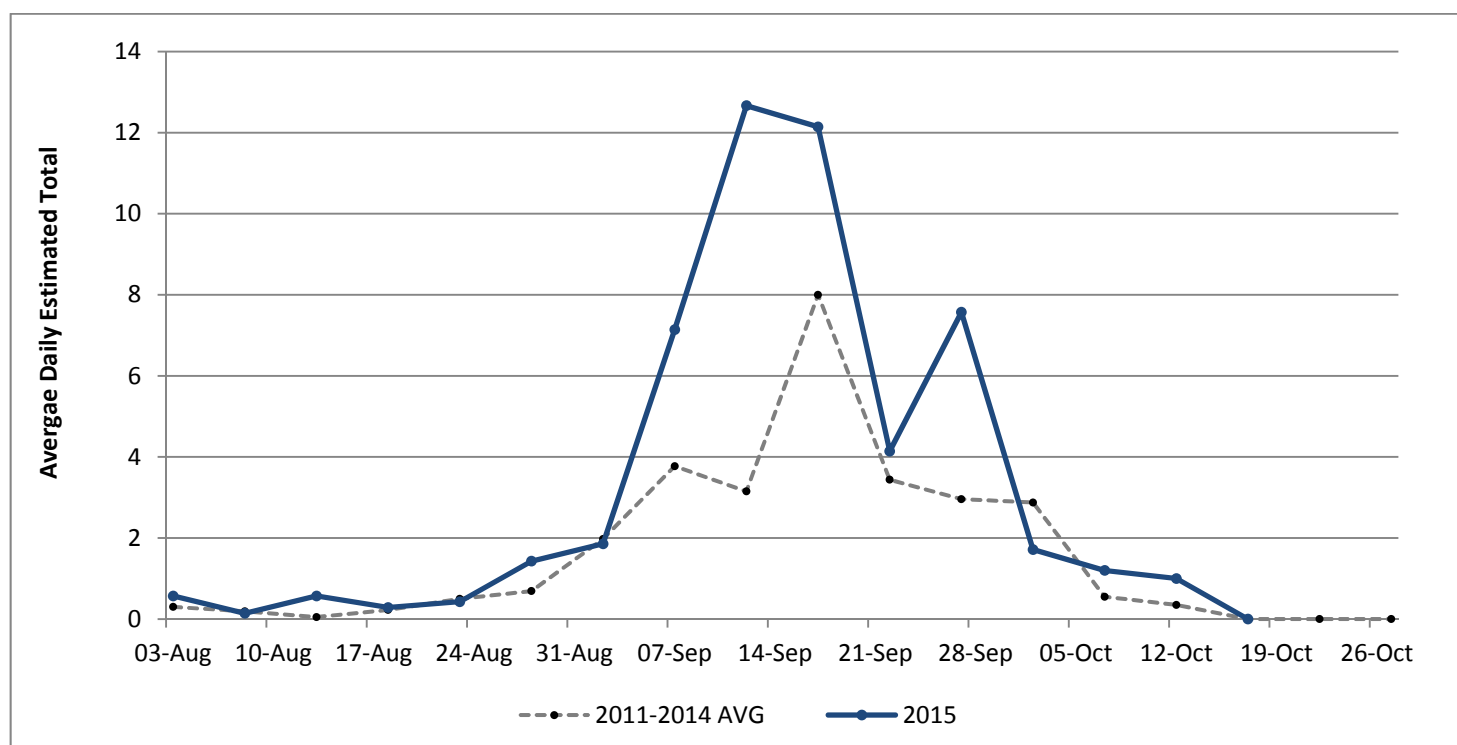


Figure C12. Ruby-crowned Kinglet migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

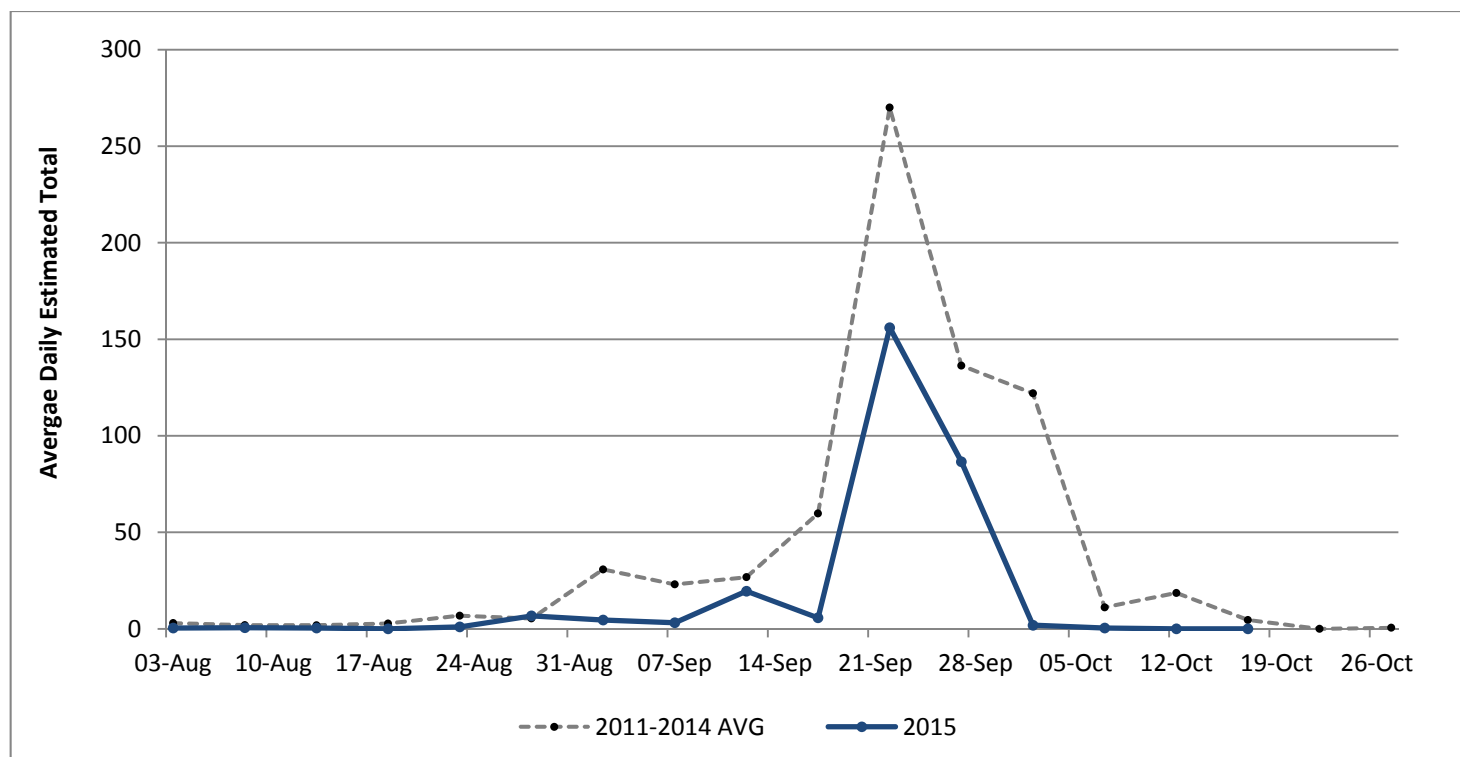


Figure C13. American Robin migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

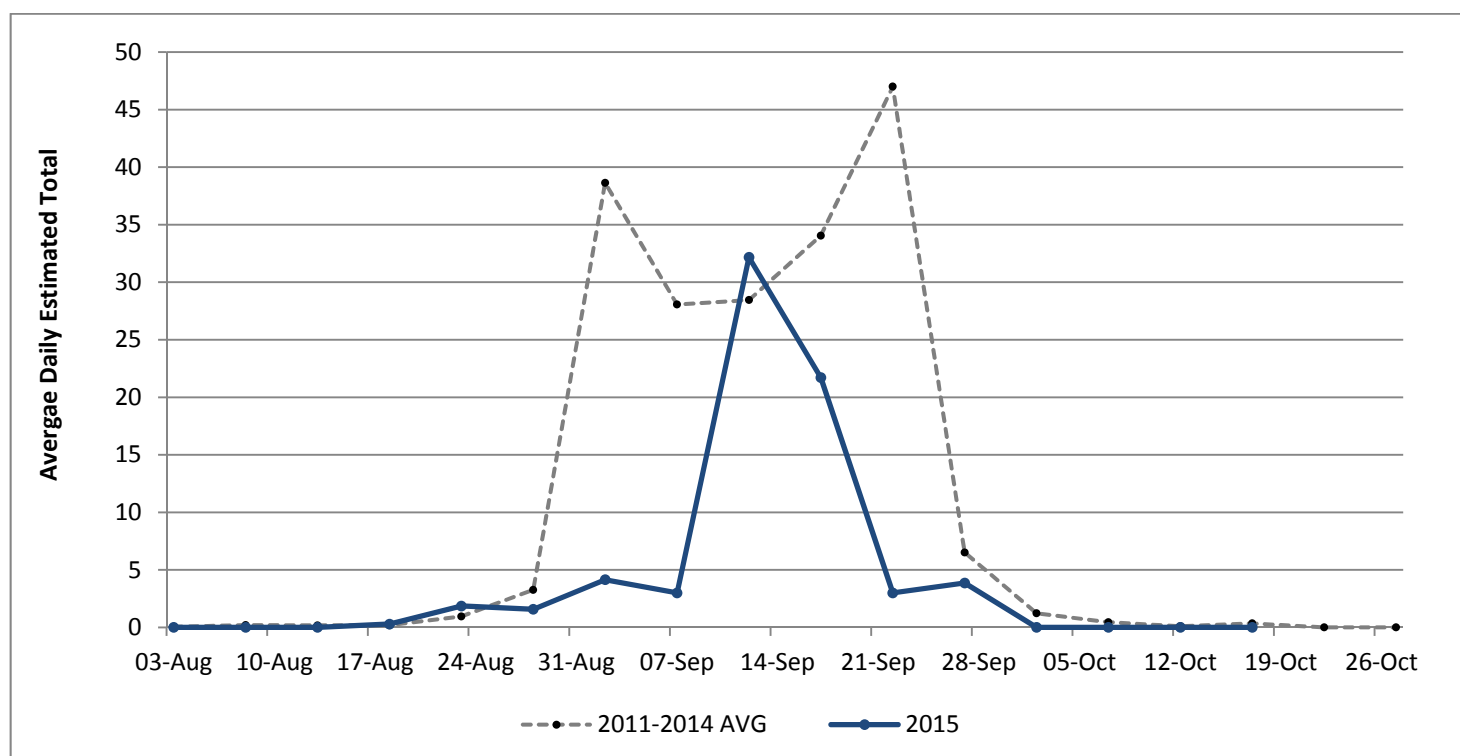


Figure C14. Varied Thrush migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

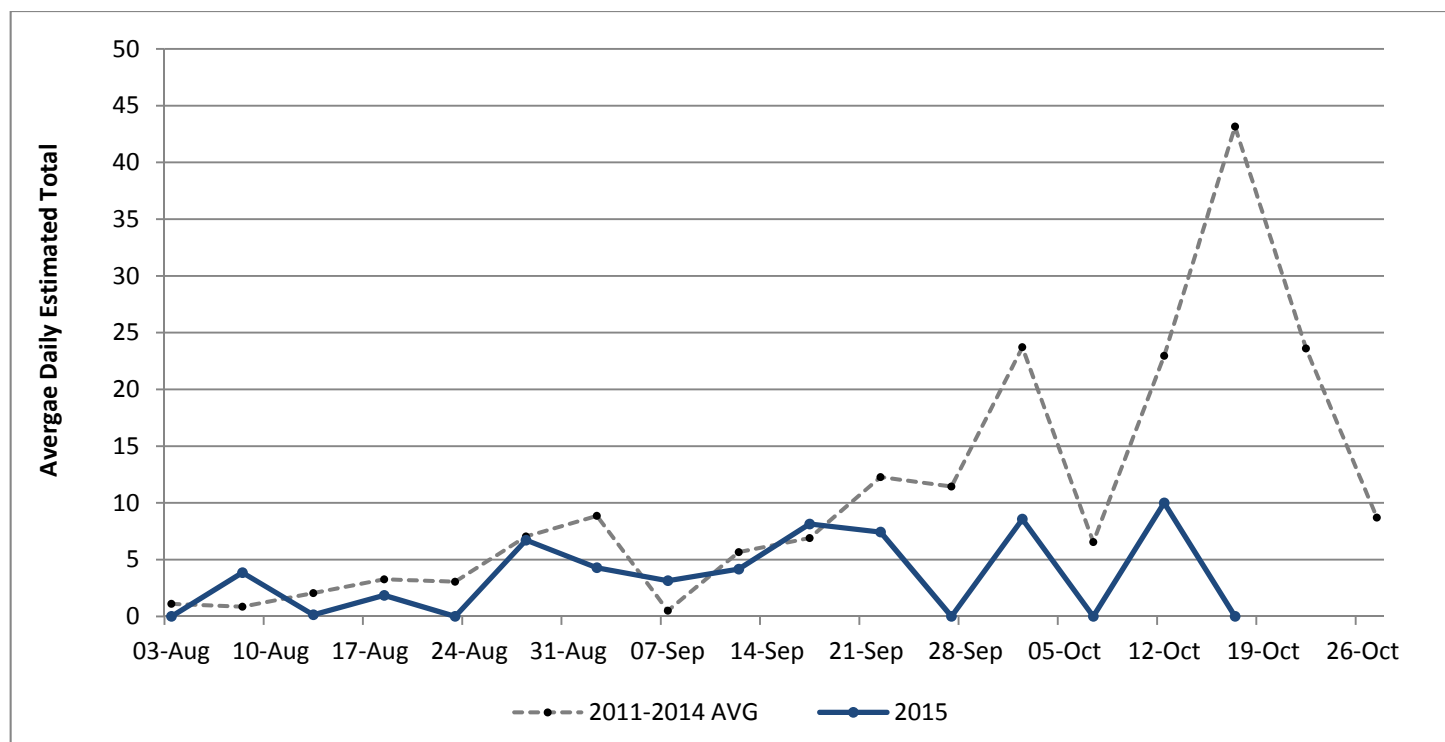


Figure C15. Bohemian Waxwing migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

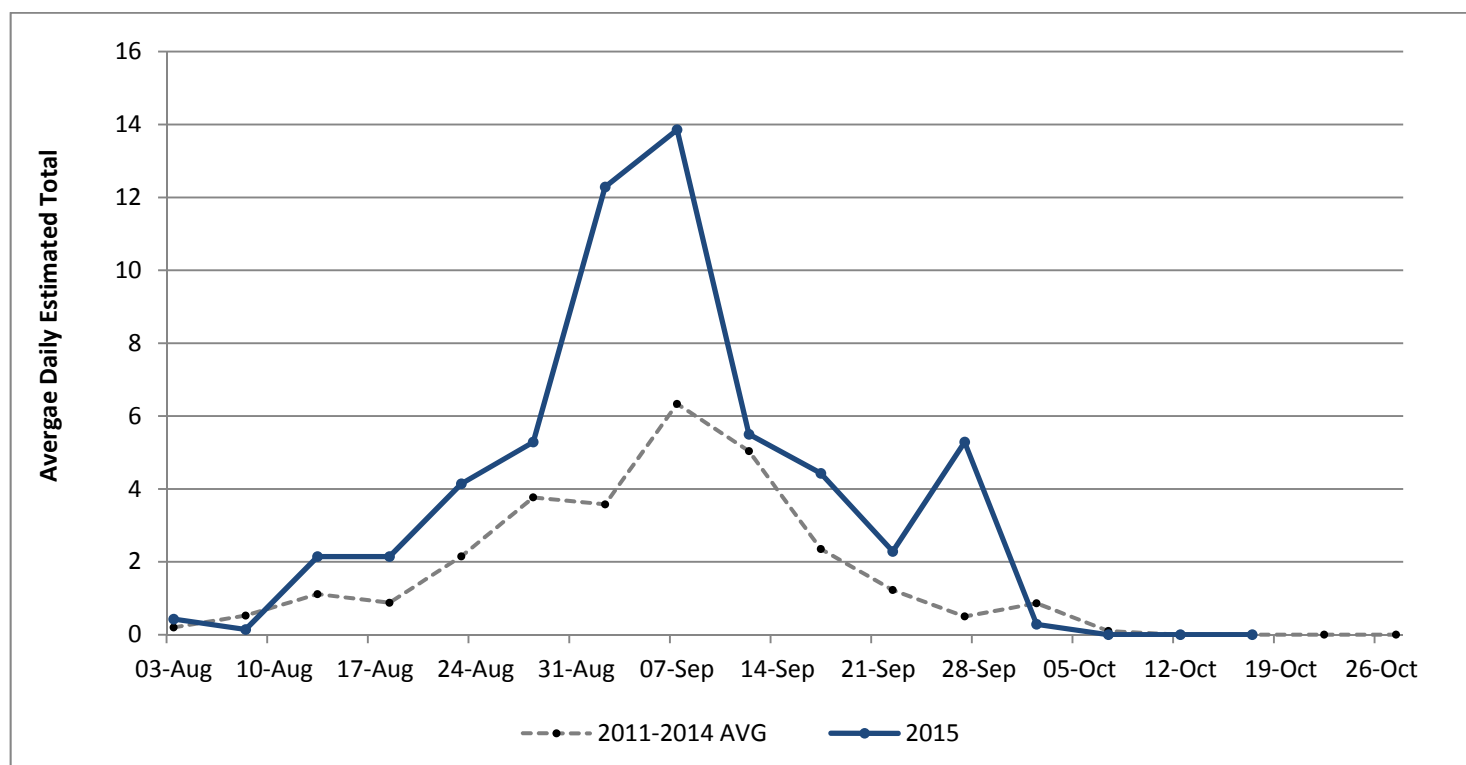


Figure C16. Orange-crowned Warbler migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

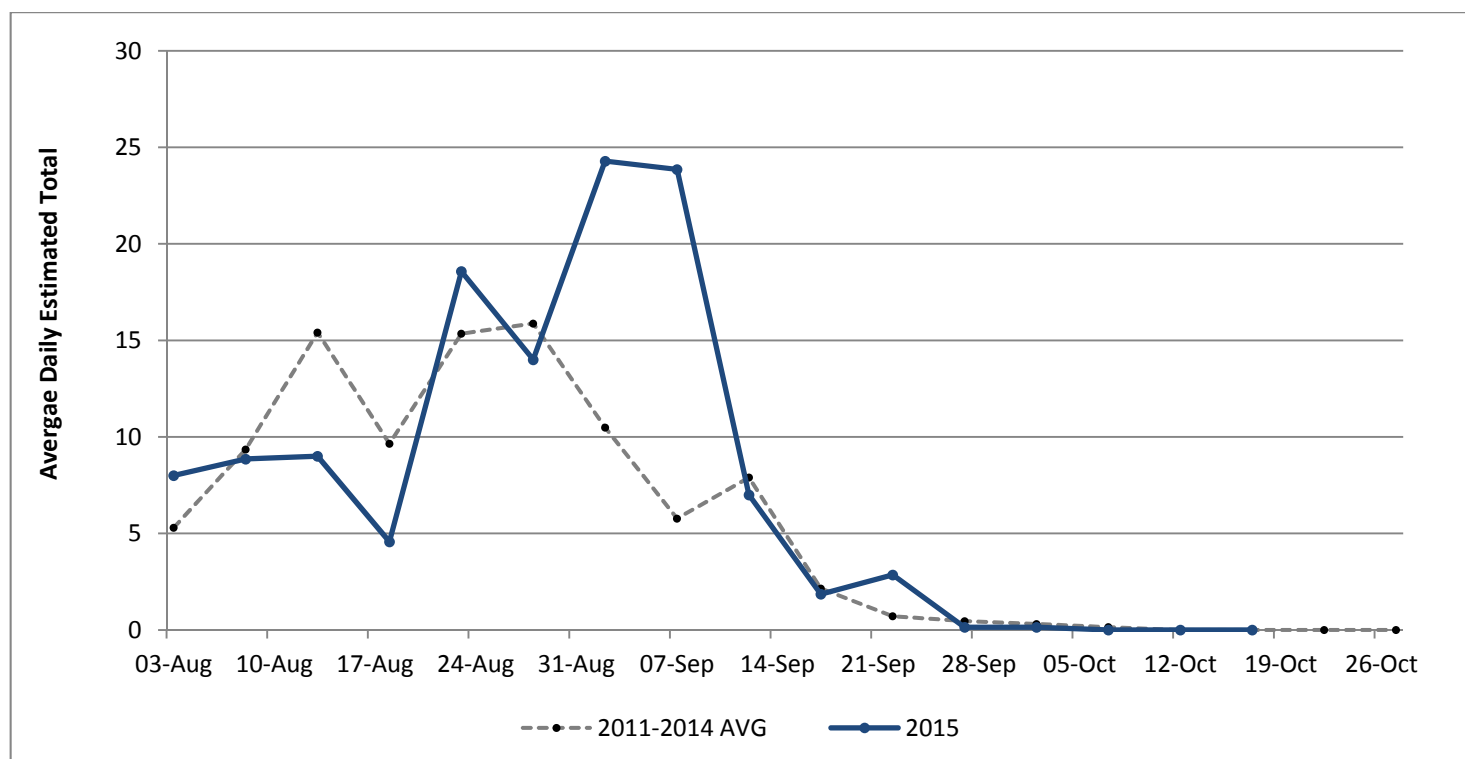


Figure C17. Yellow Warbler migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

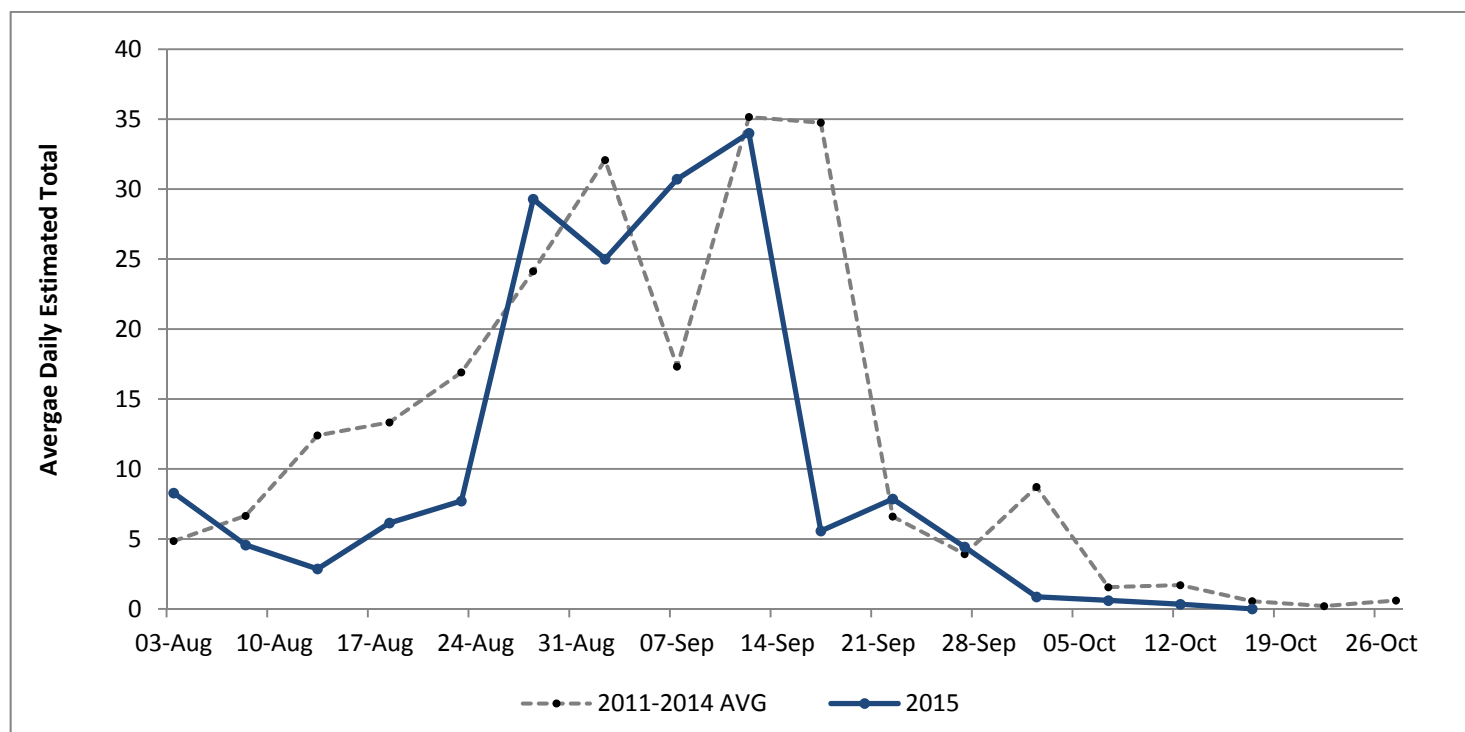


Figure C18. Myrtle Warbler migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

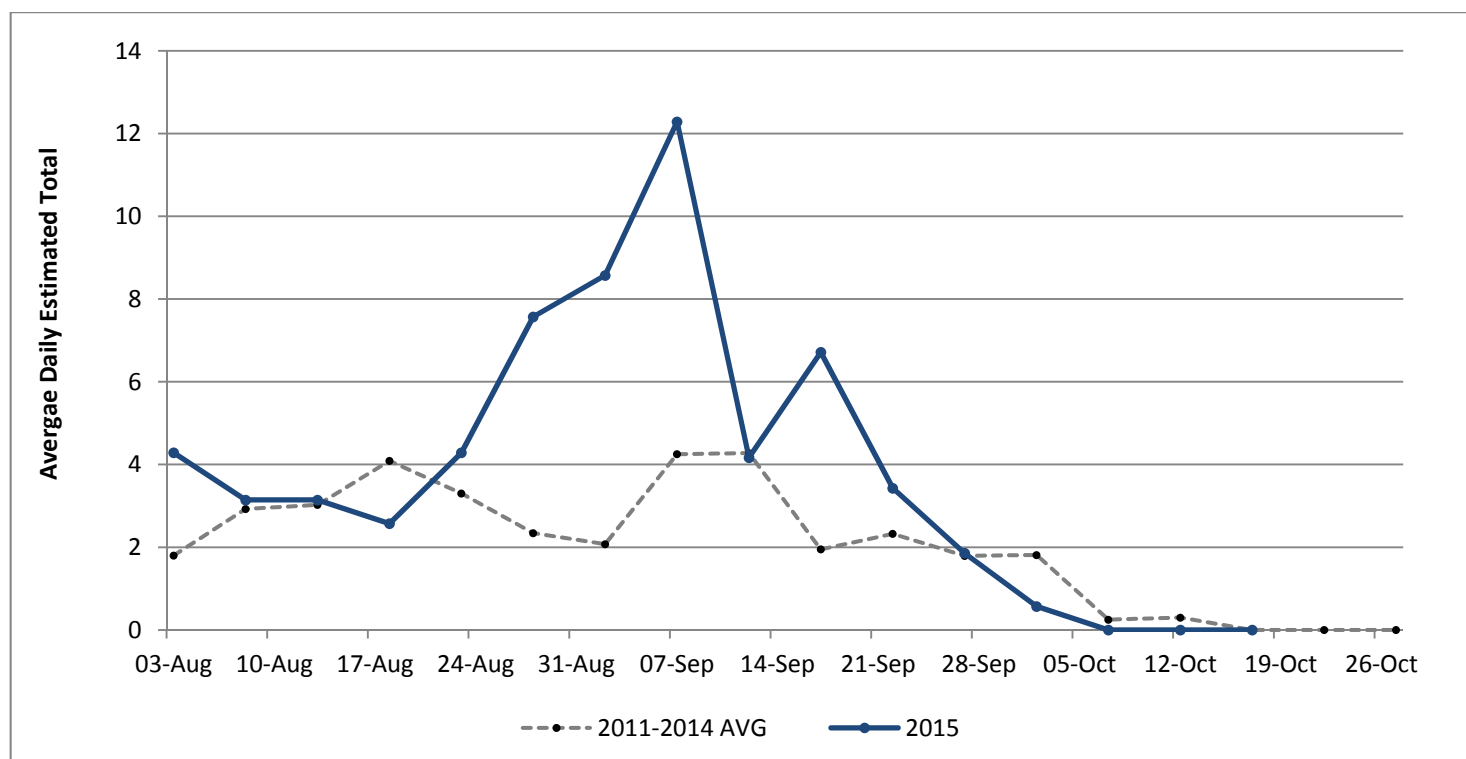


Figure C19. Wilson's Warbler migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

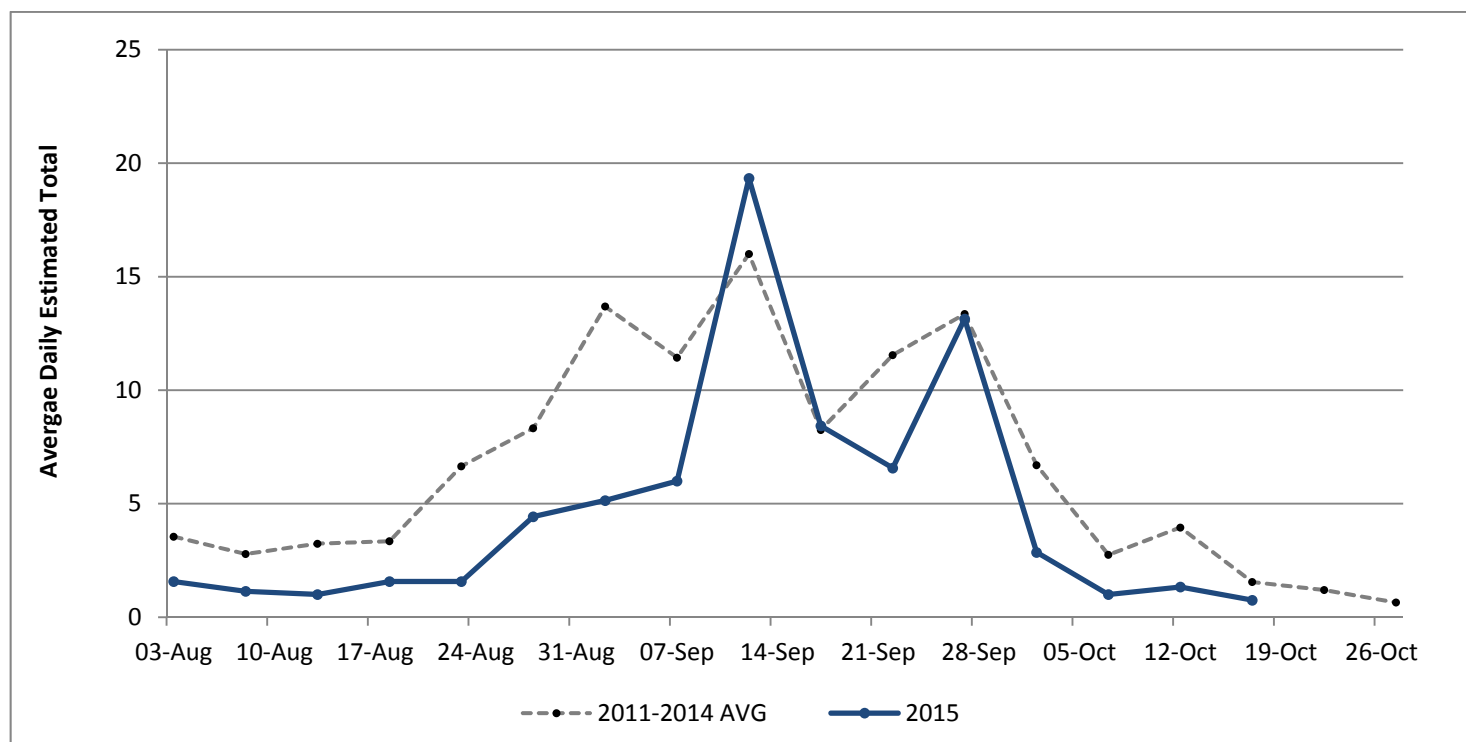


Figure C20. Slate-colored Junco migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.

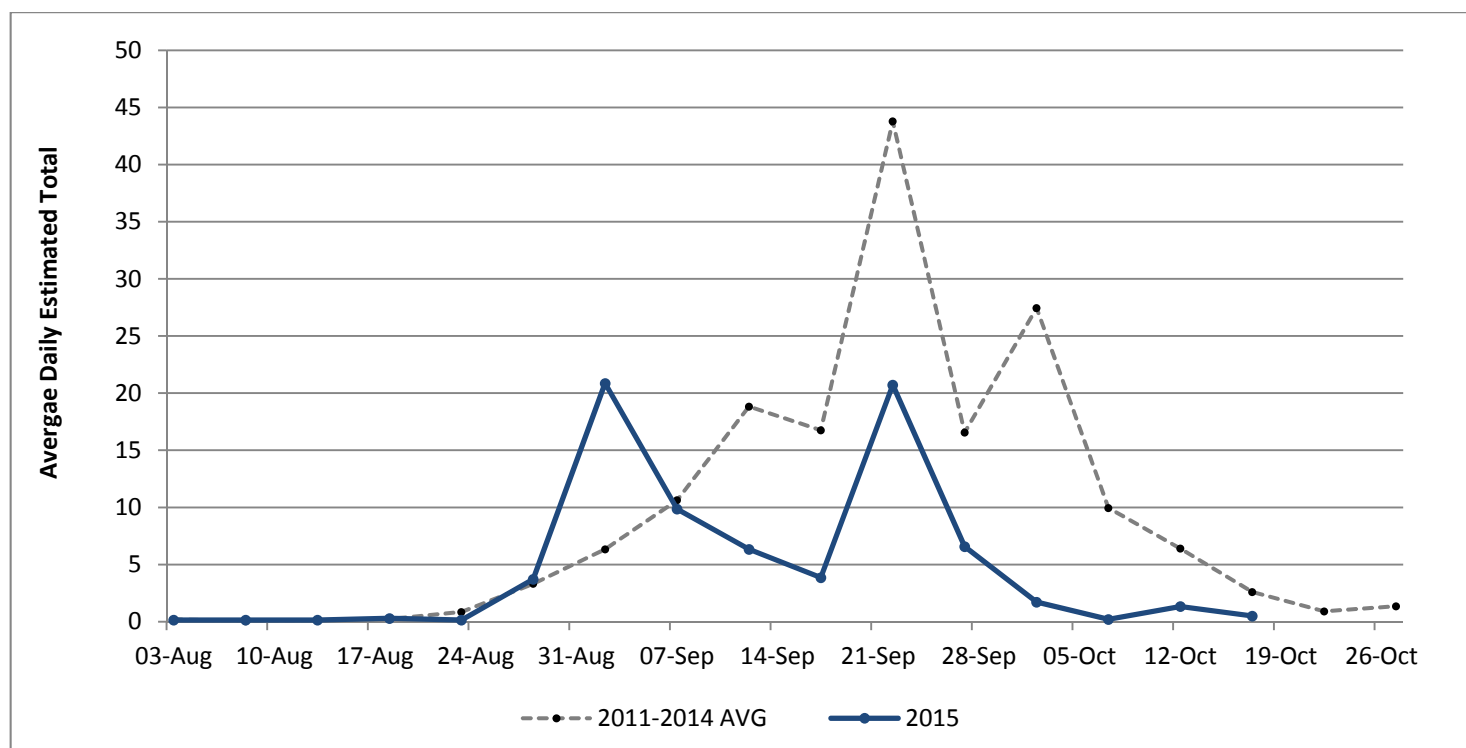


Figure C21. Rusty Blackbird migration timing at Teslin Lake Bird Observatory during 2015 as compared to 2011-2014.