

Teslin Lake Bird Observatory Final Report 2011



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The 2011 operation of the Teslin Lake Bird Observatory was made possible due to support and financial contributions from the following organizations.



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Cover Photo: adult male “Audubon’s” Yellow-rumped Warbler banded on August 4th, 2011 (Photo: Jukka Jantunen).

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EXECUTIVE SUMMARY

The Teslin Lake Bird Observatory completed its fourth consecutive year of fall migration monitoring during the fall of 2011. This year, the field station operated for a total of 102 days from July 22 to October 31. The primary method of monitoring bird migration through the study site is the use of standardized mist netting and banding of birds captured. Mist netting was conducted from July 22 to October 13 and a total of 2,793 birds of 57 species were banded with 8,304 net hours (33.7 birds/100 net hours). Encountered in high numbers in previous seasons, Alder Flycatcher and Yellow Warbler were once again among the top 3 species banded, accounting for over a third of all individuals banded. An irruption of Boreal Chickadees resulted in 235 individuals banded; second only to the record number of 831 banded in 2009.

The visual migration counts aim to collect monitoring data for bird species not adequately sampled by mist netting. Between August 1 and October 31, 331 hours of visual migration watching resulted in the counting of 78,549 birds of 111 species. A primary target of the visual counts are diurnal raptors of which 3,743 individuals of 12 species were counted, including regionally important species for monitoring - Swainson's Hawk and American Kestrel. Lake counts were conducted daily to collect monitoring data for a variety of waterbird species. On lake counts, all regularly occurring species of loons and grebes were counted in relatively high numbers and there were also sightings of a number of gull species considered rare in the Yukon including Sabine's Gull, Little Gull and Glaucous Gull. In an effort to increase the collection of monitoring data for waterfowl, a number of stationary counts were surveyed in the southern Yukon with an emphasis on regional species of interest including Greater Scaup, Lesser Scaup, Surf Scoter and White-winged Scoter.

The data collected at the observatory in 2011 builds upon the database of knowledge pertaining to the birds of the Yukon. Over the long term, this data will form a crucial step in the calculation of population trend analyses for numerous bird species including songbirds, raptors, waterbirds and waterfowl.

ACKNOWLEDGEMENTS

Jukka Jantunen was the primary Bander In Charge of the bird observatory during the 2011 season. Jukka's excellent bird identification skills were once again a definite asset to the quality of the data collected at the observatory, particularly during the visual migration counts which are very challenging. Jukka also provided many of the superb photographs presented in this report.

The following list summarizes the individuals who played a role in the 2011 operation of the Teslin Lake Bird Observatory.

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Board members of the Society of Yukon Bird Observatories helped administer the Yukon Bird Observatories. The Yukon Conservation Society (Karen Baltgailis, Georgia Greenthams) also assisted in the administration of funds for the project.

The following volunteers assisted with the operation of the observatory; more than 20 days – Abril Heredia; 10 to 20 days – Kelly Riggs, Jarmo Pirhonen, Shyloh van Delft; 5 to 10 days – Nick Guenette, Todd Heakes, Julie Bauer; 1 to 5 days – Tracy Allard, Rory Masters, Terry Skjonsberg, Cameron Eckert, Ammanda Partridge, Gwen Baluss, Tami Hamilton.

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1.0 Introduction

The Teslin Lake Bird Observatory operated only during the fall migration season in 2011. The observatory completed its sixth year of operation thanks to financial support from several government and non-government agencies.

The goals of the Teslin Lake Bird Observatory are to:

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

The observatory carries out research 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. Many of the birds banded at Teslin Lake are highly migratory spending the winter months as far south as Central and South America. In addition to the potential knowledge gained from band recoveries, the observatory also continues to gather baseline data of birds (and their migration) in the 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 many of the Yukon's bird species, many of which are considered uncommon or rare. Over the long term, the data collected at the observatory will facilitate trend analysis for a number of species. Such information will be valuable for conservation and monitoring of bird populations not only in the Yukon, but North America as a whole.

The observatory plays a role in education as a place where the public, volunteers and students can take part in a unique, community based research project. Across the Yukon (and the world), there are numerous people who have an interest in birds; however, many find it a daunting task to learn the various species. For such people, a visit to the observatory can be extremely rewarding as during banding operation they often have the opportunity to get close up views of a wide variety of bird species, many of which are difficult to observe in nature. The highly trained individuals working at the observatory have the ability to identify these species with ease and are happy to share their expertise with the public.

2.0 Methods

The methods for the operation of the bird observatory follow the Teslin Lake Bird Observatory Field Protocol and Manual ¹ (Appendix A). A brief summary of the field protocol is described in the following sections; however, for a detailed description refer to the aforementioned document. All monitoring activities at the observatory can be separated into standardized and non-standardized. 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. For every species observed, estimated totals are calculated for every day of operation using the following categories;

- Band: new birds banded.
- Recaptures: previously banded birds, not included if recaptured on the original day of banding.
- Visual Migrants – Migration Watch: birds observed in obvious migration flight, only includes individuals observed during the visual migration counts.
- Visual Migrants – 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”.

2.1 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; page 12). The only non standard net used in 2011 was a canopy net (Net C) near the point which was used on a trial basis. All nets are 30 mm mesh 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 favorable. If this is not possible, the effort is reduced in the number of nets operated rather than reducing the duration of effort.

2.2 Visual Migration Watch

Visual migration counts are conducted on all days of operation to supplement the banding data. All watches are conducted from a set location (Figure 1; page 12) and involve scanning the sky to observe and count all birds flying past the site. The protocol states that as a minimum, 10 minutes of watch

¹ Schonewille, B. 2011. Teslin Lake Bird Observatory (TLBO) Field Protocol (version 2). Society of Yukon Bird Observatories.

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.

2.3 Lake Counts

Completed in conjunction with the visual migration counts, a thorough lake count is performed daily to enumerate all birds on or over Teslin Lake. These counts target a wide range of species including; loons, grebes, some waterfowl, gulls and some species of shorebirds.

2.4 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, were recorded as ‘incidental migrants’.

2.5 Study Site

During the 2005 season, the observatory was located on the shoreline of Nisutlin Bay; however, issues associated with the site led to a new site being used since 2006. The new 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 Teslin Government Campground. 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* sp.) and alder (*Alnus* sp.) with some mature white spruce (*Picea glauca*), trembling aspen (*Populus tremuloides*) and balsam poplar (*P. balsamifera*) scattered throughout.

2.6 Waterfowl / Waterfowl Counts in other Areas

To supplement the data collected at the observatory, area counts were conducted at 5 other locations in the Southern Lakes region. These counts were initiated to collect additional monitoring data for waterfowl and other waterbirds as many of these species are underestimated in the monitoring activities at the observatory. During 2011, counts were conducted at the following locations;

- Teslin – Nisutlin Bay
- Johnson’s Crossing / Teslin Lake outlet
- Squanga Lake – Highway
- Marsh Lake – Judas Creek Marina
- Little Atlin Lake – Boat Launch



Figure 1. Overview of the Teslin Lake Bird Observatory count area showing the location of individual mist nets and the banding/observation site.

3.0 Results & Discussion

A total of 2,793 birds of 57 species were banded during 2011 and 156 species/forms were observed (Table 1, Table 2, Table 3). The all time total number of birds banded at Teslin Lake Bird Observatory is now 17,442 birds of 87 species/forms and 177 species/forms have been observed (Appendix B). Each component of the 2011 data is summarized and presented in the following subsections; however, a summary account of the 2011 estimated total data is shown in Appendix C. Note that unless otherwise stated, the results presented in this report combine and summarize both standard and non-standardized data. The standardized data will be used for long-term species trend analysis.

Table 1. Summary statistics of the 2011 fall season.

Week	Date	Days Operated	Birds Banded				Visual Counts		Total Species Observed
			#	Species	Net Hours	#/100 Net Hours	# of Visual Migrants ¹	Counting Hours	
NA	16 Jul	1	31	13	96.1	32.26	-	-	26
1	22 – 28 Jul	7	139	29	928.5	14.97	5	-	57
2	29 Jul – 4 Aug	7	159	28	930.5	17.09	392	3.2	71
3	5 – 11 Aug	7	227	29	822.5	29.59	769	11.9	78
4	12 – 18 Aug	7	543	30	866.8	62.64	2,341	12.8	76
5	19 – 25 Aug	7	322	28	615.8	52.29	2,147	9.5	76
6	26 Aug – 1 Sep	6	358	31	759.3	47.15	9,422	20.4	87
7	2 – 8 Sep	7	265	25	696.8	38.03	4,631	29.7	77
8	9 – 15 Sep	7	204	22	883.5	23.09	962	10.1	76
9	16 – 22 Sep	7	108	18	498.1	21.68	1,387	15.2	71
10	23 – 29 Sep	7	209	22	420.6	49.69	17,250	47.8	86
11	30 Sep – 6 Oct	7	183	18	463.0	39.52	10,632	46.1	82
12	7 – 13 Oct	7	43	10	322.4	13.34	24,094	45.9	75
13	14 – 20 Oct	7	-	-	0	-	3,699	44	56
14	21 – 27 Oct	7	-	-	0	-	597	27.5	48
15	28 – 31 Oct	4	-	-	0	-	221	16.7	28
ALL	16 Jul – 31 Oct	102	2,793	57	8303.9	33.7	78,549	340.8	156

¹ Note this total includes visual migrants counted during the visual counts and incidental visual migrants observed.

The 2011 fall season was the longest to date at the observatory as the season was extended to further test the utility of the visual migration counts during the last two weeks of October. In terms of banding, the peak period of mist netting productivity occurred during weeks 4 through 6 (12 Aug – 1 Sep) when the birds banded was in the range of 47 to 63 birds/100 net hours. The peak period for visual migrants occurred from week 10 through 12 (23 Sep – 13 Oct) when nearly 52,000 birds were counted. Including all monitoring methods, the peak species diversity was recorded during week 6 when 87 species were encountered.

In comparison to previous years, the birds banded during 2011 were the lowest since the observatory began full migration monitoring during the fall season (Figure 2). As shown by Table 2, this is primarily due to the relatively low capture of neotropical migrants, especially the warblers. For many of the species banded in high numbers, the proportion of hatch year birds banded during 2011 was lower

than that of previous years. This is likely the reason why the 2011 banding totals were below average as the majority of birds banded are typically hatch year individuals. Possible reasons for this pattern are:

- Late arrival of adults during the spring due to a late spring.
- Reduced nesting success due to inclement summer weather during which there was a high frequency of precipitation.
- Although difficult to ascertain with one year of data, it is possible that the populations of some species may have decreased during the past year.
- Increased mist netting effort later in the season captured a higher number of adults (adult warblers migrate much later than do hatch years).

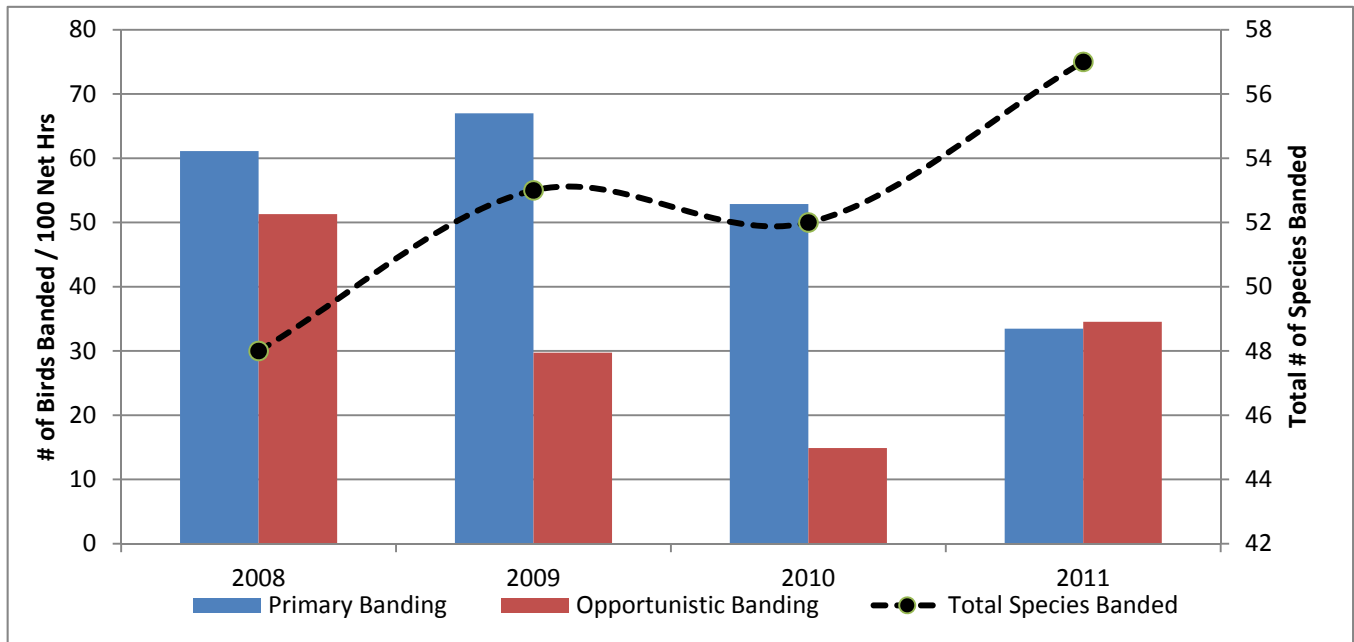


Figure 2. Summary of birds banded during the fall of 2008 through 2011.

Table 2. Top 10 species banded by age ratio during the fall of 2011, 2010 and 2009.

Species	2011			2010			2009		
	Rank	# Banded	% HY Banded	Rank	# Banded	% HY Banded	Rank	# Banded	% HY Banded
Alder Flycatcher	1	637	72	2	620	90	2	631	75
Dark-eyed Junco	2	331	81	4	420	96	3	582	81
Yellow Warbler	3	309	71	3	471	73	4	325	72
Boreal Chickadee	4	235	100	-	0	-	1	831	99
Myrtle Warbler	5	142	70	1	673	95	5	284	86
Wilson’s Warbler	6	134	72	7	177	93	8	161	91
Black-capped Chickadee	7	89	96	14	22	91	16	26	100
Ruby-crowned Kinglet	8	86	81	8	109	92	7	175	97
Swainson’s Thrush	9	85	91	11	53	75	13	49	94
American Tree Sparrow	10	77	81	15	21	90	11	54	94

Table 3. Birds banded during the fall of 2011.

Common Name	Scientific Name	# Banded	# Banded / 100 Net Hrs	Common Name	Scientific Name	# Banded	# Banded / 100 Net Hrs
Sharp-shinned Hawk	<i>Accipiter striatus</i>	7	0.08	American Pipit	<i>Anthus rubescens</i>	2	0.02
Merlin	<i>Falco columbarius</i>	2	0.02	Bohemian Waxwing	<i>Bombycilla garrulus</i>	1	0.01
Spotted Sandpiper	<i>Actitis macularia</i>	2	0.02	Northern Waterthrush	<i>Parkesia noveboracensis</i>	42	0.51
Solitary Sandpiper	<i>Tringa solitaria</i>	3	0.04	Tennessee Warbler	<i>Oreothlypis peregrina</i>	4	0.05
Boreal Owl	<i>Aegolius funerus</i>	4	-	Orange-crowned Warbler	<i>Oreothlypis celata</i>	57	0.69
Belted Kingfisher	<i>Ceryle alcyon</i>	7	0.08	Common Yellowthroat	<i>Geothlypis trichas</i>	72	0.87
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	3	0.04	American Redstart	<i>Setophaga ruticilla</i>	40	0.48
Downy Woodpecker	<i>Picoides pubescens</i>	7	0.08	Yellow Warbler	<i>Setophaga petechia</i>	309	3.72
Northern Flicker	<i>Colaptes auratus</i>	1	0.01	Blackpoll Warbler	<i>Setophaga striata</i>	57	0.69
Olive-sided Flycatcher	<i>Contopus cooperi</i>	1	0.01	Myrtle Warbler	<i>Setophaga coronata</i>	142	1.71
Western Wood-Pewee	<i>Contopus sordidulus</i>	10	0.12	Audubon's Warbler	<i>Setophaga coronata</i>	1	0.01
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	7	0.08	Townsend's Warbler	<i>Setophaga townsendi</i>	6	0.07
Alder Flycatcher	<i>Empidonax alnorum</i>	637	7.67	Wilson's Warbler	<i>Cardellina pusilla</i>	134	1.61
Least Flycatcher	<i>Empidonax minimus</i>	10	0.12	American Tree Sparrow	<i>Spizella arborea</i>	77	0.93
Hammond's Flycatcher	<i>Empidonax hammondii</i>	28	0.34	Chipping Sparrow	<i>Spizella passerina</i>	28	0.34
Dusky Flycatcher	<i>Empidonax oberholseri</i>	6	0.07	Brewer's Sparrow	<i>Spizella breweri</i>	2	0.02
Northern Shrike	<i>Lanius excubitor</i>	1	0.01	Savannah Sparrow	<i>Passerculus sandwichensis</i>	23	0.28
Warbling Vireo	<i>Vireo gilvus</i>	17	0.20	Fox Sparrow	<i>Passerella iliaca</i>	17	0.20
Black-capped Chickadee	<i>Poecile atricapillus</i>	89	1.07	Lincoln's Sparrow	<i>Melospiza lincolnii</i>	27	0.33
Mountain Chickadee	<i>Poecile gambeli</i>	2	0.02	White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	34	0.41
Boreal Chickadee	<i>Poecile hudsonicus</i>	235	2.83	Slate-colored Junco	<i>Junco hyemalis</i>	331	3.99
Red-breasted Nuthatch	<i>Sitta canadensis</i>	5	0.06	Rusty Blackbird	<i>Euphagus carolinus</i>	16	0.19
Golden-crowned Kinglet	<i>Regulus satrapa</i>	1	0.01	Brown-headed Cowbird	<i>Molothrus ater</i>	1	0.01
Ruby-crowned Kinglet	<i>Regulus calendula</i>	86	1.04	Purple Finch	<i>Carpodacus purpureus</i>	1	0.01
Townsend's Solitaire	<i>Myadestes townsendi</i>	1	0.01	White-winged Crossbill	<i>Loxia leucoptera</i>	1	0.01
Gray-cheeked Thrush	<i>Catharus minimus</i>	2	0.02	Common Redpoll	<i>Acanthis flammea</i>	75	0.90
Swainson's Thrush	<i>Catharus ustulatus</i>	85	1.02	Hoary Redpoll	<i>Acanthis hornemanni</i>	2	0.02
Hermit Thrush	<i>Catharus guttatus</i>	12	0.14	Pine Siskin	<i>Spinus pinus</i>	18	0.22
American Robin	<i>Turdus migratorius</i>	11	0.13	TOTAL INDIVIDUALS Banded		2793	33.63
Varied Thrush	<i>Ixoreus naevius</i>	2	0.02	TOTAL SPECIES Banded		57	-

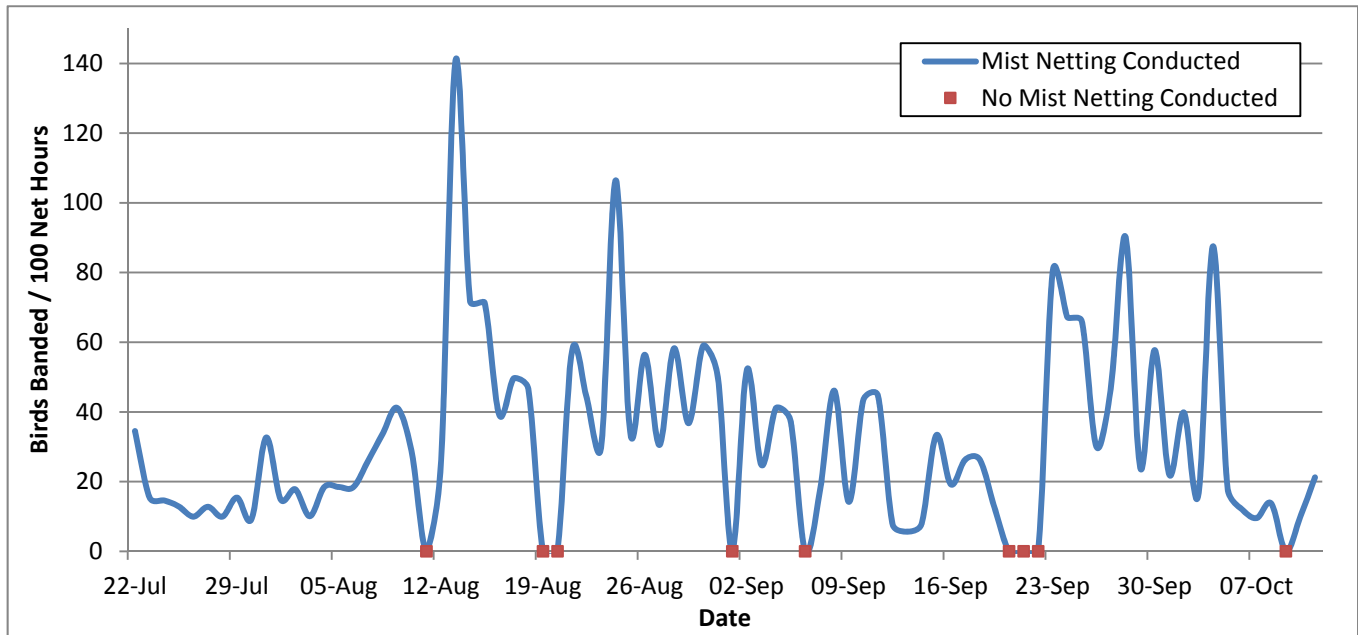


Figure 3. Summary of birds banded per 100 net hours during the fall of 2011.

The productivity of the standard mist nets suggest that the majority of birds moving through the count area pass directly along the shoreline of Teslin Lake as suggested by the highest capture rates in mist nets 10, 18, 20 and 28 (Figure 4). Note that although a portion of the mist nets placed away from the lakeshore and in taller vegetation (nets 5, 25 to 27) lack high capture rates, these nets capture species not typically caught on the lakeshore such as Swainson’s Thrush and Varied Thrush. In years with a more productive crop of berries (primarily soapberry), these mist nets are likely to be much more productive.

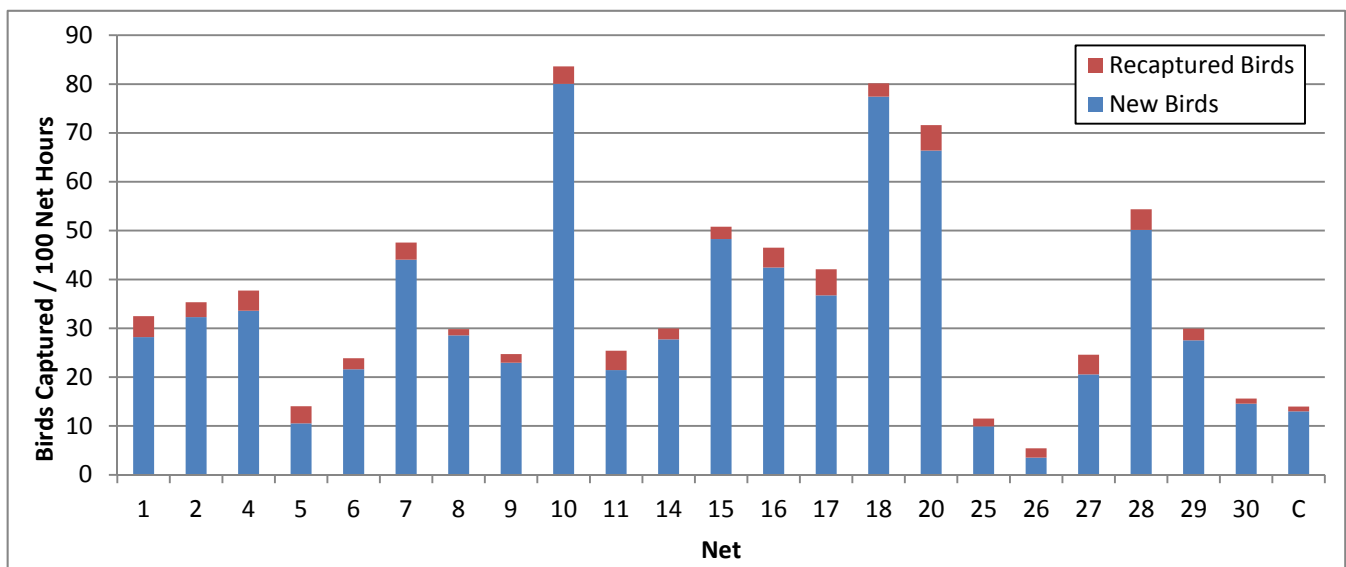


Figure 4. Number of birds banded per specific mist net during the fall of 2011.

3.1 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, age related migration timing and molt frequency and (3.1.2) species-specific migration timing.

3.1.1 Generalized Migration Timing

Generalized migration timing during 2011 and 2010 for temperate, neotropical and irruptive migrants is presented in Figure 5. During 2011, the peak in fall migration occurred in the middle two weeks of August, particularly for neotropical migrants (warblers, flycatchers, etc). This pattern is similar to previous years; however, the capture rate of neotropical migrants is typically higher during the last week of August and first week of September. The lower capture rates at this time during 2011 are likely due to a period of inclement weather which greatly reduced the mist netting effort.

Temperate migrants (primarily sparrows) outnumber neotropical migrants only during the later portion of the season (during September). Relatively few irruptive migrants were banded in 2010 and 2011; however, there were two peaks in the capture of these species. The first peak shown during late August and early September 2011 is due to high captures of Boreal Chickadees. Other irruptive species (Common Redpoll, Pine Siskin) are typically banded near the end of the season (after September 15).

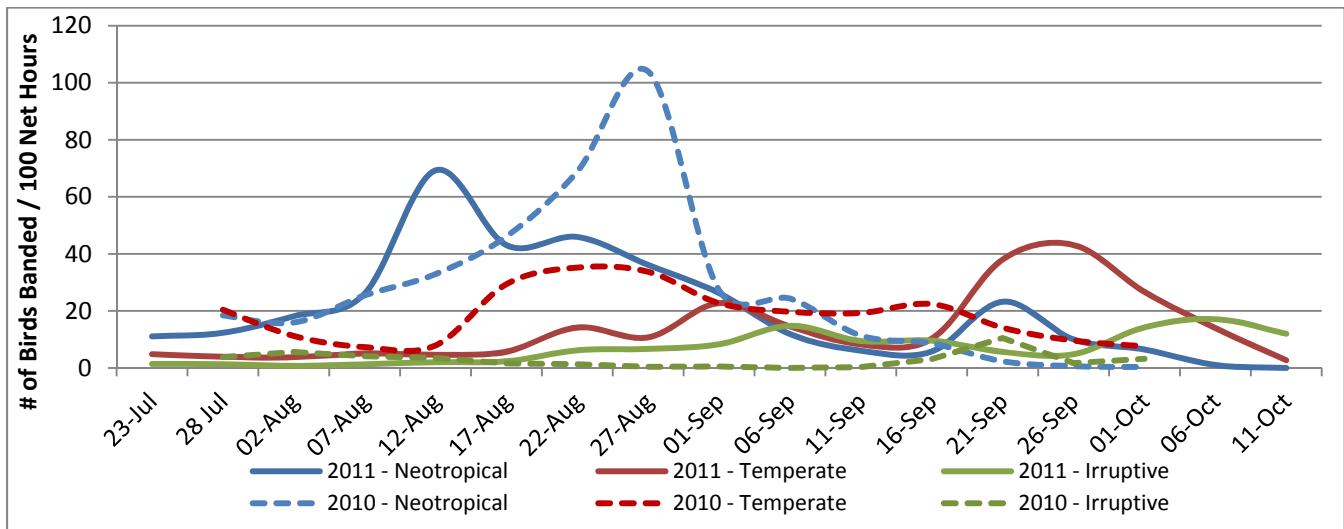


Figure 5. Migration timing for temperate, neotropical and irruptive migrants banded during the fall of 2011 and 2010.

Migration timing is influenced by a number of factors including weather, diet, timing of breeding, overwintering destination, molt strategy and age. For species which exhibit pre-migration pre-basic molt, the juveniles migrate earlier than adults. This pattern is supported by data collected at the observatory for numerous species including Yellow Warbler, Orange-crowned Warbler and Blackpoll Warbler, among others (Table 4). A different approach is taken for species which exhibit a post-migration pre-basic molt strategy. For example, adult Alder Flycatchers migrate prior to juveniles and as they molt on the wintering grounds.

Table 4. Summary of migration timing and proportion of molting adults for top 30 bird species banded during 2011.

Migratory Group	Species	Molt Strategy ¹	Adults in Flight Feather Molt (%) ²	Hatch Year Birds (%)	Adults		Juveniles	
					Mean Date	Number of Birds	Mean Date	Number of Birds
Neotropical Migrants	Western Wood-Pewee	Post	-	90.0	-	1	28 Aug	9
	Alder Flycatcher	Post	-	71.6	13 Aug	181	24 Aug	456
	Least Flycatcher	Post	-	60.0	23 Jul	4	10 Aug	6
	Hammond’s Flycatcher	Pre	100	92.9	-	2	3 Aug	26
	Warbling Vireo	MM	0	41.2	24 Jul	8	9 Aug	10
	Swainson’s Thrush	Pre	63	90.6	2 Sep	8	8 Aug	77
	Northern Waterthrush	Pre	75	90.5	-	4	7 Aug	38
	Orange-crowned Warbler	Pre	25	78.9	23 Sep	12	25 Aug	45
	Common Yellowthroat	Pre	38	88.9	11 Sep	8	24 Aug	64
	American Redstart	Pre	73	72.5	17 Aug	11	4 Aug	29
	Yellow Warbler	Pre	40	70.6	30 Aug	91	13 Aug	219
	Blackpoll Warbler	Pre	43	87.9	-	7	10 Aug	51
	Wilson’s Warbler	Pre	27	72.2	23 Sep	37	24 Aug	96
	Chipping Sparrow	MM	0	89.3	-	3	6 Aug	25
Temperate Migrants	Ruby-crowned Kinglet	Pre	13	81.4	24 Sep	16	16 Sep	70
	Hermit Thrush	Pre	100	91.7	-	1	18 Sep	11
	American Robin	Pre	-	100	<i>Mist netting not the most appropriate method to analyze migration timing</i>			
	Myrtle Warbler	Pre	79	69.7	24 Sep	43	10 Aug	99
	American Tree Sparrow	Pre	7	80.5	27 Sep	15	29 Sep	62
	Savannah Sparrow	Pre	100	95.7	-	1	23 Aug	22
	Fox Sparrow	Pre	0	94.1	-	1	1 Sep	16
	White-crowned Sparrow	Pre	0	91.2	-	3	21 Aug	31
	Lincoln’s Sparrow	Pre	50	92.6	-	2	9 Sep	25
	Slate-colored Junco	Pre	25	81.0	24 Sep	63	2 Sep	268
Irruptive Migrants	Rusty Blackbird	Pre	100	93.8	-	1	4 Sep	15
	Downy Woodpecker	-	0	42.9	-	4	-	3
	Black-capped Chickadee	Pre	75	95.7	-	4	3 Sep	88
	Boreal Chickadee	Pre	-	100	-	0	8 Sep	233
	Common Redpoll	Pre	9	70.7	7 Oct	22	4 Oct	53
	Pine Siskin	Pre	100	94.4	-	1	26 Aug	17

¹ Post = post migration, Pre = pre migration, MM = molt migration

² Showing visible flight feather molt (primaries, secondaries and/or tertials)

3.1.2 Species Specific Migration Timing

Species specific migration timing was analyzed for 51 species using three separate methods as outlined below; mist netting, visual migration counts and the daily species totals.

Mist netting effort and bird capture data were sufficient to assess the timing of migration for the following species, which are primarily nocturnal migrants and not suited to visual migration watching:

- Alder Flycatcher
- Boreal Chickadee
- Ruby-crowned Kinglet
- Swainson’s Thrush
- Orange-crowned Warbler
- Yellow Warbler
- Myrtle Warbler
- Blackpoll Warbler
- American Redstart
- Northern Waterthrush
- Common Yellowthroat
- Wilson’s Warbler
- American Tree Sparrow
- Slate-colored Junco

The full set of migration timing (mist netting) figures are shown in Appendix D and an example for Yellow Warbler is shown in Figure 6 below. These figures show data grouped over 5 day intervals and standardized to a number of birds banded per 100 net hours. The example figure below for Yellow Warbler demonstrates the value in making comparisons in migration timing between years. In 2008, 2009 and 2010, there was a notable peak in migration around August 25th; however, this peak was not observed in 2011. There was a smaller peak around August 15th, 2011 but the magnitude was much less than that of past years.

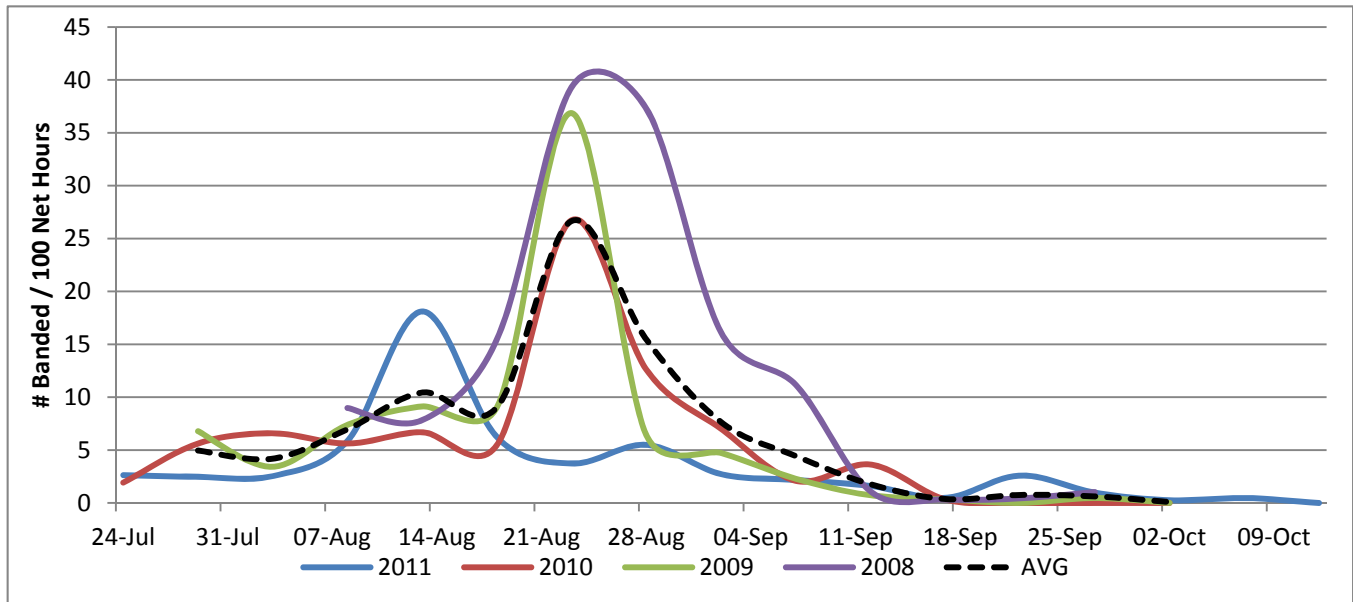


Figure 6. Yellow Warbler migration timing from 2008 to 2011 (using mist netting data).

The following species were not captured in mist nets (or were only captured in small numbers), but were observed in sufficient numbers to analyze the timing of migration using visual migration watch data.

- Greater White-fronted Goose
- Canada Goose
- Trumpeter Swan
- Tundra Swan
- Osprey
- Northern Harrier
- Sharp-shinned Hawk
- Red-tailed Hawk
- Rough-legged Hawk
- Golden Eagle
- American Kestrel
- Merlin
- Peregrine Falcon
- Mountain Bluebird
- American Robin
- Varied Thrush
- American Pipit
- Pine Grosbeak
- Common Redpoll
- Pine Siskin

The full set of migration timing figures (visual migration counts) are shown in Appendix E and an example for Osprey is shown in Figure 7 below. These figures show data grouped over 5 day intervals and standardized to a number of birds observed per 4 hours of watching. Data from 2008 is not shown on these figures due to the relatively low amount of watching effort. To complement the timing curves, the 2011 high count date and number of birds is also shown on each figure.

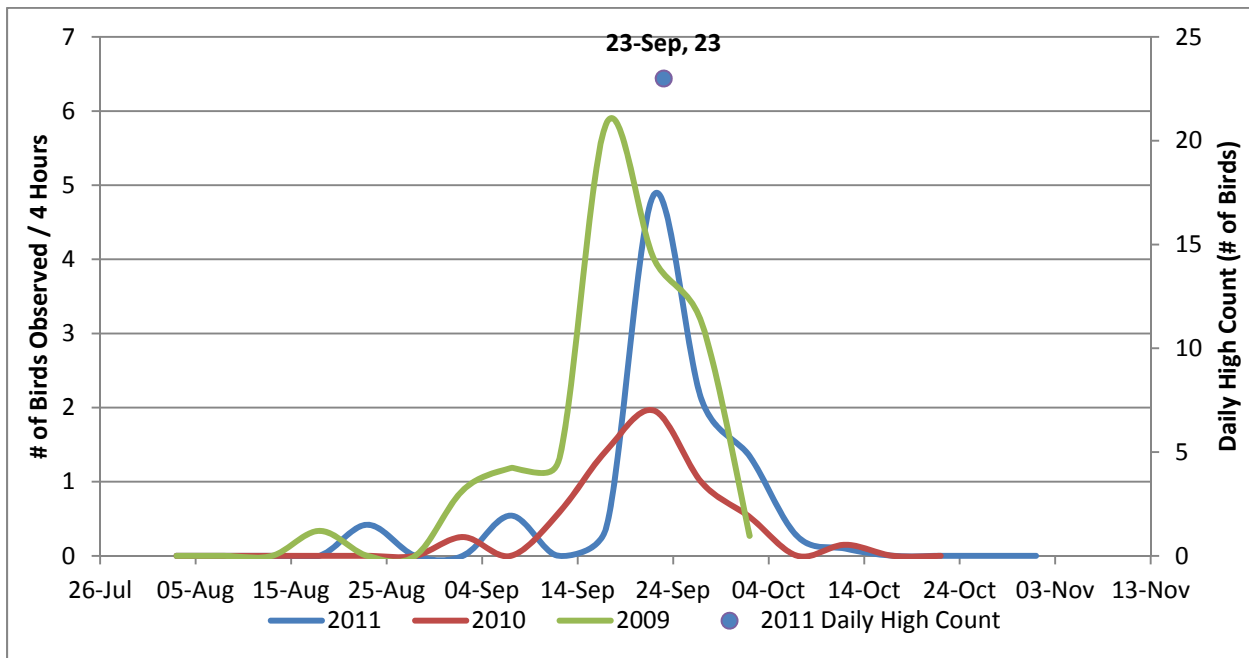


Figure 7. Osprey migration timing from 2009 to 2011 (using visual migration count data).

The following species are not well suited to the mist netting or visual migration watch analysis due to the small numbers captured/observed. However, when all observation methods are combined into the daily species totals, there is a large enough sample size to view the migration trend of these species. Thus we combined daily visual migration watch counts and other observation data to analyze migration timing:

- Northern Pintail
- Lesser Scaup
- Surf Scoter
- Red-throated Loon
- Pacific Loon
- Common Loon
- Horned Grebe
- Red-necked Grebe
- Mew Gull
- Herring Gull
- Thayer’s Gull
- Arctic Tern
- Spotted Sandpiper
- Belted Kingfisher
- Hammond’s Flycatcher
- Warbling Vireo
- Savannah Sparrow

The full set of migration timing figures (daily species totals) are shown in Appendix F and an example for Lesser Scaup is shown in Figure 8 below. These figures show data grouped over five day intervals and represent the average number of individuals seen over the five day period. To compliment the timing curves, the 2008 to 2011 average is also shown for each five day period.

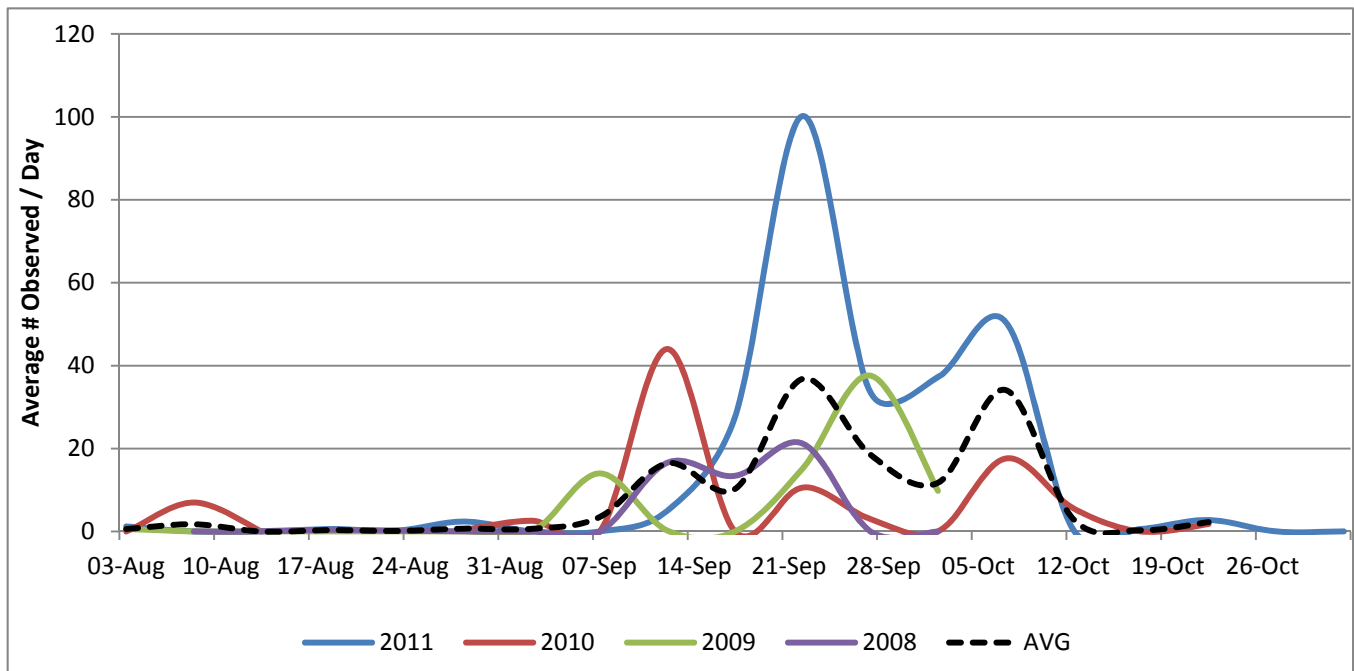


Figure 8. Lesser Scaup migration timing from 2008 to 2011 (using daily species total data).

3.2 Band Repeats, Returns & Recoveries

The proportion of band repeats was relatively low (4.6%) during the 2011 season (Table 5). This is very similar to the recapture rate during the 2010 fall season; 4.7 %. These results indicate that there is a very high turnover of migrants through the study site. 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 5. Summary of band repeats during the fall 2011 season.

Species	# of Individuals Recaptured	% of 2011 Original Bandings	Maximum # of Days From Original Banding	Average # of Days From Original Banding
Spotted Sandpiper	1	50.0	9	-
Belted Kingfisher	3	50.0	5	3
Downy Woodpecker	2	29.6	33	27
Alder Flycatcher	3	0.5	2	1
Hammond's Flycatcher	5	17.9	21	14
Warbling Vireo	2	11.8	11	9
Black-capped Chickadee	9	9.8	62	25
Boreal Chickadee	2	0.9	2	2
Ruby-crowned Kinglet	6	6.9	12	6
Swainson's Thrush	7	8.2	5	11
Hermit Thrush	1	8.3	1	-
Northern Waterthrush	13	31.0	33	10
Common Yellowthroat	5	6.9	8	3
American Redstart	18	45.0	16	6
Yellow Warbler	25	8.1	29	5
Blackpoll Warbler	1	1.8	1	-
Yellow-rumped Warbler	6	4.2	10	4
Wilson's Warbler	3	2.3	13	5
American Tree Sparrow	5	6.5	3	2
Slate-colored Junco	14	4.2	13	50
Oregon Junco	1	-	58	-
Common Redpoll	1	1.3	1	-
ALL SPECIES	133	4.6	-	-

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 2011, the observatory had 18 band returns representing 9 species (Table 6). As Black-capped Chickadee is a year-round resident at the site, the recapture of three individuals banded in 2006 and 2010 is not unexpected. The individual from 2006 has been recaptured annually since the initial banding in April 2006. Of the remaining band returns, the Sharp-shinned Hawk is the only species which is not known to breed within or directly adjacent to the site. This individual likely represents a migrant recovery. For the remaining species, the likelihood of local breeding combined with the relatively early recapture date suggests that these are local breeders. However, the Yellow Warbler recaptured on September 12 likely represents a migrant recapture.

Table 6. Summary of band returns during the fall 2011 season.

Species	Band Number	Banded		Recaptured
		Date	Age – Sex	Date
Sharp-shinned Hawk	1013-51286	1 Sep 2010	HY-M	28 Sep 2011
Warbling Vireo	2610-64908	5 Aug 2010	SY-F	2 Aug 2011
Black-capped Chickadee	2400-70951	26 Apr 2006	AHY-U	31 Jul 2011
Black-capped Chickadee	2610-64751	30 Jul 2010	HY-U	10 Sep 2011
Black-capped Chickadee	2610-65918	22 Aug 2010	HY-U	10 Sep 2011
Swainson's Thrush	2291-28796	25 Jul 2010	AHY-F	10 Aug 2011
American Redstart	2520-59977	17 Aug 2008	SY-M	22 Jul 2011
Northern Waterthrush	2400-70667	2 Jun 2006	AHY-U	16 Jul 2011
Yellow Warbler	2500-70456	10 Aug 2008	HY-U	16 Jul 2011
Yellow Warbler	2580-22148	18 Aug 2008	HY-M	12 Sep 2011
Yellow Warbler	2610-64688	28 Jul 2010	HY-U	25 Jul 2011
Yellow Warbler	2610-64597	26 Jul 2010	AHY-M	26 Jul 2011
Yellow Warbler	2610-64552	16 Jul 2010	AHY-M	26 Jul 2011
Yellow Warbler	2610-65244	14 Aug 2010	AHY-M	28 Jul 2011
Yellow-rumped Warbler	2610-64540	16 Jul 2010	AHY-F	16 Jul 2011
Yellow-rumped Warbler	2610-64823	3 Aug 2010	AHY-F	26 Jul 2011
Dark-eyed Junco	2311-84948	16 Jul 2010	AHY-F	28 Sep 2011

Foreign band recoveries are a very infrequent event; to date the observatory has had three such recoveries and also recovered one bird from another location (Table 7). Most recently, an Alder Flycatcher banded as a hatch year in late August 2009 at TLBO was recaptured at Tacarcuna Nature Reserve near Sapzurro, Choco, Colombia on April 29, 2011 approximately 7,400 km from Teslin Lake.

Table 7. Summary of foreign band recoveries at Teslin Lake Bird Observatory.

Species	Banded		Recovered		
	Location	Date	Location	Date	Status
Yellow Warbler	Texas, USA	May 12, 2008	Teslin Lake	September 9, 2009	Recaptured
Alder Flycatcher	Teslin Lake	August 25, 2008	SW Saskatchewan	June 12, 2009	Found Dead
Sharp-shinned Hawk	Teslin Lake	August 14, 2009	Boise, Idaho, USA	October 9, 2010	Recaptured
Alder Flycatcher	Teslin Lake	August 24, 2009	Sapzurro, Choco, Colombia	April 29, 2011	Recaptured

3.3 Molt Scoring

As supplementary information, data was collected on the stage of molt for a 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. 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. During 2011, a total of 167 molt scores were obtained from 25 species (Table 8). This data is useful to investigate the progress of molt over time as shown by the following figure for Yellow-rumped "Myrtle" Warbler (Figure 9).

Table 8. Summary of molt scores collected during the fall 2011 season.

Species	Number of Individuals Scored	Total Number of Molt Scores
Boreal Owl	1	1
Hammond’s Flycatcher	2	4
Black-capped Chickadee	3	3
Red-breasted Nuthatch	1	1
Ruby-crowned Kinglet	2	2
Gray-cheeked Thrush	1	1
Swainson’s Thrush	5	5
Hermit Thrush	1	1
Northern Waterthrush	3	4
Orange-crowned Warbler	3	3
Common Yellowthroat	3	3
American Redstart	8	9
Yellow Warbler	36	50
Blackpoll Warbler	3	3
Myrtle Warbler	34	38
Audubon’s Warbler	1	1
Wilson’s Warbler	10	10
American Tree Sparrow	1	1
Savannah Sparrow	1	1
Lincoln’s Sparrow	1	1
Slate-colored Junco	16	19
Oregon Junco	1	1
Rusty Blackbird	2	2
Common Redpoll	2	2
Pine Siskin	1	1
TOTAL	142	167

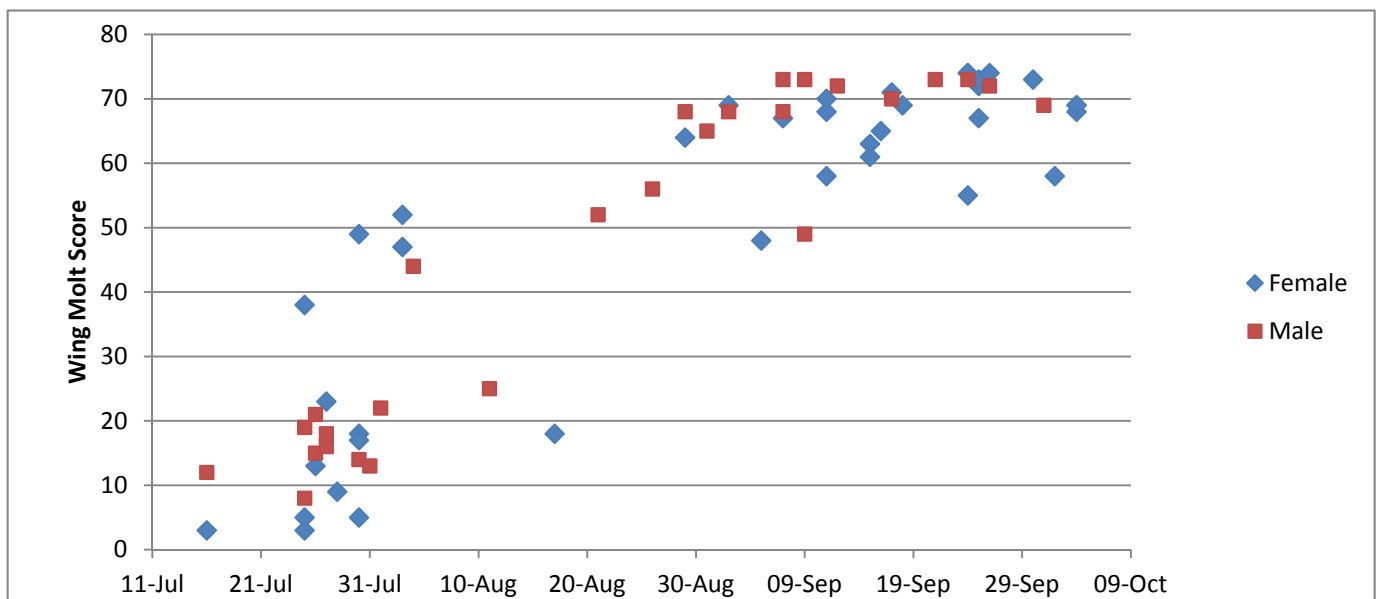


Figure 9. Yellow-rumped “Myrtle” Warbler molt scores over time during the fall of 2010 and 2011 (wing molt shown only; primaries and secondaries only).

3.4 Visual Migration Counts

The visual migration counts provide a means to observe numerous species not typically observed using other methods. The counts are especially useful in observing raptors in migration and also serve as a means for observing waterfowl and waterbirds. Note that birds seen during the migration counts which are not in active migration flight are not included in this section. During the fall 2011 season, visual migration watching (standard & nonstandard) was conducted for 331 hours (Figure 10). The following section summarizes the visual count data by species groups. For species with a sufficient sample, migration windows were assigned for specific species. These windows represent passage of 95% of the migrants observed.

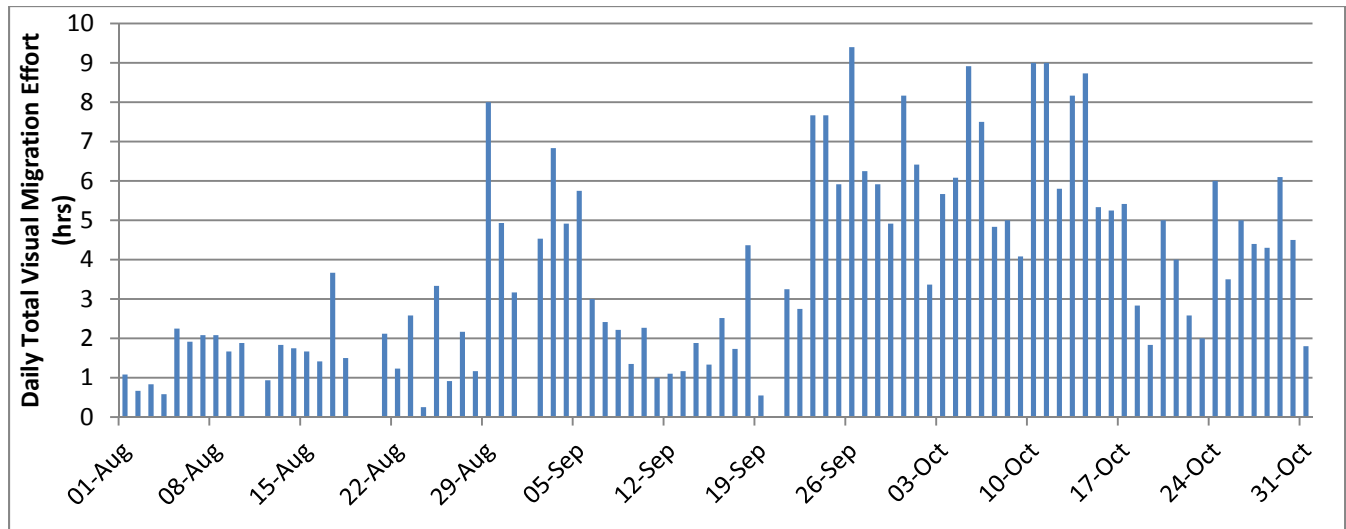


Figure 10. Summary of visual migration watching effort during the fall 2011 season.

3.4.1 Loons & Grebes

A total of 657 loons and grebes were observed during the 2011 visual counts (Table 9). The majority (77%) of these were Pacific Loons. As a group, these species are better suited to being monitored through the lake counts (Section 3.6) or through the daily estimated totals which combine all monitoring methods (visual migration and lake counts).

Table 9. Summary of loons & grebes observed during the 2011 visual migration counts.

Species	Total # Counted			Migration Window			
	Migration Counts	Incidental Migrants	TOTAL	Dates	# Observed	Watch Effort (h)	# Observed / 100 hrs
Red-throated Loon	40	6	46	-	-	-	-
Pacific Loon	502	2	504	-	-	-	-
Common Loon	38	4	42	-	-	-	-
Yellow-billed Loon	3	0	0	-	-	-	-
<i>Unidentified Loon</i>	31	0	31	-	-	-	-
<i>Common / Yellow-billed Loon</i>	4	0	4	-	-	-	-
Red-necked Grebe	8	9	17	-	-	-	-
Horned Grebe	12	1	13	-	-	-	-

3.4.2 Geese, Swans & Ducks

A total of 34,058 individual waterfowl representing 23 species were observed during the 2011 visual counts (Table 10, left). The vast majority of these were swans and geese, 19,470 and 11,400, respectively. Eighty-three percent of the swans identified to species were Tundra Swans and, 64% of the geese were Greater White-fronted Geese. Swans and geese are well suited to being monitored by the visual counts as at the observatory; the vast majority encountered were in active migration flight. In terms of ducks, 3,188 individuals of 17 species were counted. Species observed in the highest numbers included Lesser Scaup, Mallard, American Wigeon and Common Merganser. Mergansers and scaup, were also observed during the lake counts (Section 3.6).

Table 10. Summary of geese, swans & ducks observed during the 2011 visual migration counts.

Species	Total # Counted			Migration Window			
	Migration Counts	Incidental Migrants	TOTAL	Dates	# Observed	Watch Effort (h)	# Observed / 100 hrs
Greater White-fronted Goose	6,508	827	7,335	21 Aug – 3 Sep	5890	41.2	14,296
Snow Goose	151	87	238	-	-	-	-
Canada Goose	1,282	179	1,461	4 Sep – 12 Oct	1,133	175.1	647
<i>Unidentified Goose</i>	2,333	33	2,366	-	-	-	-
Trumpeter Swan	1,330	30	1,360	9 – 18 Oct	1,138	63.6	1,789
Tundra Swan	15,125	977	16,102	3 – 13 Oct	14,084	74.1	19,007
Bewick's Swan	2	0	2	-	-	-	-
<i>Unidentified Swan</i>	1,936	70	2,006	-	-	-	-
American Wigeon	215	50	265	30 Aug – 3 Oct	181	134.4	135
Mallard	571	40	611	31 Aug – 11 Oct	500	161.8	309
Northern Shoveler	13	15	28	-	-	-	-
Northern Pintail	126	48	174	-	-	-	-
American Green-winged Teal	19	7	26	-	-	-	-
Canvasback	44	21	65	-	-	-	-
Ring-necked Duck	7	0	7	-	-	-	-
Greater Scaup	42	0	42	-	-	-	-
Lesser Scaup	1,260	34	1,294	18 Sep – 5 Oct	1,123	97.3	1,154
<i>Unidentified Scaup</i>	70	0	70	-	-	-	-
Surf Scoter	64	38	102	-	-	-	-
White-winged Scoter	32	15	47	-	-	-	-
Long-tailed Duck	13	0	13	-	-	-	-
Bufflehead	14	0	14	-	-	-	-
Common Goldeneye	48	7	55	-	-	-	-
Barrow's Goldeneye	1	0	1	-	-	-	-
<i>Unidentified Goldeneye</i>	51	0	0	-	-	-	-
Common Merganser	195	29	224	6 Sep – 10 Oct	167	149.7	112
Red-breasted Merganser	11	2	13	-	-	-	-
<i>Unidentified Merganser</i>	35	5	40	-	-	-	-
<i>Unidentified Dabbling Duck</i>	0	9	9	-	-	-	-
<i>Unidentified Duck</i>	50	38	88	-	-	-	-

As presented in Table 10, some of the birds counted on the visual migration counts could not be identified to species, particularly geese and swans. To increase the sample size of individuals identified to species, the unidentified individuals were extrapolated to the actual species based on the relative proportion of individuals identified on each day. The results of this analysis are shown in Table 11.

Table 11. Summary of total counts of swans and geese observed on the 2011 migration counts; includes data extrapolations from unidentified geese and swans.

Species	Total # Counted (Migration Counts)	Migration Window			
		Dates	# Observed	Watch Effort	# Observed / 100 hrs
Greater White-fronted Goose	7,381	12 – 29 Aug	7,013	34.5	20,328
Canada Goose	1,682	3 Sep – 12 Oct	1,508	182.0	829
Trumpeter Swan	1,730	9 – 20 Oct	1,552	70.5	2,201
Tundra Swan	16,663	3 – 13 Oct	15,438	74.1	20,834

When possible, the age of visual migrants was also recorded. In the case of swans this is often done readily due to their size and relative ease of determining age. For both species of swans, a substantially higher proportion of adults were observed in relation to juveniles (Table 12). Although a substantial portion remained unspecified; this is due to the distance or the overall number of birds observed did not allow sufficient time for a thorough age determination to be made.

Table 12. Summary of age breakdown of swans observed during 2011 visual migration counts.

Species	Proportion of Individuals Observed (%)		
	Adult	Juvenile	Unspecified
Trumpeter Swan	66	14	20
Tundra Swan	30	4	66

3.4.3 Raptors

As a group, most species of raptors are well monitored by the visual migration counts; in 2011, a total of 3,743 raptors were counted during the 2011 visual counts and as incidental “other visual migrants” (Table 13) representing 12 species. The most numerous species observed was Red-tailed Hawk, followed by Sharp-shinned Hawk, Northern Harrier, Golden Eagle, Rough-legged Hawk and American Kestrel. For most of the diurnal birds of prey, the only individuals observed were visual migrants. For this reason, this form of counting is an effective method for migration monitoring of diurnal birds of prey at the observatory.

Table 13. Summary of diurnal birds of prey observed during the 2011 visual migration counts.

Species	Total # Counted			Migration Window			
	Migration Counts	Incidental Migrants	TOTAL	Dates	# Observed	Watch Effort (h)	# Observed / 100 hrs
Osprey	60	0	60	-	-	-	-
Bald Eagle	75	2	77	-	-	-	-
Northern Harrier	668	19	687	29 Aug – 10 Oct	612	187.8	326
Sharp-shinned Hawk	679	14	694	29 Aug – 13 Oct	644	210.8	306
Northern Goshawk	18	1	19	-	-	-	-
Swainson's Hawk	23	0	23	-	-	-	-
Red-tailed Hawk	1,077	7	1,084	18 Sep – 10 Oct	984	127.7	771
Rough-legged Hawk	331	0	331	27 Sep – 14 Oct	292	117.8	248
<i>Unidentified Buteo</i>	25	1	26	-	-	-	-
Golden Eagle	375	0	375	27 Sep – 21 Oct	328	147.5	222
American Kestrel	239	5	244	29 Aug – 10 Oct	222	187.8	118
Merlin	62	5	67	5 Sep – 10 Oct	52	155.4	33
Peregrine Falcon	16	3	19	-	-	-	-
<i>Unidentified Eagle</i>	8	0	8	-	-	-	-
<i>Unidentified Large Raptor</i>	10	-	10	-	-	-	-
<i>Unidentified Small Raptor</i>	14	-	14	-	-	-	-

For many species of raptors, it is possible to determine the age and sex of visual migrants when viewing conditions are suitable. As shown by Table 16, this information adds a great deal to the data collected by the visual migration counts. If conducted over the long term, such data will be valuable for determining the relative productivity of species encountered in sufficient numbers. Furthermore to the determination of age and sex, it is possible to determine different color morphs and subspecies for some species.

A breakdown of color morph data collected during 2010 and 2011 is shown in Table 14 and Table 15 for Rough-legged and Red-tailed hawks, respectively. For Rough-legged Hawk, over 70% of the birds observed were classified as light morph birds. For Red-tailed Hawk, Harlan's dark morph was by far the most common with Harlan's light morph being the second most common. The observation of 2 possible western and 1 possible eastern red-tail are very significant as there are no well-documented sightings of these forms in the Yukon. However, due to the distance of which they were observed, photographs (and confirmation by other individuals) could not be obtained.

Table 14. Summary of color morph data for Rough-legged Hawks observed during the 2010 and 2011 visual migration counts.

Species	Year	Dark Morph (%)	Light Morph (%)	Not Determined (%)
Rough-legged Hawk	2010	19.8	71.4	8.9
Rough-legged Hawk	2011	12.4	79.5	8.2

Table 15. Summary of color morph data for Red-tailed Hawks observed during the 2010 and 2011 visual migration counts.

Species	Year	Harlan's Dark Morph	Harlan's Light Morph	"Possible" Western Dark Morph	"Possible" Western Light Morph	"Possible" Eastern	Not Determined
Red-tailed Hawk	2010	83.1	3.8	0.5 (2 birds)		-	12.6
Red-tailed Hawk	2011	90.5	4.4	0.1 (1 bird)	0.1 (1 bird)	0.2 (2 birds)	4.7

Age and sex determinations for raptors observed during 2010 and 2011 are shown in Table 16. Over the long term, this form of data will be used to complement the species trend analysis to investigate patterns in productivity of various raptor species.

Table 16. Age and sex determinations for raptors observed during the 2010 and 2011 visual counts.

Species	Year	Proportion of Individuals Counted (%)							
		Adult			Sub - adult	Immature	Juvenile	Female Plumaged (juv/female)	Not Determined
		Male	Female	Not Determined					
Bald Eagle	2010	-	-	40.2	30.5	11.0	13.4		4.9
	2011	-	-	14.5	36.8	32.9	14.5	-	1.3
Golden Eagle	2010	-	-	56.4	10.4	6.9	9.0	-	17.3
	2011	-	-	35.7	12.8	12.3	7.5	-	31.7
Northern Goshawk	2010	-	-	12.5	-	-	43.8	-	43.8
	2011	-	-	27.8	-	-	44.4	-	27.8
Northern Harrier	2010	10.9	11.7	-	-	-	35.7	37.8	3.9
	2011	8.4	10.1	-	-	-	24.9	50.7	5.9
Osprey	2010	4.8	14.3	-	-	-	4.8	-	76.2
	2011	5.0	-	-	-	-	1.7	-	93.3
Peregrine Falcon	2010	-	-	44.0	-	12.0	16.0	-	28.0
	2011	25.0	12.5	12.5	-	-	6.3	-	43.8
Rough-legged Hawk	2010	17.2	10.4	5.2	-	-	12.5	-	54.7
	2011	17.5	23.0	13.0	-	-	9.4	-	37.2

3.4.4 Plovers, Sandpipers & Allies

As a group, shorebirds are not well monitored at the observatory due to the relatively low numbers of individuals observed (Table 17); in 2011, a total of 191 shorebirds of 11 species were observed. The visual migration counts are not a suitable method for collecting data for species trend analysis; however, this information can continue to be collected incidentally when counting other species (raptors, waterfowl, etc). However, Spotted and Solitary sandpiper may be able to have trend analysis completed on the basis of the daily species total data.

Table 17. Summary of shorebirds observed during the 2011 visual migration counts.

Species	Total # Counted			Migration Window			
	Migration Counts	Incidental Migrants	TOTAL	Dates	# Observed	Watch Effort (h)	# Observed / 100 hrs
Black-bellied Plover	1	0	1	-	-	-	-
Semi-palmated Plover	7	11	18	-	-	-	-
Lesser Yellowlegs	0	5	5	-	-	-	-
Solitary Sandpiper	1	1	2	-	-	-	-
Spotted Sandpiper	4	26	30	-	-	-	-
Semi-palmated Sandpiper	1	30	31	-	-	-	-
Least Sandpiper	0	8	8	-	-	-	-
Pectoral Sandpiper	30	1	31	-	-	-	-
Long-billed Dowitcher	5	0	5	-	-	-	-
Wilson's Snipe	3	0	3	-	-	-	-
Red-necked Phalarope	0	9	9	-	-	-	-
<i>Unidentified Peep</i>	3	17	20	-	-	-	-
<i>Unidentified Shorebird</i>	15	13	28	-	-	-	-

3.4.5 Cranes

In 2011, a total of 123 Sandhill Cranes were observed; this is substantially lower than the numbers observed in previous years. For example, 2,264 individuals were counted in 2010. In years when high numbers are observed, the vast majority are typically observed in a single day.

Table 18. Summary of cranes observed during the 2011 visual migration counts.

Species	Total # Counted			Migration Window			
	Migration Counts	Incidental Migrants	TOTAL	Dates	# Observed	Watch Effort (h)	# Observed / 100 hrs
Sandhill Crane	123	0	123	-	-	-	-

3.4.6 Jaegers, Gulls & Terns

A total of 325 jaegers, gulls and terns representing 9 species were counted during the 2011 visual migration counts (Table 19). Arctic Tern and Thayer's Gull are observed in sufficient numbers to investigate species trends over the long term; however, the other gull species are better monitored through the use of the lake count data. Herring Gull was the most numerous gull encountered overall but due to the large number of locally nesting and foraging birds it was very difficult to differentiate between them and birds in migration flight.

Table 19. Summary of jaegers, gulls and terns observed during the 2011 visual migration counts.

Species	Total # Counted			Migration Window			
	Migration Counts	Incidental Migrants	TOTAL	Dates	# Observed	Watch Effort (h)	# Observed / 100 hrs
Parasitic Jaeger	3	3	6	-	-	-	-
Little Gull	1	0	1	-	-	-	-
Bonaparte's Gull	10	2	12	-	-	-	-
Mew Gull	15	8	23	-	-	-	-
Herring Gull	28	15	43	-	-	-	-
Thayer's Gull	110	13	123	10 Sep – 2 Oct	105	89.6	85
Glaucous Gull	1	0	1	-	-	-	-
Sabine's Gull	1	1	2	-	-	-	-
Arctic Tern	59	42	101	4 – 18 Aug	53	25.2	210
Hybrid Gull (HERG x GLGU)	1	0	1	-	-	-	-
<i>Unidentified Large Gull</i>	12	0	12	-	-	-	-

3.4.7 Owls

Owls seen during the 2010 visual counts were limited to three Northern Hawk Owls (Table 20).

Table 20. Summary of owls observed during the 2011 visual migration counts.

Species	Migration Counts	Incidental Migrants	TOTAL	Dates	# Observed	Watch Effort (h)	# Observed / 100 hrs
Northern Hawk-Owl	3	0	3	-	-	-	-

3.4.8 Nighthawks & Swifts

Nighthawks and swifts seen during the 2011 visual counts were limited to two Common Nighthawks.

Table 21. Summary of nighthawks observed during the 2011 visual migration counts.

Species	Migration Counts	Incidental Migrants	TOTAL	Dates	# Observed	Watch Effort (h)	# Observed / 100 hrs
Common Nighthawk	2	0	2	-	-	-	-

3.4.9 Woodpeckers

With the exception of Yellow-bellied Sapsucker and Northern Flicker which are true migrants, woodpeckers in the Yukon can be considered irruptive migrants. During the 2010 visual counts, 50

woodpeckers of 7 species were counted (Table 22). The majority of individuals seen were Three-toed Woodpeckers indicating that there was some irruptive migration of this species during the fall of 2011.

Table 22. Summary of woodpeckers observed during the 2011 visual migration counts.

Species	Total # Counted			Migration Window			
	Migration Counts	Incidental Migrants	TOTAL	Dates	# Observed	Watch Effort (h)	# Observed / 100 hrs
Belted Kingfisher	2	0	2	-	-	-	-
Yellow-bellied Sapsucker	0	1	1	-	-	-	-
Downy Woodpecker	2	0	2	-	-	-	-
Hairy Woodpecker	3	0	3	-	-	-	-
Three-toed Woodpecker	17	3	20	-	-	-	-
Black-backed Woodpecker	1	0	1	-	-	-	-
Northern Flicker	2	0	2	-	-	-	-
<i>Unidentified Woodpecker</i>	18	1	19	-	-	-	-

3.4.10 Passerines

A wide variety of passerines (39,245 individuals of 40 species) were counted during the 2011 visual migration counts (Table 23). A very large proportion (88%) of the passerines observed were large thrush (American Robin, Varied Thrush, unidentified), small finches (redpolls, Pine Siskin, unidentified) 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, Pine Siskins and Common Redpolls.

Where possible, unidentified birds of similar species such as large thrush or small finches can be separated into actual species based upon the daily observed ratio on the same or adjacent days. The results of these data extrapolations is shown in Table 24; note that these data can be used to increase the sample size of known species to facilitate long term species trend analysis.

For most passerines, standard mist netting/banding is likely to provide more suitable migration monitoring data and those observed on the migration counts simply add to the daily species total data. However, for species which migrate diurnally, are not captured in sufficient numbers by mist nets, and can be identified with relative ease when in flight, the migration count data likely provides the most reliable data. These include species such as Bank Swallow, Townsend's Solitaire, Mountain Bluebird, American Robin, Varied Thrush, American Pipit, Bohemian Waxwing, Rusty Blackbird, Pine Grosbeak, Common Redpoll, Pine Siskin and in some years, White-winged Crossbill.

Table 23. Summary of passerines observed during the 2010 visual migration counts.

Species	Total # Counted			Migration Window			
	Migration Counts	Incidental Migrants	TOTAL	Dates	# Observed	Watch Effort (h)	# Observed / 100 hrs
Olive-sided Flycatcher	4	3	7	-	-	-	-
Western Wood-Pewee	2	1	3	-	-	-	-
<i>Contopus Flycatcher</i>	4	7	11	-	-	-	-
Say's Phoebe	7	9	16	-	-	-	-
Alder Flycatcher	1	0	1	-	-	-	-
Northern Shrike	4	0	4	-	-	-	-
Black-billed Magpie	5	0	5	-	-	-	-
Tree Swallow	2	2	4	-	-	-	-
Violet-green Swallow	3	2	5	-	-	-	-
Bank Swallow	360	72	432	1 – 21 Aug	341	29.9	1,140
Cliff Swallow	69	0	69	-	-	-	-
Barn Swallow	17	7	24	-	-	-	-
<i>Unidentified Swallow</i>	638	135	773	-	-	-	-
Black-capped Chickadee	0	2	0	-	-	-	-
Boreal Chickadee	90	54	144	-	-	-	-
Mountain Bluebird	89	0	89	-	-	-	-
Townsend's Solitaire	44	1	45	-	-	-	-
Hermit Thrush	0	1	0	-	-	-	-
American Robin	6,395	130	6,525	5 Sep – 10 Oct	5,796	155.4	3,730
Varied Thrush	830	1	831	4 – 26 Sep	770	74.2	1,038
<i>Unidentified Large Thrush</i>	4,965	59	5,024	-	-	-	-
American Pipit	266	68	334	23 Aug – 6 Oct	246	175.3	140
Bohemian Waxwing	679	15	694	29 Aug – 27 Oct	627	272.7	230
<i>Unidentified Waxwing</i>	42	0	42	-	-	-	-
Yellow Warbler	18	13	31	-	-	-	-
Northern Waterthrush	1	1	2	-	-	-	-
Blackpoll Warbler	17	11	28	-	-	-	-
Yellow-rumped Warbler	185	55	240	-	-	-	-
Townsend's Warbler	0	1	0	-	-	-	-
Wilson's Warbler	1	0	1	-	-	-	-
<i>Unidentified Warbler</i>	41	52	93	-	-	-	-
Lapland Longspur	87	13	100	-	-	-	-
American Tree Sparrow	39	1	40	-	-	-	-
Chipping Sparrow	6	7	13	-	-	-	-
Savannah Sparrow	19	9	28	-	-	-	-
Dark-eyed Junco	262	13	275	-	-	-	-
Snow Bunting	50	0	50	-	-	-	-
<i>Unidentified Sparrow</i>	31	2	33	-	-	-	-
Red-winged Blackbird	4	0	4	-	-	-	-
Rusty Blackbird	489	28	517	10 Sep – 11 Oct	446	149.7	2,979
<i>Unidentified Blackbird</i>	1	0	1	-	-	-	-
Pine Grosbeak	653	3	656	30 Sep – 30 Oct	616	168.8	365
Purple Finch	0	1	1	-	-	-	-
Red Crossbill	0	5	5	-	-	-	-
White-winged Crossbill	33	16	49	-	-	-	-
Common Redpoll	6,762	75	6,837	7 – 17 Oct	6,241	70.6	8,840
Pine Siskin	1,379	360	1,739	22 Aug – 6 Sep	1,170	52.8	2,216
<i>Unidentified Small Finch</i>	7,086	3	7,089	-	-	-	-
<i>Unidentified Small Passerine</i>	6,219	212	6,331	-	-	-	-

Table 24. Summary of passerines observed on the 2011 migration counts; includes data extrapolations from unidentified passerines.

Species	Total # Counted (Migration Counts)	Migration Window			
		Dates	# Observed	Watch Effort	# Observed / 100 hrs
American Robin	10,144	4 Sep – 10 Oct	9,641	160.3	6,014
Varied Thrush	1,360	2 – 27 Sep	1,298	91.8	1,414
Common Redpoll	13,148	3 – 16 Oct	12,465	93.4	13,345
Pine Siskin	2,055	16 Aug – 18 Sep	1,924	84.8	2,269

3.5 Lake Counts

The lake counts provide monitoring data for various species of loons, grebes, waterfowl and jaegers/gulls/terns. With the exception of Pacific Loon, relatively few loons and grebes were observed during the visual migration counts. The opposite was true for the lake counts which recorded these species in relatively high numbers. Red-necked Grebe in particular was observed in high numbers with over 1,100 bird days counted for this species (Table 25).

Table 25. Summary of loons and grebes observed during the 2011 lake counts (does not include birds in migration flight).

Species	Total # of Bird Days	Migration Window	
		Dates	# of Bird Days
Red-throated Loon	117	6 Aug – 10 Oct	108
Pacific Loon	252	7 Aug – 27 Sep	237
Common Loon	292	26 Jul – 10 Oct	273
Yellow-billed Loon	3	-	-
<i>Unidentified Loon</i>	19	-	-
Horned Grebe	145	13 Aug – 19 Oct	134
Red-necked Grebe	1,146	2 Aug – 7 Oct	1,077
Western Grebe	1	-	-

Geese and swans were observed in very low numbers during the lake counts; these species are typically observed flying over the site only (*ie*, are visual migrants). However, for some duck species (scoters and mergansers), the lake counts recorded higher numbers than the visual migration counts (Table 26). Only small numbers of dabbling ducks were seen mostly due to scarcity of suitable habitat at the observatory. Species such as goldeneyes, Bufflehead and Long-tailed Duck were observed in low to moderate numbers (unlikely enough to facilitate species trend analysis in the future).

Table 26. Summary of ducks, geese and swans observed during the 2011 lake counts.

Species	Total # of Bird Days	Migration Window	
		Dates	# of Bird Days
Greater White-fronted Goose	17	-	-
Canada Goose	118	-	-
Trumpeter Swan	21	-	-
<i>Unidentified Swan</i>	30	-	-
American Wigeon	3	-	-
Mallard	90	-	-
American Green-winged Teal	1	-	-
Lesser Scaup	16	-	-
<i>Unidentified Scaup</i>	11	-	-
Harlequin Duck	1	-	-
Surf Scoter	258	1 Aug – 27 Sep	245
White-winged Scoter	1	-	-
Long-tailed Duck	62	-	-
Bufflehead	30	-	-
Common Goldeneye	57	-	-
Common Merganser	227	16 Aug – 25 Oct	211
Red-breasted Merganser	84	-	-
<i>Unidentified Duck</i>	76	-	-
<i>Unidentified Dabbling Duck</i>	30	-	-

As a group, jaegers, gulls and terns are well monitored through the use of the lake counts as these species are typically counted in the highest numbers using this method. Herring Gull in particular was observed in high numbers during 2010 with over 2,952 bird days counted (Table 27). It is important to note that a gull feeder (cereal and food scraps) was established at the site during the last week of September and was used until the end of the season (October 31). The purpose of this feeder was to attract gulls towards the site to allow for a positive identification and photo documentation of rare gull species. As this feeder likely influenced the number of gulls at the site during this time, this count data will be considered non-standard and will be included separately during future trend analysis for these species. Refer to Section 3.7 for additional information on rare gull sightings.

Table 27. Summary of gulls, terns and jaegers observed during the 2011 lake counts.

Species	Total # of Bird Days	Migration Window	
		Dates	# of Bird Days
Parasitic Jaeger	6	-	-
Little Gull	12	-	-
Bonaparte's Gull	10	-	-
Mew Gull	204	29 Jul – 18 Oct	192
Herring Gull	2,952	24 Jul – 20 Oct	2,749
Thayer's Gull	4	-	-
Glaucous Gull	15	-	-
Sabine's Gull	6	-	-
Arctic Tern	60	23 Jul – 26 Aug	55
Hybrid Gull HERG x GWGU/GLGU	26	-	-
<i>Unidentified Large Gull</i>	5	-	-

3.6 Waterfowl / Waterbird Counts at Other Locations

To compliment the monitoring activities at the observatory, waterfowl counts were done on a trial basis at a number of potential monitoring sites in the Southern Lakes Region. The goal of these counts is to investigate the possibility of monitoring bird species (primarily waterfowl and waterbirds) which may be under represented by the monitoring activities at the observatory. In total, 52 counts were completed at 6 locations Table 28.

Table 28. Summary of waterfowl / waterbird counts completed in the Southern Lakes region during the fall of 2011.

Count Name	Times Surveyed	Dates Surveyed
Johnson's Crossing/Teslin Lake outlet	15	4, 12, 17 August; 2, 10, 15, 18, 26, 30 September; 4, 8, 12, 17, 19, 26 October
Little Atlin Lake – Boat Launch	3	20 September; 9, 19 October
Marsh Lake – Judas Creek Marina	9	7, 17, 22 August; 13, 15, 20, 27 September; 2, 19 October
Marsh Lake – North Lookout	2	7, 17 August
Squanga Lake – Highway	18	4, 12, 17, 22, 28 August; 2, 10, 15, 18, 20, 27, 30 September; 4, 8, 12, 17, 19, 26 October
Teslin – Nisutlin Bay	5	2, 31 August; 4 September, 7, 19 October

The stationary counts tallied over 12,000 birds of 78 species including over 11,600 waterfowl, loons and grebes as summarized in Table 29 and Appendix G. The highest number of birds observed were located at Johnson's Crossing where both dabbling and diving ducks were observed in moderate numbers. The counts conducted at Marsh Lake-Judas Creek Marina were also positive, particularly for Red-necked Grebes which accounted for nearly 70% of the birds counted at this location. The count of 477 individuals on August 17th is likely one of the highest single location counts in the Yukon to date. The counts conducted at Squanga Lake also observed reasonable numbers for diving ducks, particularly Bufflehead and goldeneyes.

Overall, the number of dabbling ducks observed was substantially lower than observed in 2010, particularly at Johnson's Crossing and Nisutlin Bay. This is likely due to abnormally high water levels in Teslin Lake during the fall which decreased the area of shallow water/mudflats favored by dabbling ducks. Surveys of the same frequency in the future should yield higher counts.

Table 29. Summary of waterfowl, loons and grebes counted during the fall 2011 waterfowl / waterbird counts.

Species	Johnson's Crossing / Teslin Lake outlet	Little Atlin Lake – Boat Launch	Marsh Lake – Judas Creek Marina	Marsh Lake – North Lookout	Squanga Lake	Teslin – Nisutlin Bay	TOTAL
Red-throated Loon			1		3		4
Pacific Loon			3		2		5
Common Loon	60	117	117	3	85	23	405
Yellow-billed Loon	1						1
Horned Grebe	62	107	71	18	75		333
Red-necked Grebe	37	56	1,360	108	32		1,593
Greater White-fronted Goose	74						74
Snow Goose	1						1

Table 29 (cont). Summary of waterfowl, loons and grebes counted during the fall 2011 waterfowl / waterbird counts.

Species	Johnson's Crossing / Teslin Lake outlet	Little Atlin Lake – Boat Launch	Marsh Lake – Judas Creek Marina	Marsh Lake – North Lookout	Squanga Lake	Teslin – Nisutlin Bay	TOTAL
Canada Goose	134	58	10	9			211
Trumpeter Swan	374	3			10		387
Tundra Swan	194		1		65	2	262
<i>Unidentified Swan</i>	208	45			4		257
American Wigeon	130				24		154
Mallard	1,166	30			17	34	1,247
Northern Shoveler	35				3		38
Northern Pintail	27				2	2	31
American Green-winged Teal	44				11		55
<i>Unidentified Dabbling Duck</i>	366	30					396
Canvasback					3		3
Ring-necked Duck	332		1		19	1	353
Greater Scaup	8				8	2	18
Lesser Scaup	192		15		57	2	266
<i>Unidentified Scaup</i>	497		1		134		632
Surf Scoter	39		217	4	109	4	373
White-winged Scoter	3	2	5		35		45
Bufflehead	901	110	34		768	65	1,878
Common Goldeneye	693	70	45		227	38	1,073
Barrow's Goldeneye	1		3		1		5
<i>Unidentified Goldeneye</i>	265	15	1		100		381
Common Merganser	86	1	4		12	3	106
Red-breasted Merganser	25	28	37				90
Hooded Merganser	2						2
<i>Unidentified Merganser</i>			8				8
<i>Unidentified Diving Duck</i>	833	20			60		913
Total Species	25	11	16	5	22	11	28
Total Individuals	6,790	692	1,934	142	1,866	176	11,600

Using the bird observation data, extrapolations were done to estimate bird numbers each day between counts, and these were combined to estimate the total number of bird-days at each area for species observed in sufficient numbers. The extrapolation data allows for a measure of overall bird use for the locations surveyed and to determine the practicality of these methods for the purposes of long term trend monitoring. A summary of the data extrapolations are shown for Squanga Lake, Marsh Lake-Judas Creek Marina and Johnson's Crossing/Teslin Lake outlet in Table 30, Table 31 and Table 32. The complete set of data extrapolation figures are shown in Appendix H and an example for dabbling ducks at Johnson's Crossing/Teslin Lake outlet is shown in Figure 11.

Table 30. Total bird days for selected species at Squanga Lake during the fall 2011 season.

Species	Date Range	Bird Days		
		# Observed	# Extrapolated	TOTAL (observed & extrapolated)
Common Loon	4 Aug – 26 Oct	85	323	408
Horned Grebe	4 Aug – 26 Oct	75	293	368
Lesser / Greater Scaup	4 Aug – 26 Oct	199	640	839
Surf Scoter	4 Aug – 26 Oct	119	483	611
Bufflehead	4 Aug – 26 Oct	768	2,342	3,110
Common / Barrow's Goldeneye	4 Aug – 26 Oct	328	1,024	1,352
<i>Diving Duck</i> ¹	4 Aug – 26 Oct	560	1,890	2,408

¹ Includes the following species; Common Goldeneye, Barrow's Goldeneye, Lesser Scaup, Greater Scaup, Ring-necked Duck, Canvasback.

Table 31. Total bird days for selected species at Marsh Lake-Judas Creek Marina during the fall 2011 season.

Species	Date Range	Bird Days		
		# Observed	# Extrapolated	TOTAL (observed & extrapolated)
Common Loon	7 Aug – 19 Oct	112	877	989
Horned Grebe	7 Aug – 19 Oct	71	512	583
Red-necked Grebe	7 Aug – 19 Oct	1,360	9,384	10,744
Surf Scoter	7 Aug – 19 Oct	217	672	889

Table 32. Total bird days for selected species at Johnson's Crossing/Teslin Lake outlet during the fall 2011 season.

Species	Date Range	Bird Days		
		# Observed	# Extrapolated	TOTAL (observed & extrapolated)
Canada Goose	4 Aug – 26 Oct	134	679	813
Trumpeter / Tundra Swan	4 Aug – 26 Oct	696	2,074	2,511
American Wigeon	4 Aug – 26 Oct	130	843	873
Mallard	4 Aug – 26 Oct	1,166	4,645	5,811
<i>Dabbling Duck</i> ¹	4 Aug – 26 Oct	1,768	8,888	10,656
Ring-necked Duck	4 Aug – 26 Oct	332	1,063	1,395
Lesser / Greater Scaup	4 Aug – 26 Oct	697	2,432	3,129
Bufflehead	4 Aug – 26 Oct	901	2,741	3,642
Common / Barrow's Goldeneye	4 Aug – 26 Oct	961	3,383	4,344
<i>Diving Duck</i> ²	4 Aug – 26 Oct	2,839	9,831	12,671
Common/ Red-breasted Merganser	4 Aug – 26 Oct	111	946	1,057

¹ Includes the following species; Mallard, American Wigeon, American Green-winged Teal, Northern Pintail, Northern Shoveler, Unidentified Dabbling Duck.

² Includes the following species; Common Goldeneye, Barrow's Goldeneye, Lesser Scaup, Greater Scaup, Ring-necked Duck, Canvasback, Unidentified Diving Duck

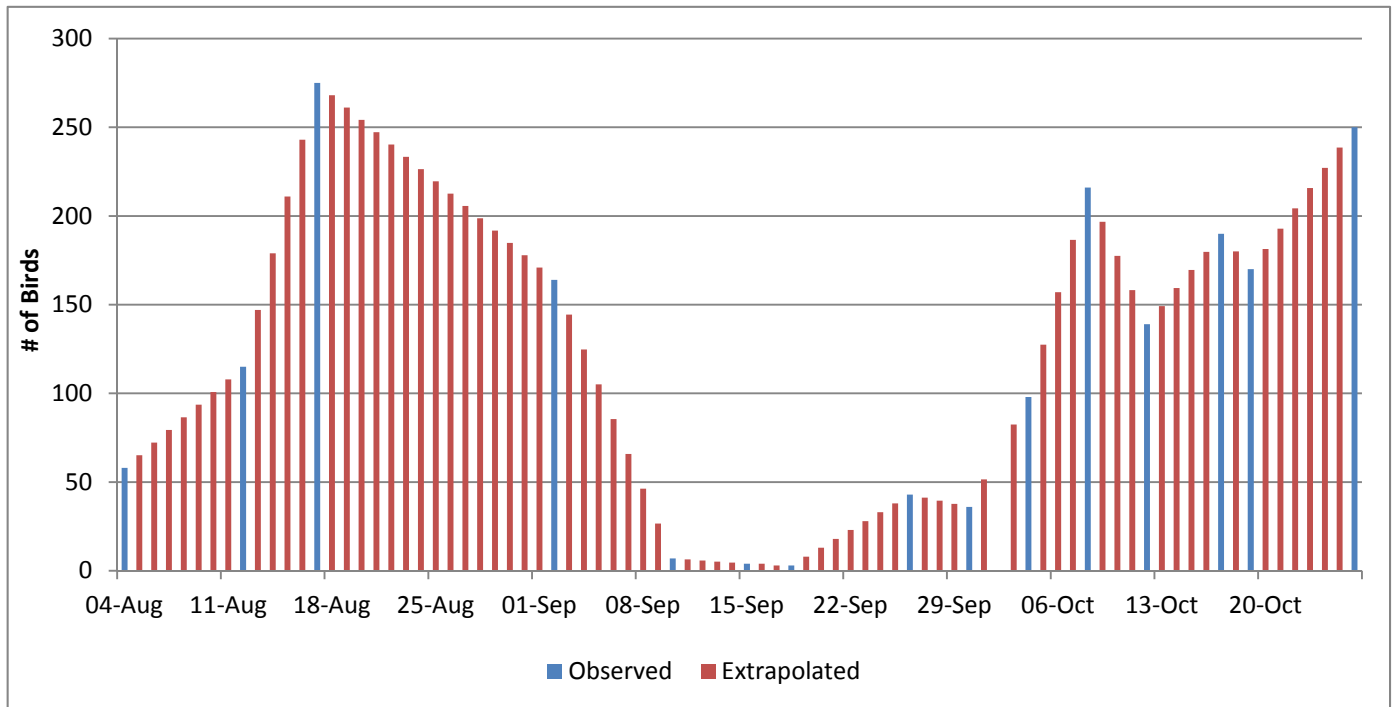


Figure 11. Data extrapolation figure for dabbling ducks at Johnson's Crossing/Teslin Lake outlet from August 4th to October 26th, 2011.

3.7 Interesting & Notable Captures / Observations

The vast majority of birds banded and observed at Teslin Lake in 2010 were species which are common and widespread north and west of the study site. For these species, the observatory continues to collect baseline data on species distribution and migration timing. These common species will be the primary focus of the long term species trend analysis to be conducted falling 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. As the observatory operates on a daily basis throughout the fall migration season, there are often a number of interesting and notable species observed and/or captured in the mist nets. The following section summarizes a number of interesting and/or notable captures and sightings from the 2011 fall season.

Yellow-billed Loon (*Gavia adamsii*)

This species is a rare fall migrant through the southern Yukon during October and November. This species was observed for the first time at the site in 2010 and included 3 separate individuals. Sightings of this species in 2011 included the following; 4 on October 11, 1 on October 12 and 1 on October 13. Also of interest, an additional 4 probable Yellow-billed Loons were observed from October 14 to 16.

Western Grebe (*Aechmophorus occidentalis*)

A new species for the observatory in 2011, a single Western Grebe was observed on October 12. This species is considered casual in the southern Yukon where it is most frequently seen during the fall on large lakes. Interestingly, there is one previous well documented record (specimen) from Teslin Lake.



Photo 1. Western Grebe observed on October 12, 2011. (Photo: Jukka Jantunen).

Bewick's Swan (*Cygnus columbianus bewickii*)

The Bewick's Swan is the Eurasian subspecies of Tundra Swan. Aside from the observatory, this subspecies has been seen two times previously in the southern Yukon at locations often associated with high numbers of Tundra and Trumpeter swans (Johnson's Crossing, McClintock Bay). On October 17, 2010 a single adult was observed flying over Teslin Lake within a flock of Tundra Swans. In addition, a probable individual was observed once again with Tundra Swans on October 12. In 2011, single individuals were observed with flocks of Tundra Swans on October 5 and 8.

Hooded Merganser (*Lophodytes cucullatus*)

This species has been observed at the observatory on 2 occasions, August 28, 2009 and September 24, 2010 with both records being single flyby individuals. In 2011, a single individual (adult male) was observed at Johnson's Crossing on October 17 and 19. This species is typically observed annually in small numbers in the southern Yukon, much more often in spring than fall.

Swainson's Hawk (*Buteo swainsoni*)

Prior to the initiation of visual migration counts at the observatory in 2008, fall records of this species in the Yukon were very sparse. Since then, the species has occurred at the observatory annually in low numbers. Three individuals were counted during visual counts in 2008, 17 in 2009, and 10 in 2010. This species appears to be a relatively early migrant as only one sighting (September 24, 2008) has been made after September 5. Interestingly, 44 of 53 individuals counted to date have been seen from

August 29 to September 5. Observations during 2011 included the following; 21 on August 29, 1 on September 4 and 1 on September 5.

Black-bellied Plover (*Pluvialis squatarola*)

Recorded for the first time at the observatory in 2011, single individuals were observed on October 1 (a juvenile on the lake shore) and October 2 (visual migrant). This species is seen annually in fall in low numbers in the southern Yukon. Nearby to the observatory, there are numerous records from the Nisutlin River Delta.

American Golden-Plover (*Pluvialis dominica*)

A rare sighting at the observatory, the first record of this species occurred as a visual migrant on August 30, 2010. During 2011, a single juvenile was observed and photographed on the lake shoreline on August 4.



Photo 2. American Golden-Plover observed on August 4, 2011 (Photo: Jukka Jantunen).

Sanderling (*Calidris alba*)

Sanderling is a rare fall migrant at the observatory; previous records have included 3 in 2008, 4 in 2009, and 1 in 2010. In 2011, a total of 4 individuals were observed; 1 on August 31, 1 on September 2 and 2 on September 9. To date, the earliest and latest records are August 13 and September 9, respectively with a median date of August 31.



Photo 3. Sanderling observed on August 31, 2011 (Photo: Jukka Jantunen).

Western Sandpiper (*Calidris mauri*)

The first record of this species at the observatory was a single juvenile was observed and photographed on the lakeshore on August 26. This species is rare but annual in small numbers in the southern Yukon. Similar to many other shorebirds, this species has been seen on a number of occasions at the nearby Nisutlin River Delta.



Photo 4. Western Sandpiper observed on August 26, 2011 (Photo: Jukka Jantunen).

Parasitic Jaeger (*Stercorarius parasiticus*)

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. A summary of sightings of this species at the observatory is shown in Table 33. To date, the majority of individuals observed have been light morph adults; however, a small number of dark morph birds have also been seen.

Table 33. Summary of Parasitic Jaeger observations from 2008 to 2011.

Year*	# of Days	# of Bird Days	High Count	Early Date	Late Date	Median Date
2008	28	72	8 – 6 Sep	7 Aug	24 Sep	8 Sep
2009	11	16	3 – 30 Aug	24 Aug	25 Sep	31 Aug
2010	20	37	3 – 7/25 Sep	1 Sep	15 Oct	25 Sep
2011	9	12	3 – 7 Sep	2 Sep	11 Oct	7 Sep

*Note the observatory did not operate to the same dates in each year. Year end dates as follows; 2008 – 27 Sep, 2009 – 4 Oct, 2010 – 24 Oct, 2011 – 31 Oct.



Photo 5. Light morph adult Parasitic Jaeger observed on September 7, 2011 (Photo: Jukka Jantunen).

Little Gull (*Hydrocoloeus minutus*)

The observatory's first Little Gull was a juvenile observed on October 15 and 16, 2010. This species is very rare in the Yukon and is not seen annually. Interestingly, the 2010 bird was not only the first record of a juvenile but also a first fall record of the species in the Yukon. In 2011, this species was observed on the following occasions; 1 juvenile in apparent migration flight on September 24 and 1 juvenile on Teslin Lake daily from October 1 to 9. It is likely, or at least possible that all of the 2011 sightings refer to the same individual bird.



Photo 6. Juvenile Little Gull observed on October 1, 2011 (Photo: Jukka Jantunen).

Thayer's Gull (*Larus thayeri*)

Thayer's Gull is an arctic nesting species seen in the southern Yukon only during migration (most often the fall). This species has been observed annually at the observatory; a summary of these observations is presented in Table 34.

Table 34. Summary of Thayer's Gull observations from 2008 to 2011.

Year	# of Days Recorded	# of Bird Days	First Date Recorded	Last Date Recorded	High Count		Median Date
					#	Date	
2008	2	2	17 Sep	20 Sep	-	-	-
2009	24	103	29 Aug	4 Oct	14	13 Sep	13 Sep
2010	32	261	29 Aug	21 Oct	45	10 Sep	23 Sep
2011	19	127	21 Aug	12 Oct	25	21 Sep	21 Sep



Photo 7. Adult Thayer's Gull observed on September 16, 2011 (Photo: Jukka Jantunen).

Glaucous Gull (*Larus hyperboreus*)

Another arctic nesting gull species, Glaucous Gull has also been observed at the site annually since the fall of 2008 including; twice in 2008 (August 27, September 19); twice in 2009 (August 1, 29) and twice during 2010 (October 4, 18). In 2011, single birds were seen on 13 days from September 16 to October 24 and three individuals were seen on September 24.



Photo 8. Juvenile Glaucous Gull observed on October 22, 2011 (Photo: Jukka Jantunen).

Sabine's Gull (*Xema sabini*)

Sabine's Gull is a rare fall migrant in the southern Yukon. At the observatory, this species has been observed annually since 2008 including the following; twice in 2008 (2 on September 2, 1 on September 4), twice in 2009 (2 on August 27, 2 on August 29) and twice in 2010 (September 30, October 11 with single birds seen on each day). In 2011, single birds were seen on 8 days from September 24 to October 24 on the following dates; 4, 24, 30 Sep, 1,4,5,6,24 Oct. Given the dates observed it is likely that the birds observed in 2011 constitute more than one individual.



Photo 9. Juvenile Sabine's Gull observed on October 1, 2011 (Photo: Jukka Jantunen).

Yellow-bellied Flycatcher (*Empidonax flaviventris*)

Yellow-bellied Flycatcher is likely the least well known *Empidonax* flycatcher in the Yukon. 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 35) with a median date of August 15.

Based upon data from other bird surveys in the Yukon (Roadside BBS) and incidental observations, it has been suggested that this species is becoming more common in the Yukon. The banding data from the observatory does not indicate an increase from 2008 to 2011 (Figure 12); however, this is based on a small sample size and additional years of data collection are required to provide a more definitive trend for this species.

Table 35. Summary of Yellow-bellied Flycatchers banded during the fall season from 2008 to 2011.

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
TOTAL	35	1	29 July 29	September 4

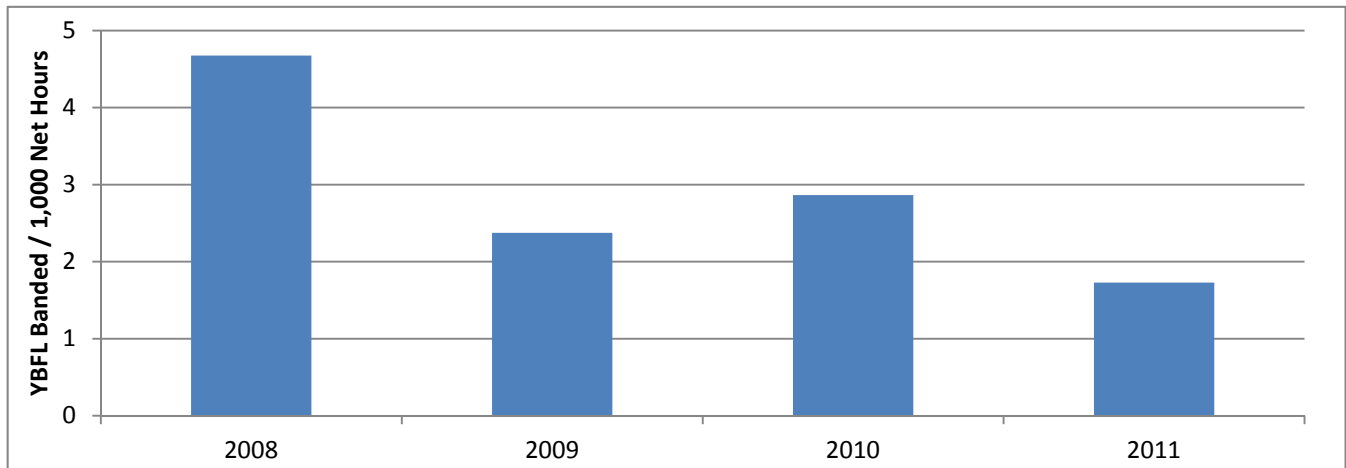


Figure 12. Yellow-bellied Flycatchers banded per 1,000 net hours from 2008 to 2011 during the migration window of August 1st to September 5th.

Dusky Flycatcher (*Empidonax oberholseri*)

This species 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 36). During 2011, a total of 6 individuals (4 juveniles, 2 adults) were banded bringing the all time banding total to 16 individuals in fall.

Table 36. Summary of Dusky Flycatchers banded in the fall of 2008 to 2011.

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
TOTAL	14	2	August 1	September 5

Steller’s Jay (*Cyanocitta stelleri*)

A single Steller’s Jay, the first record for the observatory, was seen on October 15th. Relatively common along the coast in southeast Alaska, this species makes irregular irruptions outside of its regular range and into the southern Yukon. This individual was a part of such an irruption, the first one since a major one in the fall of 2006.



Photo 10. Steller's Jay observed on October 15, 2011 (Photo: Jukka Jantunen).

Mountain Chickadee (*Poecile gambeli*)

The least common species of the regularly occurring chickadee in the southern Yukon, Mountain Chickadee is a rare year round resident in the south central Yukon. Since 2008, this species has been banded in all years with the exception of 2010. Along with Boreal Chickadee, it is evident that both of these species regularly stages fall irruptions and, interestingly, they appear to coincide. A breakdown of Mountain Chickadees banded and observed since 2008 is shown in Table 37.

Table 37. Summary of Mountain Chickadees observed and banded from 2008 to 2011.

Year	# of Days Observed	# of Bird Days	# Banded		Early Date	Late Date	High Count	Median Date
			Juvenile	Adult				
2008	8	20	15	0	3 Sep	26 Sep	6 – 24/25 Sep	24 Sep
2009	8	24	11	0	5 Sep	27 Sep	10 – 19 Sep	19 Sep
2010	0	0	0	0	-	-	-	-
2011	3	3	2	0	12 Sep	3 Oct	1 – all days	-
TOTAL	19	47	28	0	3 Sep	26 Sep	10 – 19 Sep 09	-



Photo 11. Mountain Chickadee banded September 12, 2011 (Photo: Jukka Jantunen).

Chestnut-backed Chickadee (*Poecile rufescens*)

The third documented record of this species in the Yukon was a single individual observed on October 15, 2011 (Photo 12). This species has been recorded at the observatory in the past; a juvenile was banded on September 17, 2008. This species is a common year round resident on the Pacific Coast, approximately 150 km southwest of the observatory. It is likely that the individuals observed at the observatory were blown over the Coast Mountains during a period of high southwest winds (possibly while migrating). This is a very likely theory given that there were very strong southwest winds on the day of the 2011 sighting.



Photo 12. Chestnut-backed Chickadee observed on October 15, 2011 (Photo: Jukka Jantunen).

Brown Creeper (*Certhia americana*)

Similar to the Chestnut-backed Chickadee, Brown Creeper is very rare in the southern Yukon; however, it is commonly found along the Pacific Coast. The first record for this species at the observatory was a single individual which touched down very briefly at the point on October 15, 2011 (Photo 13). This species is considered casual in southern Yukon as it is not seen annually. On October 19 a single individual was observed at the Teslin Lake outlet while conducting waterfowl counts at the Teslin Lake outlet.



Photo 13. Brown Creeper observed on October 15, 2011 (Photo: Jukka Jantunen).

Pacific / Winter Wren (*Troglodytes pacificus / hiemalis*)

Despite being a new species for the observatory in 2011, Pacific / Winter Wren has been encountered annually in the Teslin region during the past few years. On July 28, a single individual was observed in the area behind the mist netting known as “the woodpile”. Although photo / audio documentation was not obtained, it is highly probable that this individual was a Pacific Wren.

American Redstart (*Setophaga ruticilla*)

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.

Table 38. Summary of American Redstarts observed and banded from 2008 to 2011.

Year	# of Days Observed	# of Bird Days	# Banded		Early Date ¹	Late Date	High Count	Median Date
			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	9 Aug
2010	24	47	25	5	16 Jul	6 Sep	6 – 26 Jul	3 Aug
2011	36	137	28	12	16 Jul	26 Sep	10 – 30/31 Jul	1 Aug
TOTAL	99	298	92	31	16 Jul	26 Sep	-	-

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

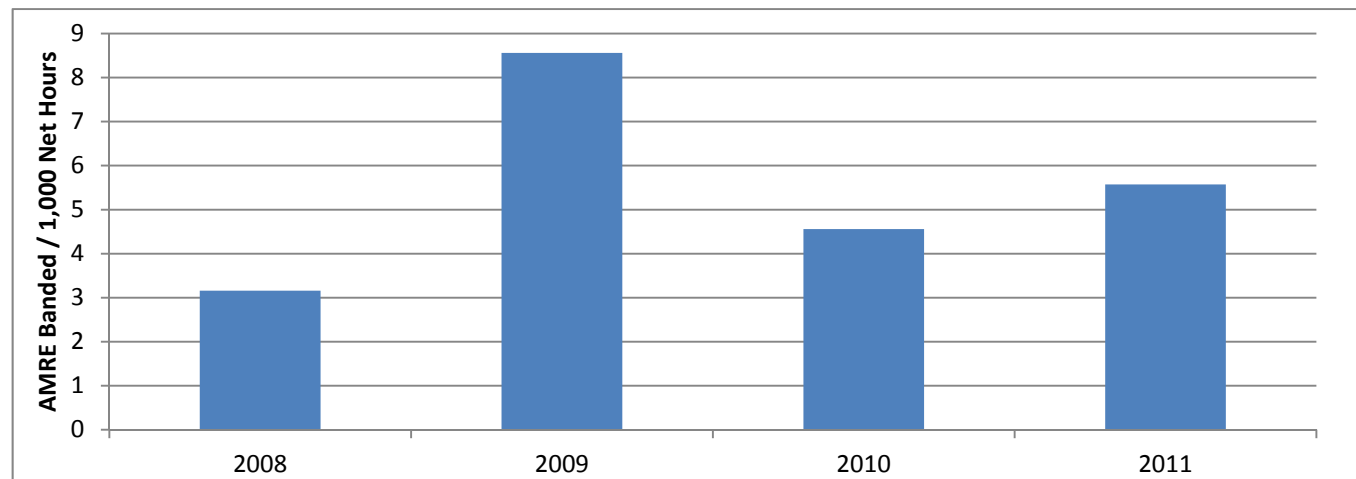


Figure 13. American Redstarts banded per 1,000 net hours from 2008 to 2011 during the migration window of July 23 to September 20.

Yellow-rumped “Audubon’s” Warbler (*Setophaga coronata auduboni*)

The familiar Myrtle Warbler is the race of Yellow-rumped Warbler which breeds throughout the Boreal Forest from Alaska to the Maritimes and the Audubon’s race is typically restricted to the remainder of western North America, including southeast Alaska. Definitive records of Audubon’s Warbler in the Yukon are restricted to one at Shallow Bay (Lake Laberge) on October 15, 1994, one at Judas Creek (Marsh Lake) on April 29, 1994 and a single individual seen and photographed at the observatory on

October 10, 2010. On August 4, 2011, a molting adult male Audubon’s Warbler was banded (Photo 14); the individual constituted the first banding record of a pure Audubon’s Warbler for the Yukon Bird Observatories.



Photo 14. Adult male Audubon’s Warbler banded on August 4, 2011 (Photo: Jukka Jantunen).

Magnolia Warbler (*Setophaga magnolia*)

In the Yukon, Magnolia Warbler is a species typically restricted to the southeast portion of the Yukon; however, it has been banded at the observatory on two occasions; August 19, 2008 (juvenile) and June 11, 2005 (adult; when the station was located on Nisutlin Bay). In 2011, a single adult female was observed in the count area behind the mist netting area.

Western Tanager (*Piranga ludoviciana*)

In the Yukon, Western Tanager is a regular breeding species in the southeast portion of the territory; however, it is documented irregularly further west. To date, 2 individuals have been banded at the observatory (1 on June 4, 2006 and 1 on August 11, 2009) and also observed on two days in 2010. This species was not banded in 2011; however, it was observed on three days with single birds on all days (22 and 23 July, 3 August).

Brewer’s “Timberline” Sparrow (*Spizella breweri taverneri*)

The Timberline race of Brewer’s Sparrow breeds in subalpine areas in northwestern BC, southwest Yukon and adjacent areas of mainland Alaska. Records of this species in migration are quite uncommon in the Yukon. In previous years, juveniles have been banded on the following occasions; September 3, 2006 and August 26, 2009. In 2011, two individuals were banded, both hatch years on August 22 and September 8.



Photo 15. Juvenile Brewer's "Timberline" Sparrow banded on August 22, 2011 (Photo: Jukka Jantunen).

Hoary Redpoll (*Acanthis hornemanni*)

Hoary Redpoll is a breeding species in the northern portion of the Yukon and small numbers are observed annually in the southern Yukon (and as far south as the northern USA) during the winter months. This species is encountered at the observatory very infrequently as there is just one previous record of three individuals banded on May 7, 2007. In 2011, two hatch year birds were banded, October 5 and 11 (single birds each day, Photo 16).



Photo 16. Hatch year Hoary Redpoll banded on October 11, 2011 (Photo: Jukka Jantunen).

3.7.1 Chickadee Movements

Typically regarded as year round resident species in the Yukon, the observatory has documented chickadee irruptions in three of the last four years (Table 39). The high number of individuals banded and observed 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.

Table 39. Summary of chickadees banded and observed from 2008 to 2011.

Species	2008		2009		2010		2011	
	# Banded	# of Bird Days	# Banded	# of Bird Days	# Banded	# of Bird Days	# Banded	# of Bird Days
Boreal Chickadee	138	293	831	1,612	-	12	233	486
Black-capped Chickadee	57	172	26	221	22	295	92	270
Mountain Chickadee	15	20	11	24	-	-	2	3
Chestnut-backed Chickadee	1	1	-	-	-	-	-	1
Hybrid Chickadee	1	1	-	-	-	-	-	-
TOTAL	212	487	869	1,859	22	207	327	760

3.8 *Rusty Blackbirds*

As part of an ongoing project in co-operation with Pam Sinclair (CWS-Whitehorse) and the Yukon bird observatories, all Rusty Blackbirds captured were fitted with a color band (light blue) in addition to the regular band. As each Rusty Blackbird study site uses a different color, the color bands help to identify the origin of a re-sighted individual without the need to recapture it. Additionally, from 2008 to 2010 a feather was collected from each Rusty Blackbird captured. Feather samples will be analyzed for stable isotopes in an effort to make linkages between breeding and wintering grounds of this species. During the fall of 2011, 16 individuals were banded (15 hatch year, 1 after hatch year).

3.9 *Owl Banding*

To date, a large scale owl banding test project has not been completed. Building upon a minimal effort during the fall of 2008 and 2009, a limited amount of effort (40 hours of net effort spread across 4 nights) was completed in early September using Boreal and Northern Saw-whet Owl call playback. A total of 4 Boreal Owls were banded (3 hatch year, 1 second year). These results suggests that at least small numbers of owls move through the site; however, additional personnel are required to further test the site for owl banding with the goal of developing a long term monitoring program.

3.10 *Species At Risk*

Monitoring of species at risk is important throughout the species range and this is even more critical in more remote areas with limited monitoring information. During 2011, 2 COSEWIC designated species were banded and 6 species were observed. (Table 40).

Table 40. Summary of COSEWIC designated species encountered during the fall of 2011.

Species	COSEWIC Designation ¹	# Banded		# of Days Observed	High Count (#-date)	Total Visual Migrants	Total Bird Days
		HY	AHY				
Horned Grebe	Special Concern			59	12 – 10 Sep	12	158
Peregrine Falcon	Special Concern			9	7 – 23 Sep	16	19
Short-eared Owl	Special Concern			1	1 – 15 Oct	0	1
Olive-sided Flycatcher	Threatened	1		9	3 – 26/29Aug	4	14
Common Nighthawk	Threatened			1	2 – 29 Aug	2	2
Rusty Blackbird	Special Concern	15	1	64	123 – 223 Sep	478	667

¹<http://www.cosewic.gc.ca>

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 volunteers who provide valuable assistance when the observatory is busy. Table 41 and Table 42 summarize the number of hours spent at the observatory by visitors, volunteers and paid workers. Visitors were defined as those people who visited the observatory (often for a short time) and did not take part in activities at the observatory. Volunteers were those people 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, Ben Schonewille and Ted Murphy-Kelly) and individuals paid by other organizations (Yukon Government, Canadian Wildlife Service, etc).

Table 41. Hours spent at the bird observatory by volunteers and paid individuals.

Paid		Volunteer	
# of Individuals	Hours	# of Individuals	Hours
4	711.25	14	1,002.25

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.

Table 42. Hours spent at the bird observatory by visitors.

Locals		Yukon		Canada		USA		Other International	
#	Hours	#	Hours	#	Hours	#	Hours	#	Hours
8	9.5	45	133.25	27	35.75	5	5.0	5	6.75

In comparison to previous years, the total number of volunteer hours was very high in 2011 and was nearly double the previous year recorded in 2009 (Figure 14). This is due, in part, to the extended season and a single long term volunteer at the observatory throughout the season. The visitor hours in 2011 were similar to previous years. Since 2009, the visitor hours have ranged from 190 to 230 hours (Figure 14).

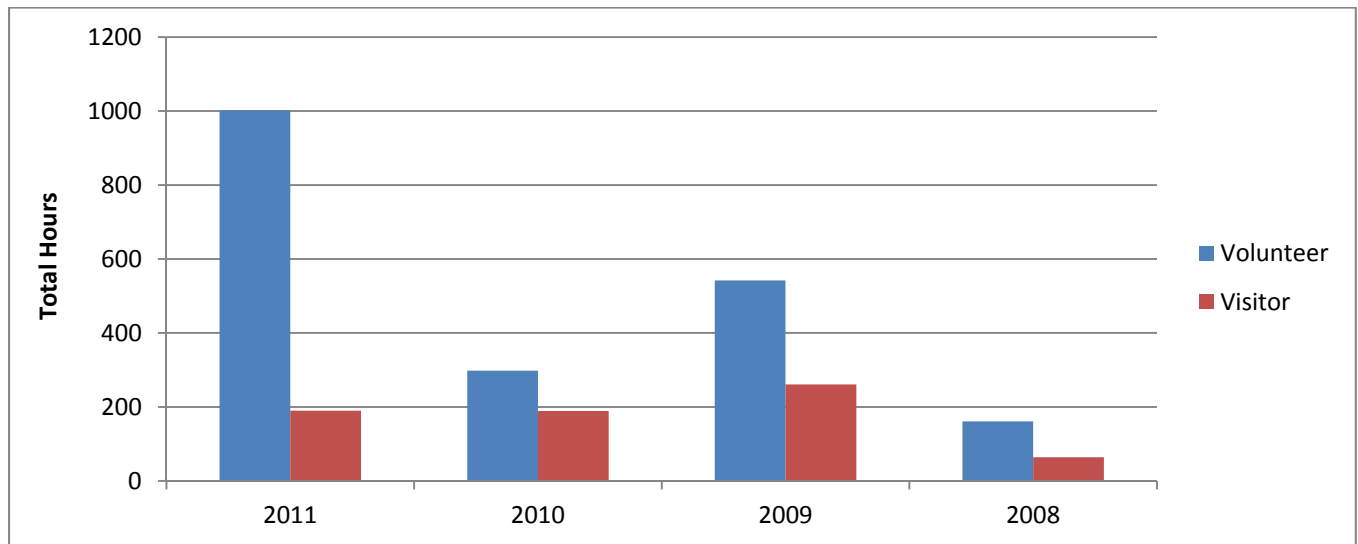


Figure 14. Summary of volunteer and visitor hours at Teslin Lake Bird Observatory from 2008 to 2011.

4.0 Conclusion & Recommendations

The results from this season's operation 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 a very 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 four years of fall migration monitoring at the observatory, the ability to monitor songbirds has been well demonstrated by the high 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 throughout the season. For the purposes of effective migration monitoring, this is a desirable situation as it is clear that most birds observed and banded truly are migrants.

The visual migration and lake counts were initially added to the monitoring protocol to increase the number of bird species which may be monitored at the observatory; they 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.

To build upon the activities at the observatory and collect additional monitoring data for waterfowl, a number of waterfowl counts were surveyed on a trial basis in the Southern Lakes region during 2010 and 2011. These results indicate that there is potential for monitoring a wide range of species using this method; primarily loons/grebes, diving ducks (goldeneyes, Ring-necked Duck, scaup), Surf Scoter and some species of dabbling ducks. It is likely that dabbling ducks were under represented in the 2011 counts due to abnormally high water levels (especially at sites on Teslin Lake) which drastically reduced the availability of suitable stopover habitats (ie, mud flats) for these species.

Over the long term, the data collected at the observatory will be used to calculate species trend analysis to be used 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 and continuing monitoring in an standardized manner (ie, follow the monitoring protocol).

The observatory continued to be successful in attracting groups of students to the observatory to learn about birds and bird migration. During 2011, a Y2C2 (Yukon Youth Conservation Corps) group and a science youth group from Teslin visited the observatory. On all occasions, the visiting groups were given an introduction to birds, their migration and methods used for ornithological data collection.

APPENDIX A –TESLIN LAKE BIRD OBSERVATORY (TLBO) FIELD PROTOCOL

Teslin Lake Bird Observatory (TLBO) Field Protocol



Ben Schonewille
Society of Yukon Bird Observatories
2011 (version 2)

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1.0 Introduction

The Teslin Lake Bird Observatory (TLBO) was established in the spring of 2005 by Ben Schonewille and Ted Murphy-Kelly with assistance from a number of agencies including the Teslin Renewable Resources Council, Canadian Wildlife Service, Yukon Environment and the Yukon Conservation Society. For 2005, the station was located along the shore of Nisutlin Bay, however; land tenure problems caused the station to relocate to the current location at Ten Mile Point on Teslin Lake. Over the period of 2006 to 2008, the station operated during the spring season with varying amounts of effort (typically 25 – 35 days of operation per year). Prior to 2008, the station operated very sporadically during the fall season, however; in 2008 the station operated continuously during the fall migration season and has continued since.

TLBO is an associate member of the nationwide CMMN (Canadian Migration Monitoring Network). Situated along Teslin Lake (60.231° N, 132.916° W) in the south-central Yukon, TLBO offers an ideal location to monitor the migration of landbirds, raptors, waterbirds and possibly waterfowl breeding north of the observatory throughout the Yukon and Alaska. Migration monitoring methods at Teslin Lake follow procedures recommended by the North American Migration Monitoring Council and are similar to methods used elsewhere (Wojnowski et al 2000, Gahbauer and Hudson 2004). This protocol provides a description of field procedures currently in practice at TLBO. It is intended that this protocol should enable personnel, who are unfamiliar with the site, to collect data that are consistent with current procedures.

This document is intended to develop a field protocol for the operation of TLBO with the possibility of revisions to be made should additional components (e.g. owl banding, species specific monitoring using call playback) be added to the protocol in the future.

2.0 Objectives

The primary objectives of Teslin Lake Bird Observatory are as follows:

- Collect data to allow for trend analysis of landbird populations based on the collection of migration monitoring data.
- Collect baseline data on the distribution and migration timing of all bird species in the south-central Yukon.
- Provide an opportunity for the public (especially students) to learn about the birdlife of the Yukon, their migration habits and ornithological data collection.

A secondary objective of the observatory is to document trends in populations of shorebirds, waterbirds and waterfowl based on the collection of migration monitoring data.

High priority landbird species for monitoring at Teslin Lake are shown in Table 1. Species prioritization follows that of Badzinski and Francis (2000). Species shown in **bold** are those which meet the minimum criteria in Badzinski and Francis (2000) for species trend analysis; at least 10 individuals are observed on a least 5 days per year. Such prioritization currently does not exist for other groups of birds including waterfowl, waterbirds and raptors.

Table 1. Priority landbird species for monitoring at Teslin Lake Bird Observatory (not that there are no priority ‘E’ and ‘F’ species which occur regularly at TLBO).

Priority ‘A’	Priority ‘B’	Priority ‘C’	Priority ‘D’
Alder Flycatcher	American Tree Sparrow	American Redstart	American Robin
American Pipit	Boreal Chickadee	Bank Swallow	Black-capped Chickadee
Blackpoll Warbler	Bohemian Waxwing	Barn Swallow	Belted Kingfisher
Gray-cheeked Thrush	Common Redpoll	Chipping Sparrow	Cedar Waxwing
Lincoln’s Sparrow	Dark-eyed Junco	Cliff Swallow	Downy Woodpecker
Northern Waterthrush	Fox Sparrow	Common Nighthawk	Hairy Woodpecker
Orange-crowned Warbler	Lapland Longspur	Common Yellowthroat	Hermit Thrush
Savannah Sparrow	Myrtle Warbler	Dusky Flycatcher	Northern Flicker
Swainson’s Thrush	Northern Shrike	Hammond’s Flycatcher	Pine Siskin
Tennessee Warbler	Pine Grosbeak	Least Flycatcher	Purple Finch
Wilson’s Warbler	Ruby-crowned Kinglet	MacGillivray’s Warbler	Red-breasted Nuthatch
Yellow-bellied Flycatcher	Rusty Blackbird	Olive-sided Flycatcher	Townsend’s Solitaire
	Varied Thrush	Say’s Phoebe	
	White-crowned Sparrow	Townsend’s Warbler	
	White-winged Crossbill	Tree Swallow	
		Violet-green Swallow	
		Warbling Vireo	
		Western Tanager	
		Western Wood-Pewee	
		Yellow Warbler	

- A. Species with <50% of North American (Canada and USA only) breeding range covered by BBS, and <60% of their winter range in USA and Canada.
- B. Species with <50% of North American breeding range covered by BBS, but >60% of their winter range in the USA and Canada.
- C. Species with <60% of their Canadian and Alaskan breeding range (but >50% of North American range) covered by BBS, but >60% of their winter range in USA and Canada.
- D. Species with <60% of their Canadian and Alaskan breeding range (but >50% of North American range) cover by BBS, but >60% of their winter range in USA and Canada.
- E. Species with >60% of both their Canadian and North American breeding range covered by BBS, and <60% of their winter range in USA and Canada.
- F. Species with >60% of both their Canadian and North American breeding range covered by BBS, and >60% of their winter range in USA and Canada.

3.0 Migration Monitoring Methods

3.1 Count Area

Teslin Lake Bird Observatory is located on the east shore of Teslin Lake, approximately 15 km northwest of the community of Teslin (Figure 1). The boundary of the count area is shown by a purple line in Figure 2. The count area is delimited by the Alaska Highway to the east and Teslin Lake to the west. The north boundary is the access road to the boat launch and the south boundary is the location where the Alaska Highway embankment is nearest Teslin Lake. The area of the count area is approximately 0.15 km² (15 ha).

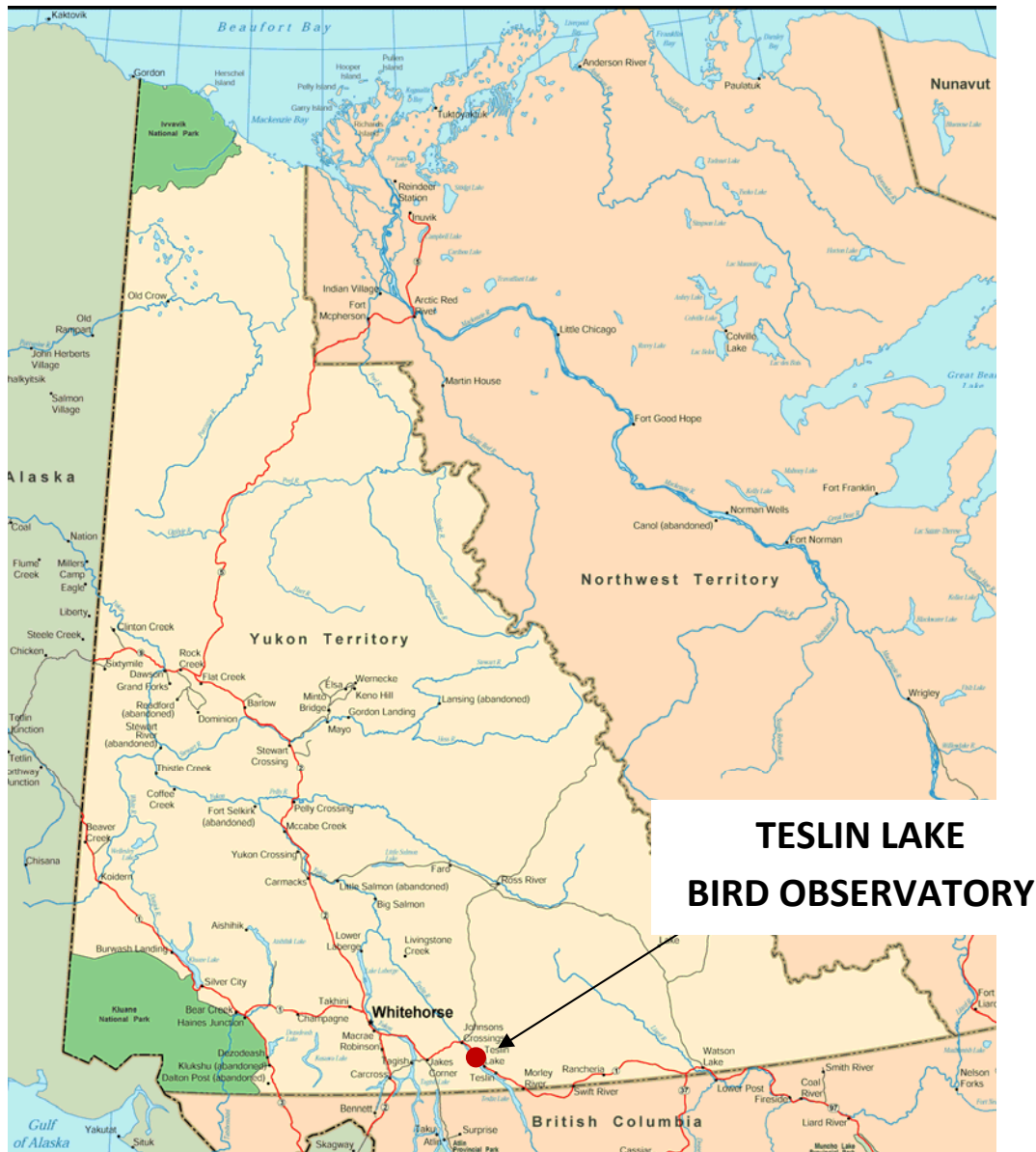


Figure 1. Map of the Yukon, showing the location of TLBO.



Figure 2. Map of Teslin Lake Bird Observatory count area (marked by purple line).

The count area encompasses Ten Mile Point and includes the Yukon Government’s Teslin Lake Campground. Any birds seen or heard by observers, who are within the count area during the count period, may be included in observations contributing to the estimated total, regardless of whether the birds are within the count area or not. All birds on or over the lake, whether seen by naked eye or with the assistance of optics, are countable if the observer is within the boundaries of the count area.

3.2 Count Period

The daily count period for the estimated totals starts 15 minutes before sunrise and is rounded back to the nearest quarter or an hour (ex – 520 sunrise rounds to 515 start). The duration of the daily mist-netting activities is, conditions permitting, 6 hours, from the opening of the first net to closing the first net (sunrise plus 6 hours) and shall begin 15 minutes after the start of the count period. The remaining time within the daily count period will include a 1 hour watch. The actual duration of the daily count period may vary on a day to day basis due to the 1 hour watch to be completed following the closure of the mist nets and the subsequent processing of birds captured during the closing net round. A daily schedule of the standard start and end times of the count period during the spring and fall season is shown in Appendix 1.

The standard count period timing may be altered by up to 3 hours due to unfavorable weather conditions including rain/snow or cold temperatures. When this occurs, a full scale 6 hour mist netting effort is allowed. In the event that the station is opened later than the scheduled start time and is not attributed to weather, the only effort which is considered standard is that which

extends up to the scheduled count period end. In these instances, a minimum of 3 hours of netting effort is required to be considered standard otherwise the entire effort for the particular day will be considered non-standard.

Some examples of how the standard/non-standard count periods are shown below using an example of September 1st; the predetermined count period for this data is 630 with the net opening and closing being 645 and 1245, respectively.

- Count period starts at 630, nets opened at 645 and closed at 1245, birds are then processed, a 1 hr visual count is conducted and the count period ends at 1400.
 - Standard Count Duration = 7.5 hrs
 - Non-Standard Count Duration = 0 hrs
 - Standard Mist Netting Effort = 6.0 hrs
 - Non-Standard Mist Netting Effort = 0 hrs
- Count period starts at 630, nets opened at 645 and closed at 1445, birds of the 1245 net round are processed at a one hour watch is conducted and finished as 1400. Birds from the 1445 net closing round are banded and the count period ends at 1530.
 - Standard Count Duration = 7.5 hrs
 - Non-Standard Count Duration = 1.5 hrs
 - Standard Mist Netting Effort = 6.0 hrs
 - Non-Standard Mist Netting Effort = 2.0 hrs
- Raining at 630; however, rain ends at 800. Nets opened at 830 and closed at 1430. After the final net round, a 1 hr visual count is done and completed at 1600. An additional 1.5 hr visual count is done and the count period ends at 1730.
 - Standard Count Duration = 7.5 hrs
 - Non-Standard Count Duration = 1.5 hrs
 - Standard Mist Netting Effort = 6.0 hrs
 - Non-Standard Mist Netting Effort = 0 hrs

3.2.1 Seasonal Count Timing

The core timing of the standardized fall count period will be July 25 to September 25 (a total of 9 weeks of operation). Should additional resources be available and weather conditions favorable to allow for an extended season, the standardized protocols will be utilized to operate the observatory before and/or after the July 25 to September 25 period.

3.4 Mist Netting

One qualified bander must be designated as the bander-in-charge (BIC) at all times. The BIC is responsible for ensuring that mist netting and banding is conducted safely and in accordance with this protocol. In order for any capture or banding to take place, a licensed bander **must** be on site. Further, that individual must have the Master Bander's banding permit on hand.

The standard mist netting period extends for 6 hours starting at official sunrise (rounded back to the nearest quarter of an hour; see Appendix 1). At Teslin Lake, the sole method of capturing birds for the purposes of banding is through the use of passerine mist nets.

3.4.1 Operating Guidelines

All mist nets used should be 30 mm, black mesh, 75d/2 ply thread, and tethered. All nets are set on guyed, 3 m high poles.

3.4.1.1 Fall Season

The standard mist net array for the fall season is shown in Figure 3. Mist net specifications are detailed in Table 2. In addition to these nets, non-standard nets are allowed must be indicated as such on all effort and species estimated total sheets. For example, nets may be useful to target specific species (such as Rusty Blackbird) or to test innovative capture techniques such as canopy nets.

Table 2. TLBO mist net specifications.

Net #	Length	Height	# of Panels	CF
1	12 m	2.75 m	4	1
2	12 m	2.75 m	4	1
4	12 m	2.75 m	4	1
5	12 m	2.75 m	4	1
6	12 m	2.75 m	4	1
7	12 m	2.75 m	4	1
8	12 m	2.75 m	4	1
9	12 m	2.75 m	4	1
10	12 m	2.75 m	4	1
11	12 m	2.75 m	4	1
14	12 m	2.75 m	4	1
15	12 m	2.75 m	4	1
16	12 m	2.75 m	4	1
17	12 m	2.75 m	4	1
18	12 m	2.75 m	4	1
20	12 m	2.75 m	4	1
25	12 m	2.75 m	4	1
26	12 m	2.75 m	4	1
27	12 m	2.75 m	4	1
28	18 m	2.75 m	4	1.5
29	12 m	2.75 m	4	1
30	12 m	2.75 m	4	1

CF = Correction Factor. To determine net hours, a 12 meter - 4 panel net is counted as 1 net and an 18 m – 4 panel net is counted as 1.5 net.



Figure 3. TLBO mist net array.

A total of 22 mist nets may be used on a daily basis (see Table 2). The opening and closing of nets shall be conducted in the same order each day and should begin at the banding & observation site and progress in a northward direction along the net loop. The number of nets used on a daily basis shall be determined by a number of factors including; number of qualified personnel onsite, bird activity and weather. The core group of 13 nets which shall be used on a daily basis as conditions allow include the following; 4, 6, 7, 8, 9, 10, 11, 14, 15, 18, 16, 17 and 20. Additional mist nets should be opened when conditions allow and should be done so at the discretion of the BIC. In the advent of unfavorable weather or a backlog of birds, all mist nets should be closed until the backlog of birds is processed or the weather improves. Should birds be released unbanded due to an excessive backlog of birds or other reason, the number of individuals should be recorded as “obs” on the daily log sheet. The number (and species) are birds should also be recorded in the daily narrative and entered accordingly in the observatory database.

Only the standard nets should be operated during the standard period, with the exception of experimental canopy nets and/or species specific nets. Exceptions may be made in order to catch and document a rare bird or where the trapping involves non-target species (e.g. shorebirds) and does not affect the standard program. Birds caught during the standard period in non-standardized nets or traps (e.g. shorebird trap, by hand, etc.) must be denoted as NSB (non-standard banding) in the comments column on the banding sheets. These birds are, however, included in the regular band column on the Daily Log and do contribute to the ET.

Additional passerine netting after the normal closure time may be done at the discretion of the bander-in-charge. New bandings and recaptures outside of the standard Banding Period are denoted as NSB on the banding/recapture data sheets or, respectively and entered into the NSB Band and NSB Recap columns, respectively, of the daily log sheet. Any non-standard netting or trapping effort should be recorded on the daily log sheet, even if no birds are captured.

The use of bird seed / suet within the count area is prohibited within the count area and other means of attracting birds to the count area are not permitted with the following exceptions:

- Nocturnal audio-luring of owls is permitted during testing of the site for monitoring owls.
- The testing of using audio lures to target specific target species, such as finches or woodpeckers at mist nets 5, 25, 26 and 27.

Should either of the above activities prove to be feasible at TLBO, future refinements to this protocol will be made.

3.4.2 Banding

All banding shall be conducted in adherence to the North American Bird Banding Manual (Gustafson et al 1997) and all aging and sexing of birds shall be made using the Identification Guide to the Identification Guide to North American Birds (Pyle 1997). Refer to Appendix 2 (field manual) for additional detail regarding the collection of banding data.

The safety of birds should be utmost importance during the mist netting and banding activities at TLBO.

Should any birds show signs of excessive stress upon extraction, they should be released immediately at the net and recorded within the “Obs” column of the daily log sheet. In the event that birds are released unbanded, the number (and species) are birds should also be recorded in the daily narrative and entered accordingly in the observatory database.

Data sheets to be used include the following: Original Banding Sheet, Recapture Sheet and Molt Sheet (see Appendix 3).

3.5 Visible Migration Count

A series of visible migration watches (i.e., the watches) will be conducted as part of the daily count period at TLBO. Due to problems associated with having a sufficient number of qualified observers, the watches are designed to allow the primary observer (typically the Bander-in-Charge) to carry out the mist netting and banding activities simultaneously.

An extensive (4-6 hour) watch is not typically possible since different species migrate at different times of day, and qualified observers are limited. Therefore a number of shorter duration watches will be conducted throughout the count period. Rather than identify a predetermined visual count effort on an hourly basis (which may not be possible at times due to high mist net captures), the guideline for the visual counts is to conduct as much visual counting as possible during the count period. In addition to the visual counts during the mist netting period, a 1 hour watch should be carried out following the completion of the day’s mist

netting / banding activities (where possible). The birds counted for each watch shall be separated and indicated as such on the “Visual Counts Field Data Sheet”. On the data sheets, all counts shall be scribed as starting at the top of the hour. For example, if a count is started at 945, the birds seen up until 959 are recorded under the 945 watch period and a new count shall be started at 1000 and progress as long as 1059, when a new (1100) count shall be started.

The watch timing / effort and a tally of all birds seen should be recorded on the daily log sheet (Appendix 4). Note that all birds seen shall be designated as either visual migrants (“vis”) or observed (“obs”) on the field tally sheet.

Typically, the watch will be completed by a single individual, however; should additional personnel be involved in the watch, one person shall be designated as the lead observer. The lead observer will typically be the most experienced observer and all data will be recorded by the lead observer.

The watch data are to be collected independently of other survey / banding activities at the station. In other words, all birds classified as “vis” cannot be recorded in other Estimated Totals categories.

To assign individual birds or flocks of birds as visual migrants (vis) , the observer is required to use reasonable judgment, however; the following guidelines will aid in making the determination.

- Any birds flying along (or over) Teslin Lake without stopping shall be considered migrants (this is typically in a southward direction but may also be in other directions).
- In the case of small passerines, individuals seen moving through the vegetation at a fairly steady pace without prolonged periods of stopover shall be considered migrants.
- Birds (typically small passerines such as warblers) observed landing at the point, and leaving shortly after shall be considered migrants despite stopping briefly. Such birds must be considered migrants as many birds will stop briefly at the point prior to flying out over the water or continue along the lakeshore.
- Any birds observed “dropping in” to the point and not leaving shortly after shall not be considered migrants.

Unidentified flycatchers, thrushes, sparrows, vireos and warblers should be recorded as such while conducting the visual counts. In the case of similar species in which a species specific identification cannot be determined, it is acceptable to record them as a combination of species. An example would be American Robin / Varied Thrush which in some instances can be difficult to identify at a distance. On the visual count data sheet, the number of birds observed should be recorded as visual migrants (“vis”).

3.5.1 Watch Location

All watches should be conducted from the sparsely vegetated location at the tip of the point immediately adjacent to the banding table. At the watch location, there are two primary viewing avenues at which to observe migrating birds. First, viewing towards the west (over the lake) typically yields the majority of waterfowl, waterbird and shorebird migrants over the lake itself and also low numbers of raptors travelling along the far shore. Second, viewing towards the east (over the land) yields the vast majority of landbird and raptor migrants. The watch effort should be split between the two viewing avenues, however; on days when the larger proportion of birds are following either avenue, the effort should be split accordingly. An approximation of the proportion of the day's total watch shall be included on the appropriate data sheet (Appendix 4).

3.6 Other Observations

All birds that are observed during the count period, but are not included in the visible migration counts should be recorded in the other observations column ("Obs") in the daily log. Opportunistic sightings of birds observed in migration shall also be included separately and recorded as "Oth Vis" in the daily log.

These include birds observed during net-rounds, and any other observations from within the count area outside of the visual migration watches. Other observations should be noted by the personnel onsite on the appropriate daily log sheet (Appendix 4).

3.7 Estimated Totals (ETs)

The Estimated Total (ET) is the best estimate of the number of individuals of each species detected in the count area during the standard count period. To arrive at the ETs, all personnel involved in the respective day's activities shall be involved to help reduce the possibility of double counting individual birds.

3.8 Overall Coverage Codes

Each day, an overall coverage code, ranging from 0 to 5, is assigned based on the actual effort during the count period (6.5 hours after sunrise) that day. The coverage code takes into consideration the number of observers and their skill levels (Table 3), as well as the overall counting and mist netting effort. The coverage codes and the criteria used to assign them, are described in Table 4. For the code to be assigned, **all the listed criteria must be met**. The aim should be to achieve Code 3 coverage as frequently as possible.

Table 3. Observer skill levels.

Class	Criteria
1	Able to identify over 90% of birds encountered.
2	Able to identify 75 to 90% of birds encountered.
3	Able to identify 50 to 75% of birds encountered.
4	Able to identify less than 50% of birds encountered.

Table 4. Criteria for assigning daily coverage codes.

Code	Coverage	Criteria
0	No coverage	
1	Casual	Casual observations and/or banding. Very limited or no visible migration count
2	Poor	At least 1 Class 2 observer active throughout count period; variable amount of visible migration count effort; no or limited mist netting effort.
3	Fair	At least 1 Class 2 observer active throughout count period; 1.5 hrs visible migration count; mist netting may have been restricted by weather (maximum 100 corrected net hrs).
4	Good	At least 1 Class 2 observer active throughout count period; 2.0 hrs visible migration count; at least 100 corrected net hrs unless reduced due to backlog of birds.
5	Excellent	At least 1 Class 1 and 1 Class 2 observers active throughout count period; at least 3.0 hrs visible migration count; over 100 corrected net hrs unless reduced due to backlog of birds.

3.9 Additional Observations

The daily species total (DST) reflects the total number of birds of each species seen or heard in the area during the course of the entire day. The DST is determined by combining all birds encountered during the standard (Estimate Total) and non-standard monitoring data. Although not as standardized as the daily ET, the daily species total serves to record species detected outside the daily count period and also makes use of observations made later into the day by the observatory's personnel and volunteers.

4.0 Data Entry

The TLBO standard is to that all data (including effort, banding and ET data) will be entered into a Microsoft Excel / Access database. All applicable banding data will be provided to Environment Canada's Bird Banding Office on a yearly basis in a timely manner. Aside from data submission to Environment Canada to fulfill permit obligations, all relevant data will be provided to the Canadian Wildlife Service (Whitehorse) and the Yukon Bird Club for inclusion in seasonal bird sighting summaries, etc.

5.0 Personnel

At least two qualified people are required to obtain excellent coverage (code 5, Table 4) at TLBO, however; this protocol has been developed to allow for a lone qualified individual to achieve fair to good coverage during periods of favorable weather. It is understood that more than one qualified individual onsite would be the preferred option as is typically the case at other bird observatories. However, due to the relatively low number of qualified personnel in the Yukon, additional qualified personnel cannot be assured. Should the observatory be staffed by a lone individual, it is essential that the individual be a qualified and competent bander, and preferably also with the identification skills to conduct migration watches.

All new personnel must familiarize themselves with the protocol. The BIC, generally the most experienced bander at the station, is responsible for overseeing all aspects of operations including trapping and data recording. Training and supervision of new personnel should be done solely by the BIC or by a person designated by him/her. All persons are expected to

participate in the routine maintenance of the station. The station manager is typically responsible for station setup/closure and data management/reporting duties.

6.0 Vegetation Management

TLBO is located within the riparian influence (within the high water mark) of Teslin Lake and the site is subject to annual flooding during the spring and early summer months (late May to late June) due to the rapid melt of high elevation snowpack within the watershed. This annual flooding has a strong influence on the natural succession of vegetation onto the beach within the count area. As such, there are very few trees within the actual mist netting area (**Error! Reference source not found.**), except for along the margins where nets 5, 25 and 26 are located. However, vegetation management is not a concern for these nets as they are intended as “understory nets” to capture species in such habitats (ie, thrush). In addition, the annual flooding and movement of gravel along the shoreline limits the growth of woody vegetation within the netting area. The only vegetation management required at TLBO is the annual clearing of net lanes; primarily the removal of grasses and material deposited within the net lanes due to the spring flooding.

7.0 Literature Cited

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Appendix 1
DAILY COUNT TIMING

Date	Sunrise	Count Period Start Time	Mist Net Open	Mist Net Close	Count Period End (Approximate)
23-Jul	511	445	500	1100	1230
24-Jul	513	445	500	1100	1230
25-Jul	515	500	515	1100	1230
26-Jul	517	500	515	1115	1245
27-Jul	519	500	515	1115	1245
28-Jul	521	500	515	1115	1245
29-Jul	524	500	515	1115	1245
30-Jul	526	500	515	1115	1245
31-Jul	528	500	515	1115	1245
01-Aug	531	515	530	1130	1300
02-Aug	533	515	530	1130	1300
03-Aug	536	515	530	1130	1300
04-Aug	538	515	530	1130	1300
05-Aug	540	515	530	1130	1300
06-Aug	543	515	530	1130	1300
07-Aug	545	530	545	1145	1315
08-Aug	548	530	545	1145	1315
09-Aug	550	530	545	1145	1315
10-Aug	553	530	545	1145	1315
11-Aug	555	530	545	1145	1315
12-Aug	557	530	545	1145	1315
13-Aug	600	545	600	1200	1330
14-Aug	602	545	600	1200	1330
15-Aug	605	545	600	1200	1330
16-Aug	607	545	600	1200	1330
17-Aug	610	545	600	1200	1330
18-Aug	612	545	600	1200	1330
19-Aug	614	545	600	1200	1330
20-Aug	617	600	615	1215	1345
21-Aug	619	600	615	1215	1345
22-Aug	622	600	615	1215	1345
23-Aug	624	600	615	1215	1345
24-Aug	627	600	615	1215	1345
25-Aug	629	600	615	1215	1345
26-Aug	631	615	630	1230	1400
27-Aug	634	615	630	1230	1400
28-Aug	636	615	630	1230	1400
29-Aug	639	615	630	1230	1400
30-Aug	641	615	630	1230	1400
31-Aug	643	616	630	1230	1400
01-Sep	646	630	645	1245	1415
02-Sep	648	630	645	1245	1415
03-Sep	651	630	645	1245	1415
04-Sep	653	630	645	1245	1415
05-Sep	655	630	645	1245	1415
06-Sep	658	630	645	1245	1415

Date	Sunrise	Count Period Start Time	Mist Net Open	Mist Net Close	Count Period End (Approximate)
07-Sep	700	645	700	1300	1430
08-Sep	702	645	700	1300	1430
09-Sep	705	645	700	1300	1430
10-Sep	707	645	700	1300	1430
11-Sep	710	645	700	1300	1430
12-Sep	712	645	700	1300	1430
13-Sep	714	645	700	1300	1430
14-Sep	717	700	715	1315	1445
15-Sep	719	700	715	1315	1445
16-Sep	721	700	715	1315	1445
17-Sep	724	700	715	1315	1445
18-Sep	726	700	715	1315	1445
19-Sep	728	700	715	1315	1445
20-Sep	731	715	730	1330	1500
21-Sep	733	715	730	1330	1500
22-Sep	736	715	730	1330	1500
23-Sep	738	715	730	1330	1500
24-Sep	740	715	730	1330	1500
25-Sep	743	715	730	1330	1500
26-Sep	745	730	745	1345	1515
27-Sep	747	730	745	1345	1515
28-Sep	750	730	745	1345	1515
29-Sep	752	730	745	1345	1515
30-Sep	754	730	745	1345	1515
01-Oct	757	730	745	1345	1515
02-Oct	759	730	745	1345	1515
03-Oct	801	745	800	1400	1530
04-Oct	804	745	800	1400	1530
05-Oct	806	745	800	1400	1530
06-Oct	808	745	800	1400	1530
07-Oct	811	745	800	1400	1530
08-Oct	813	745	800	1400	1530
09-Oct	815	800	815	1415	1545
10-Oct	818	800	815	1415	1545
11-Oct	820	800	815	1415	1545
12-Oct	823	800	815	1415	1545
13-Oct	825	800	815	1415	1545
14-Oct	827	800	815	1415	1545
15-Oct	830	815	830	1430	1600
16-Oct	832	815	830	1430	1600
17-Oct	835	815	830	1430	1600
18-Oct	837	815	830	1430	1600
19-Oct	840	815	830	1430	1600
20-Oct	842	815	830	1430	1600
21-Oct	845	830	845	1445	1615

Appendix 2
FIELD MANUAL

Teslin Lake Bird Observatory
Field Manual

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1.0 Introduction

The purpose of this field manual is to provide the field crew members of TLBO with a guide with which to collect data during the spring and fall migration seasons. This manual will deal primarily with the daily log sheets and the banding sheets to explain how the data shall be collected and scribed onto the respective data sheets.

2.0 Data Collection

2.1 Daily Log Sheet

The personnel and visitors section shall be filled out in the field to ensure accurate times are recorded. Additionally, all times shall be recorded to the nearest 5 minute interval.

The following outlines the scoring system used to collect weather data.

Wind Direction – record as N, NE, E, SE, S, SW, W or NW prevailing wind direction

Wind Strength – shall be recorded using the Beaufort Scale as outlined in the table below

Scale	Ground Speed (km/h)	Description	Specifications
0	0 – 2	Calm	Smoke rises vertically.
1	2 – 6	Light air	Direction of wind shown by smoke drift.
2	6 – 11	Light breeze	Wind felt on face, leaves rustle.
3	10 – 19	Gentle breeze	Leaves and small twigs in constant motion.
4	19 – 30	Moderate breeze	Raises dust and loose paper, small branches moved.
5	30 - 39	Fresh breeze	Small trees in leaf begin to sway, crested wavelets form on inland waters.
6	39 - 50	Strong breeze	Large branches in motion, umbrellas used with difficulty.
7	50 - 61	Near gale	Whole trees in motion, inconvenience felt when walking into the wind.
8	61 - 74	Gale	Twigs break off of trees, generally impedes progress.
9	74 - 87	Severe gale	Slight structural damage
10	87 - 100	Storm	Rare inland, trees uprooted, considerable structural damage,

Visibility – shall be recorded as accurately as possible using the following landmarks as a guide

- Gull Nesting Island – 2.4 km
- Microwave Tower – 6 km
- Mt. Bryde – 28 km
- Dawson Peaks – 35 km

Cloud Cover – approximation to the nearest 10%

Temperature – measured to the nearest degree

Precipitation – shall be recorded using the following codes

0 = None	0 = None
1 = Trace rainfall	1S = Trace snowfall (few flurries)
2 = Light rainfall (drizzle)	2S = Light snow flurries
3 = Moderate, steady rainfall	3S = Moderate snowfall
4 = Heavy Rain	4S = Heavy snowfall

On page 2 of the daily log sheet, any rare birds and bird injuries/mortalities should be recorded in the respective space. The daily narrative should be filled out at the end of each day's activities and may include a synopsis of the day's activities including a brief synopsis of bird migration. Also to be included are any interesting notes regarding visitors or station maintenance activities.

For the mist net and visual watch data sheets, all times should be recorded as accurately as possible. For the opening and closing of nets, the time the first net was open / closed shall be recorded for all corresponding nets. This will provide an accurate count of mist net effort so long as the nets are opened and closed in the same order.

On both the visual migration watch and incidental observation data sheets, all observations should be recorded as soon as possible in the tally section. And the end of the daily count, all tallies shall be summed and recorded in the appropriate box. Upon summation of the observation data, this information can be scribed on the ET species tables along with the day's banding and recapture data. Note that all observers from each day should be involved in the estimation of the day's ET data.

2.2 Banding Sheet

The following explains the methods for data collection involving the primary banding sheet.

Banders – be sure to include the full name and initials for each bander on the respective banding sheet.

Band Numbers – take extreme care to ensure the first and last band numbers are recorded correctly on the banding sheet. At the start and finish of each page, be sure to scribe the full band number legibly.

Species – record the 4 letter code for the respective species. Should the same species follow the first scribing of the species code, then do not rewrite the codes. In such instances, a line should be written through the species box to ease later data entry. An exception to this rule is the first bird of the day (on each banding sheet) which should always be rewritten regardless of whether or not the last bird of the previous day was the same species.

Net – the net number should be recorded for all birds captured. Upon extraction from the mist nets, a number pin should be placed on the bag ties from each net. After arriving at the banding location, the birds should be processed in the order of extraction. Exceptions to this rule include the capture of large birds of species which become easily stressed such as woodpeckers and kingfishers.

Age and sex – the age and sex codes should be recorded using the following coding system.

0 = Unknown

1 = AHY

2 = HY

4 = L

5 = SY

6 = ASY

7 = TY

8 = ATY

0 = Unknown

4 = Male

5 = Female

For each bird, a code describing the method of aging and sexing should be recorded for all birds using the following codes.

1 = Plumage

2 = Skull

3 = Eye Color

4 = Wing Length

5 = Cloacal Protuberance

6 = Brood Patch

7 = Mouth/bill

8 = Culmen Length

9 = Retrice Shape

Wing – the un-flattened wing length (wing chord) should be recorded in millimeters.

Weight – the weight may be recorded in grams using a digital scale with 0.1 g increments.

Fat Score – the 7 point fat scoring system should be used with the following codes

0 = None

1 = Trace

2 = Light

3 = Half

4 = Filled

5 = Bulging

6 = Greatly Bulging

7 = Excessively Bulging

Cloacal Protuberance – should a bird have a CP, the relative size of the CP should be ranked using the following criteria.

0 = None (cloaca not enlarged)

1 = Small (cloaca somewhat enlarged and noticeably swollen, shape is such that it is widest at the base and narrowest at the tip. Care should be used with this ranking as it can be difficult to ascertain.

2 = Medium (cloaca protuberance large, diameter fully as large near the tip as at the base).

3 = Large (cloaca protuberance very large with a diameter considerably larger in the middle than at the base.

Brood Patch – similar to a CP, all brood patches should be ranked using the following codes

0 = None (no brood patch)

1 = Smooth (lower breast feathers and abdomen feathers lost, some vascularization present but overall, the area is rather smooth and dark red).

2 = Vascularized (vascularization evident, some wrinkles present and some fluid under the skin giving the area a pale, opaque, pinkish color).

3 = Heavy (vascularization extreme, thickly wrinkled and much fluid under the skin. This is the maximum extent of the brood patch and is present when the bird is incubating eggs).

4 = Wrinkled (vascularization mostly has disappeared and the fluid under the skin mostly gone. The skin retains many thin, dry looking wrinkles).

5 = Molting (vascularization and fluid buildup gone, new pin feathers present).

Moult – this space is reserved for recording basic information regarding a bird’s moult using the following codes. Note that this information is supplementary and should only be recorded when time and/or bird volume allows.

B = Body
H = Head
T = Tail
W = Wing

GC = Greater Coverts
MC = Median Coverts
LC = Lesser Coverts
A = Alula

A ranking of juvenal plumage may also be recorded in the moult section using the following codes.

3 = Full (full juvenal plumage)
2 = Greater (more than half of juvenal plumage remains, mostly appears like a juvenile)
1 = Less (less than half of juvenal plumage remains)
0.5 = no juvenal plumage remaining, but formative feathers still growing in
0 = None (no juvenal plumage)

Status- the status of each bird shall be recorded using the following codes (only some of the more common codes shown). Should consecutive birds have the same status, a line should be drawn through the status box.

300 = normal wild bird, federal numbered leg band only
301 = normal wild bird, colored leg band
500 = sick, exhausted, injured, crippled or deformed with federal numbered leg band
501 = sick, exhausted, injured, crippled or deformed with colored leg band

Date – the month and day should be recorded at the top of each banding sheet and then a line should be drawn through the date boxes for each corresponding banding record.

Time – the time should be recorded as the time each respective net round was started. On each banding sheet, the first time of each net round should be recorded with a line being recorded in the time box for each bird from the net round.

Intl – the bander’s initials should be recorded for each bird banded. Be sure that the initials match the bander’s name and initials at the top of the page. Do not rewrite the bander’s initials, rather use a line in the corresponding field, except for the first bird of each day.

Trap – record the method of capture for each bird, this should typically be MN (Mist Net). Do not rewrite the trap, rather use a line in the corresponding field, except for the first bird of each day.

Tail & PP – these measurements may be recorded in special circumstances when such data may be valuable. These fields are particularly useful in terms of the *Empidonax* flycatchers.

NSB – include a checkmark in this box for all birds banded outside of the daily count period (non standard banding).

Comments – include any additional information of interest in this field.

2.3 Recapture Sheet

The methods for data collection on the recapture sheet are similar to the original recapture sheet with the following exceptions.

- Take extreme care to accurately record the full band number for all birds, especially those which are not repeats from the current season.
 - In the case of repeats, a line may be drawn beneath the portion of the previous band number with the same digits.
- The age, sex and wing length are supplemental data on the recapture sheet.

2.4 Molt Sheet

As with the recapture sheet, take care to record the band number accurately for all birds which are molt scored. To assign molt scores for each feather, use the codes in the attached diagram which uses a scoring system of 0 (old feather) to 5 (complete new feather). Also note that the scores of the primary and secondary feathers are the priority scores.

Appendix 3
BANDING SHEETS

Appendix 4
DAILY LOG SHEETS

TESLIN LAKE BIRD OBSERVATORY

Daily Log Sheet

DATE	
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DAILY COVERAGE CODE	
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Personnel	Initials	Code	Time	Hours Onsite	
				Standard	Non-Standard
BIC-					

Visitors	Origin	Time

Weather	Count Period				Synopsis
	Start	Mid	End	Dusk	
Wind Direction					
Wind Strength					
Visibility (km)					
Cloud (%)					
Temperature (°C)					
Precipitation					

Daily Count Timing			
Start	Nets Open	Nets Closed	End

Total Birds Banded	
Total Species Banded	
Total Net Hours	
Birds Banded / 100 hrs	
Total Species Detected	

SEASON BANDED TOTAL	
---------------------	--

Rare Bird Bandings / Sightings	Bird Mortalities / Injuries

Daily Narrative (description of migration activity, visitors, station maintenance, etc)

Mist Net & Visual Migration Watch Effort Sheet - FALL

DATE	
------	--

Mist Nets		Net Length (m)	Standard Count Period									Non Standard Corrected Net Hrs
			Open	Close	Open	Close	Open	Close	Total Hrs	Correction Factor	Corrected Net Hrs	
Group	#											
A	7	12								1		
	10	12								1		
	15	12								1		
	18	12								1		
B	6	12								1		
	8	12								1		
	9	12								1		
	11	12								1		
	14	12								1		
C	16	12								1		
	17	12								1		
	20	12								1		
D	1	12								1		
	2	12								1		
	4	12								1		
	5	12								1		
	24	18								1.5		
E	21	12								1		
	22	18								1.5		
	23	12								1		
TOTAL												

Visual Migration Counts						
Time Start	Duration (min)	Observer	Time Start	Duration (min)	Observer	Viewing Avenue (LAKE / LAND) Ratio

Mist Net & Visual Migration Watch Effort Sheet - FALL

DATE	
------	--

Mist Nets		Net Length (m)	Standard Count Period									Non Standard Corrected Net Hrs
			Open	Close	Open	Close	Open	Close	Total Hrs	Correction Factor	Corrected Net Hrs	
Group	#											
A	7	12								1		
	10	12								1		
	15	12								1		
	18	12								1		
B	8	12								1		
	9	12								1		
	11	12								1		
	14	12								1		
C	16	12								1		
	17	12								1		
	20	12								1		
D	1	12								1		
	2	12								1		
	4	12								1		
	5	12								1		
	6	12								1		
	24	18								1.5		
E	21	12								1		
	22	18								1.5		
	23	12								1		
TOTAL												

Visual Migration Counts						
Time Start	Duration (min)	Observer	Time Start	Duration (min)	Observer	Viewing Avenue (LAKE / LAND) Ratio

APPENDIX B – ALL TIME BANDING TOTALS

SPECIES	2005		2006		2007		2008		2009	2010	2011	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall			
Northern Harrier							1					1		1
Sharp Shinned hawk					2		1	10	23	14	7	3	54	57
Merlin											2		2	2
Solitary Sandpiper				2				2	5	1	3		13	13
Spotted Sandpiper	1		2		1		1			1	2	5	3	8
Wilson's Snipe							1	1	1			1	2	3
Boreal Owl											4		4	4
Belted Kingfisher				8				8	6	5	6		33	33
Yellow-bellied Sapsucker	2		2		2		1				3	7	3	10
Downy Woodpecker								2	1	3	7		13	13
Hairy Woodpecker	2											2		2
Yellow-shafted Northern Flicker	1				1					1	1	2	2	4
Olive-sided Flycatcher			11				6				1	17	1	18
Western Wood-pewee	3		2		2			3	6	5	10	7	24	31
Yellow-bellied Flycatcher	2	2	1		1			9	8	11	7	4	37	41
Alder Flycatcher	17	9	41	18	10	5	9	811	631	620	637	77	2731	2808
Least Flycatcher	3		4		3		2	2	1	3	10	12	16	28
Hammond's Flycatcher	7		5		11			18	6	12	17	41	63	104
Dusky Flycatcher	2				2			1	6	3	6	4	16	20
Eastern Phoebe			1									1	0	1
Say's Phoebe			2		2			1	1	1	1	5	3	8
Northern Shrike										1	1		2	2
Warbling Vireo	13		1	4			1	9	10	19	17	15	59	74
Common Raven									1	1			2	2
Gray Jay	5				1				5	4		6	9	15
Horned Lark			3									3		3
Tree Swallow	5											5		5
Barn Swallow									1				1	1
Black-capped Chickadee		4	4	3	2		2	57	26	22	92	8	204	212
Mountain Chickadee							2	15	11		2	2	28	30
Chestnut-backed Chickadee								1					1	1
Boreal Chickadee	2		3		2		8	138	831		233	15	1202	1217
Hybrid Chickadee			1					1				1	1	2
Red-breasted Nuthatch							1	3	2	2	5	1	12	13

SPECIES	2005		2006		2007		2008		2009	2010	2011	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall			
Winter Wren	1											1		1
Golden-crowned Kinglet		1							10	2	1		14	14
Ruby-crowned Kinglet	25	7	51	3	27		72	29	175	109	86	175	409	584
Townsend's Solitaire									1		1		2	2
Gray-cheeked Thrush	4	2	2		5		1	1	2	8	2	12	15	27
Swainson's Thrush	99	7	39	10	48		21	19	49	53	85	207	223	430
Hermit Thrush	1		1				1	1	7	12	12	3	32	35
American Robin	27	1	36	5	17		4		27	9	11	84	53	137
Varied Thrush			1		2			3	12	5	2	3	22	25
American Pipit			2				1	1	3		2	3	6	9
Bohemian Waxwing			40				23				1	63	1	64
Cedar Waxwing										2			2	2
Northern Waterthrush	4	1	14	10	11		4	46	53	54	42	33	206	239
Tennessee Warbler	4		4		6		2		9	40	4	16	53	69
Orange-crowned Warbler	16	6	26	1	47		61	101	180	271	57	150	616	766
Nashville Warbler								1					1	1
MacGillvary's Warbler	1		1					1	3	2		2	6	8
Common Yellowthroat	1		17	4	11	6	21	66	113	70	72	50	331	381
American Redstart			6	4	1			10	43	30	39	7	126	133
Cape May Warbler							1					1		1
Magnolia Warbler	1							1				1	1	2
Yellow Warbler	10	6	50	19	37	3	31	486	325	471	310	128	1620	1748
Blackpoll Warbler	3	2	21	4	10		5	47	107	194	58	39	412	451
Myrtle Warbler	60	3	63	5	29		78	49	284	673	142	230	1156	1386
Audubon's Warbler											1		1	1
Yellow-rumped Warbler							1	1				1	1	2
Townsend's Warbler							1		8	10	6	1	24	25
Wilson's Warbler	116	8	54	5	63		151	113	161	177	133	384	597	981
Western Tanager			1						1			1	1	2
American-tree Sparrow	220		13	1	72		41	19	54	21	77	346	172	518
Chipping Sparrow	28		4	1	6		3	6	24	18	28	41	77	118
Brewer's Sparrow				1					1		2		4	4
Savannah Sparrow	11	2	2	2	24		10	14	18	18	23	47	77	124
Fox Sparrow	106		3		17		26	11	28	28	17	152	84	236

SPECIES	2005		2006		2007		2008		2009	2010	2011	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall			
Song Sparrow										1			1	1
Lincoln's Sparrow	9	1	6		39		21	5	16	14	27	75	63	138
Swamp Sparrow										2			2	2
White-throated Sparrow					1							1		1
White-crowned Sparrow	86	3	13		579		311	1	33	36	34	989	107	1096
Golden-crowned Sparrow	1				16		9					26		26
Slate-colored Junco	165	12	139	5	135		224	182	582	420	331	663	1532	2195
Dark-eyed Junco					9		31	11				40	11	51
Lapland Longspur							5					5		5
Red-winged Blackbird			1		1							2		2
Rusty Blackbird	19		3		2	1		11	30	20	16	24	78	102
Brown-headed Cowbird	1										1	1	1	2
Pine Grosbeak			2									2		2
Purple Finch	27		3		6		1			10	1	37	11	48
Red Crossbill	3											3		3
White-winged Crossbill			5					2	2	100	1	5	105	110
Common Redpoll			107		1		22		6	1	75	130	82	212
Hoary Redpoll					3						2	3	2	5
Pine Siskin	28		1					1	1	91	10	29	103	132
TOTAL SPECIES BANDED	43	18	48	21	43	4	45	48	53	52	57	70	73	87
TOTAL BIRDS BANDED	1142	77	814	115	1267	15	1238	2319	3956	3706	2793	4461	12774	17442

APPENDIX C – ESTIMATED TOTAL DATA SUMMARY

Species	ALL OBS		First Date	Last Date	HIGH COUNT		Median Date
	# of Days	Bird Days			#	Date	
Red-throated Loon	55	163	29-Jul	24-Oct	18	13-Sep	14-Sep
Pacific Loon	59	756	30-Jul	24-Oct	362	29-Sep	29-Sep
Common Loon	80	334	16-Jul	22-Oct	15	17-Sep	07-Sep
Yellow-billed Loon	3	6	11-Oct	13-Oct	4	11-Oct	-
<i>Unidentified Large Loon</i>	3	4					
<i>Unidentified Loon</i>	13	50					
Horned Grebe	59	158	30-Jul	23-Oct	12	10-Sep	10-Sep
Red-necked Grebe	81	1163	22-Jul	30-Oct	76	18-Aug	21-Aug
Western Grebe	1	1	12-Oct	-	1	-	-
Greater White-fronted Goose	22	7352	07-Aug	13-Oct	5789	29-Aug	29-Aug
Snow Goose	4	238	02-Oct	12-Oct	191	04-Oct	-
Canada Goose	32	1580	22-Aug	21-Oct	249	23-Sep	24-Sep
<i>Unidentified Goose</i>	12	2366					
Trumpeter Swan	21	1381	30-Sep	28-Oct	411	13-Oct	14-Oct
Tundra Swan	30	16160	22-Sep	29-Oct	4941	11-Oct	11-Oct
Bewick's Swan	2	2	05-Oct	08-Oct	1	both days	-
<i>Unidentified Swan</i>	28	2036					
American Wigeon	21	268	26-Aug	11-Oct	103	18-Sep	-
Mallard	61	702	22-Jul	21-Oct	140	05-Oct	05-Oct
Northern Shoveler	5	28	26-Aug	11-Oct	14	26-Aug	-
Northern Pintail	19	173	06-Aug	24-Oct	40	25-Sep	25-Sep
American Green-winged Teal	6	27	30-Aug	08-Oct	8	30-Oct	-
<i>Unidentified Dabbling Duck</i>	2	39					
Canvasback	4	65	29-Sep	14-Oct	35	12-Oct	-
Red-winged Blackbird	4	8	16-Jul	13-Aug	4	16-Jul	-
Ring-necked Duck	4	7	26-Sep	03-Oct	4	02-Oct	-
Greater Scaup	8	42	22-Sep	22-Oct	14	30-Sep	30-Sep
Lesser Scaup	25	1310	23-Jul	22-Oct	464	23-Sep	24-Sep
<i>Unidentified Scaup</i>	5	81					
Harlequin Duck	1	1	05-Sep	-	1	-	-

Species	ALL OBS		First Date	Last Date	HIGH COUNT		Median Date
	# of Days	Bird Days			#	Date	
Surf Scoter	27	360	23-Jul	05-Oct	150	10-Aug	10-Aug
White-winged Scoter	9	48	08-Aug	19-Oct	21	05-Oct	05-Oct
Long-tailed Duck	8	75	05-Oct	24-Oct	34	21-Oct	21-Oct
Bufflehead	5	44	08-Sep	21-Oct	30	21-Oct	-
Common Goldeneye	22	112	03-Aug	31-Oct	12	14-Oct	16-Oct
Barrow's Goldeneye	1	1	16-Oct	-	1	-	-
<i>Unidentified Goldeneye</i>	5	51					
Common Merganser	65	451	16-Jul	31-Oct	35	13-Oct	03-Oct
Red-breasted Merganser	29	97	29-Jul	30-Oct	10	31-Jul	21-Aug
<i>Unidentified Merganser</i>	2	40					
<i>Unidentified Duck</i>	12	164					
Osprey	16	62	25-Aug	10-Oct	23	23-Sep	25-Sep
Bald Eagle	73	171	22-Jul	29-Oct	24	24-Sep	27-Sep
Northern Harrier	54	687	06-Aug	21-Oct	159	23-Sep	25-Sep
Sharp-shinned Hawk	61	724	02-Aug	22-Oct	155	26-Sep	26-Sep
Northern Goshawk	27	44	22-Jul	30-Oct	4	13-Oct	11-Oct
Swainson's Hawk	3	23	29-Aug	05-Sep	21	29-Aug	-
Red-tailed Hawk	48	1112	24-Jul	26-Oct	389	26-Sep	27-Sep
Rough-legged Hawk	30	332	23-Sep	29-Oct	52	13-Oct	10-Oct
Golden Eagle	29	377	18-Sep	30-Oct	68	14-Oct	06-Oct
American Kestrel	36	246	06-Aug	17-Oct	67	23-Sep	25-Sep
Merlin	33	74	06-Aug	17-Oct	9	26-Sep	26-Sep
Peregrine Falcon	9	19	03-Aug	30-Sep	7	23-Sep	23-Sep
<i>Unidentified Eagle</i>	5	8					
<i>Unidentified Large Raptor</i>	8	10					
<i>Unidentified Small Raptor</i>	9	14					
<i>Unidentified Buteo</i>	13	26					
Ruffed Grouse	60	139	22-Jul	31-Oct	15	05-Sep	-
Spruce Grouse	3	4	07-Sep	03-Oct	2	07-Sep	-
Sandhill Crane	8	123	29-Aug	13-Oct	59	26-Sep	-

Species	ALL OBS		First Date	Last Date	HIGH COUNT		Median Date
	# of Days	Bird Days			#	Date	
Black-bellied Plover	2	2	01-Oct	02-Oct	1	both days	-
American Golden Plover	1	1	04-Aug	-	1	-	-
Semi-palmated Plover	16	34	31-Jul	24-Aug	10	14-Aug	13-Aug
Killdeer	1	1	31-Aug	-	1	-	-
Greater Yellowlegs	1	1	04-Aug	-	1	-	-
Lesser Yellowlegs	10	18	26-Jul	17-Aug	4	28-Jul	-
Solitary Sandpiper	33	47	16-Jul	28-Aug	3	28-Jul	05-Aug
Spotted Sandpiper	53	189	22-Jul	21-Sep	15	06-Aug	11-Aug
Sanderling	3	4	31-Aug	09-Sep	2	09-Sep	-
Semi-palmated Sandpiper	10	40	16-Jul	09-Sep	14	30-Jul	30-Jul
Western Sandpiper	1	1	26-Aug	-	1	-	-
Least Sandpiper	11	20	24-Jul	13-Aug	4	05-Aug	-
<i>Unidentified Peep Sandpiper</i>	3	25					
Baird's Sandpiper	1	1	24-Jul	-	1	-	-
Pectoral Sandpiper	2	31	30-Aug	23-Sep	30	23-Sep	-
Long-billed Dowitcher	3	5	18-Sep	26-Sep	3	18-Sep	-
Red-necked Phalarope	2	9	07-Aug	25-Aug	7	25-Aug	-
Wilson's Snipe	6	7	29-Aug	26-Sep	2	29-Aug	-
<i>Unidentified Shorebird</i>	4	28					
Parasitic Jaeger	9	12	02-Sep	11-Oct	3	07-Sep	07-Sep
Little Gull	13	13	24-Sep	09-Oct	1	all days	03-Oct
Bonaparte's Gull	8	22	22-Jul	14-Aug	6	12-Aug	-
Mew Gull	61	227	27-Jul	29-Oct	14	27-Aug	26-Aug
Herring Gull	102	2995	16-Jul	31-Oct	110	01-Aug	15-Aug
Thayer's Gull	19	127	21-Aug	12-Oct	25	21-Sep	21-Sep
Glaucous-winged Gull							
Glaucous Gull	14	16	16-Sep	24-Oct	3	2 / 24 Sep	-
Sabine's Gull	8	8	04-Sep	24-Oct	1	all days	-
Arctic Tern	21	329	22-Jul	29-Aug	110	01-Aug	02-Aug
<i>Unidentified Large Gull</i>	5	17					

Species	ALL OBS		First Date	Last Date	HIGH COUNT		Median Date
	# of Days	Bird Days			#	Date	
<i>Hybrid Gull - GWGU x HERG</i>	15	20					
<i>Hybrid Gull - GLGU x HERG</i>	3	6					
Great Horned Owl	1	1	11-Sep	-	1	-	-
Northern Hawk Owl	3	3	10-Sep	10-Oct	1	all days	-
Short-eared Owl	1	1	15-Oct	-	1	-	-
Boreal Owl	2	5	10-Sep	11-Sep	3	10-Sep	-
Common Nighthawk	1	2	29-Aug	-	2	-	-
Belted Kingfisher	54	82	16-Jul	27-Sep	4	13-Aug	-
Yellow-bellied Sapsucker	6	6	26-Jul	13-Sep	1	all days	-
Downy Woodpecker	25	27	22-Jul	10-Oct	2	23 / 25 Jul	15-Aug
Hairy Woodpecker	8	9	31-Aug	03-Oct	2	30-Sep	-
American Three-toed Woodpecker	19	25	26-Aug	26-Oct	3	26 Sep / 10 Oct	-
Black-back Woodpecker	1	1	11-Oct	-	1	-	-
Northern Flicker	11	14	16-Jul	26-Sep	2	many days	-
<i>Unidentified Woodpecker</i>	9	20					
Olive-sided Flycatcher	9	14	18-Aug	04-Sep	3	26 / 29 Aug	26-Aug
Western Wood-Pewee	11	21	02-Aug	06-Sep	4	24 / 29 Aug	24-Aug
<i>Unidentified Contopus flycatcher</i>	3	11					
Yellow-bellied Flycatcher	6	7	12-Aug	04-Sep	2	12-Aug	15-Aug
Alder Flycatcher	46	684	22-Jul	30-Sep	90	24-Aug	21-Aug
Least Flycatcher	8	11	22-Jul	15-Aug	2	8 / 15 Aug	-
Hammond's Flycatcher	23	37	16-Jul	05-Sep	5	31-Jul	03-Aug
Dusky Flycatcher	6	6	01-Aug	27-Aug	1	all days	-
<i>Unidentified Empid Flycatcher</i>	1	1					
Say's Phoebe	9	13	08-Aug	04-Sep	3	21-Aug	24-Aug
Northern Shrike	6	6	09-Aug	24-Oct	1	all days	-
Warbling Vireo	20	37	16-Jul	09-Sep	4	23 / 27 Jul	29-Jul
Gray Jay	41	99	07-Aug	31-Oct	6	01-Oct	-
Steller's Jay	1	1	15-Oct	-	1	-	-
Black-billed Magpie	58	85	24-Aug	31-Oct	6	27-Sep	01-Oct

Species	ALL OBS		First Date	Last Date	HIGH COUNT		Median Date
	# of Days	Bird Days			#	Date	
Common Raven	100	586	22-Jul	31-Oct	20	13 / 14 Oct	-
Tree Swallow	8	39	16-Jul	17-Aug	28	16-Jul	-
Violet-green Swallow	4	6	01-Aug	23-Sep	2	15 / 18 Aug	-
Bank Swallow	20	371	01-Aug	02-Oct	67	17-Aug	14-Aug
Cliff Swallow	10	89	28-Jul	27-Aug	50	15-Aug	-
Barn Swallow	8	58	01-Aug	25-Aug	28	01-Aug	02-Aug
<i>Unidentified Swallow</i>	20	773					
Black-capped Chickadee	90	270	16-Jul	31-Oct	12	28-Sep	06-Sep
Mountain Chickadee	3	3	12-Sep	03-Oct	1	all days	-
Chestnut-backed Chickadee	1	1	15-Oct	-	1	-	-
Boreal Chickadee	50	486	14-Aug	24-Oct	65	10-Sep	10-Sep
Red-breasted Nuthatch	13	14	23-Jul	02-Oct	2	06-Aug	06-Aug
Brown Creeper	1	1	15-Oct	-	1	-	-
Pacific Wren / Winter Wren	1	1	28-Jul	-	1	-	-
Golden-crowned Kinglet	3	5	02-Aug	02-Sep	3	02-Sep	-
Ruby-crowned Kinglet	46	129	16-Jul	24-Sep	11	24-Sep	23-Sep
Mountain Bluebird	12	89	23-Sep	26-Oct	50	23-Sep	23-Sep
Townsend's Solitaire	19	47	03-Aug	14-Oct	9	25-Aug	03-Sep
Gray-cheeked Thrush	2	2	07-Sep	18-Sep	1	both days	-
Swainson's Thrush	41	140	16-Jul	13-Sep	7	many days	08-Aug
Hermit Thrush	13	15	09-Aug	11-Oct	3	27-Sep	23-Sep
American Robin	83	6638	16-Jul	29-Oct	1748	26-Sep	25-Sep
Varied Thrush	45	871	31-Jul	14-Oct	326	05-Sep	08-Sep
<i>Unidentified Large Thrush</i>	28	4989					
American Pipit	58	410	06-Aug	27-Oct	101	23-Sep	23-Sep
Bohemian Waxwing	30	881	29-Jul	29-Oct	115	24-Oct	13-Oct
<i>Unidentified Waxwing</i>	4	42					
Tennessee Warbler	7	7	23-Jul	18-Aug	1	all days	09-Aug
Orange-crowned Warbler	45	81	04-Oct	16-Jul	5	28-Aug	30-Aug
Magnolia Warbler	1	1	24-Jul	-	1	-	-

Species	ALL OBS		First Date	Last Date	HIGH COUNT		Median Date
	# of Days	Bird Days			#	Date	
Yellow Warbler	64	484	16-Jul	08-Oct	70	13-Aug	17-Aug
Yellow-rumped "Myrtle" Warbler	86	611	16-Jul	28-Oct	53	05-Sep	26-Aug
Yellow-rumped "Audobon's" Warbler	1	1	04-Aug	-	1	-	-
Townsend's Warbler	6	9	02-Aug	29-Sep	3	04-Aug	06-Aug
Blackpoll Warbler	39	107	22-Jul	25-Sep	12	05-Aug	13-Aug
American Redstart	36	129	16-Jul	26-Sep	10	30 Jul / 5 Aug	02-Aug
Northern Waterthrush	31	85	16-Jul	28-Aug	10	13-Aug	31-Jul
MacGillivray's Warbler							
Common Yellowthroat	58	109	23-Jul	10-Oct	7	24-Aug	25-Aug
Wilson's Warbler	54	177	26-Jul	08-Oct	16	23-Sep	16-Sep
<i>Unidentified Warbler</i>	20	102					
Western Tanager	3	3	22-Jul	03-Aug	1	all days	-
Lapland Longspur	33	101	25-Aug	27-Oct	18	12-Oct	05-Oct
American Tree Sparrow	47	176	27-Aug	31-Oct	23	26-Sep	30-Sep
Chipping Sparrow	24	57	16-Jul	11-Sep	8	6 / 7 Aug	09-Aug
Brewer's Sparrow	2	2	22-Aug	08-Sep	1	both days	-
Savannah Sparrow	41	78	01-Aug	30-Oct	8	23-Sep	02-Sep
Fox Sparrow	15	21	31-Jul	12-Oct	3	31-Aug	02-Sep
Lincoln's Sparrow	16	28	01-Aug	07-Oct	5	30-Sep	-
White-crowned Sparrow	24	46	08-Aug	30-Oct	11	21-Aug	26-Aug
Dark-eyed Junco	98	1086	16-Jul	31-Oct	140	30-Sep	22-Sep
<i>Unidentified Small Sparrow</i>	1	1					
<i>Unidentified Sparrow</i>	7	37					
Snow Bunting	13	150	10-Oct	31-Oct	45	13-Oct	15-Oct
Rusty Blackbird	64	667	22-Jul	29-Oct	123	23-Sep	24-Sep
Brown-headed Cowbird	2	2	26-Jul	30-Jul	1	both days	-
<i>Unidentified Blackbird</i>	1	1					
Pine Grosbeak	40	711	27-Aug	31-Oct	131	16-Oct	15-Oct
Purple Finch	7	7	16-Jul	12-Aug	1	all days	-
Red Crossbill	9	12	16-Jul	14-Sep	2	many days	-

Species	ALL OBS		First Date	Last Date	HIGH COUNT		Median Date
	# of Days	Bird Days			#	Date	
White-winged Crossbill	26	101	16-Jul	17-Oct	20	01-Aug	03-Aug
Common Redpoll	51	6986	24-Jul	31-Oct	2239	11-Oct	11-Oct
Pine Siskin	52	1943	16-Jul	12-Oct	680	25-Aug	25-Aug
Hoary Redpoll	2	2	05-Oct	11-Oct	1	both days	-
<i>Unidentified Small Finch</i>	44	7089					
<i>Unidentified Small Passerine</i>	69	6418					

APPENDIX D – MIGRATION TIMING FIGURES (MIST NETTING)

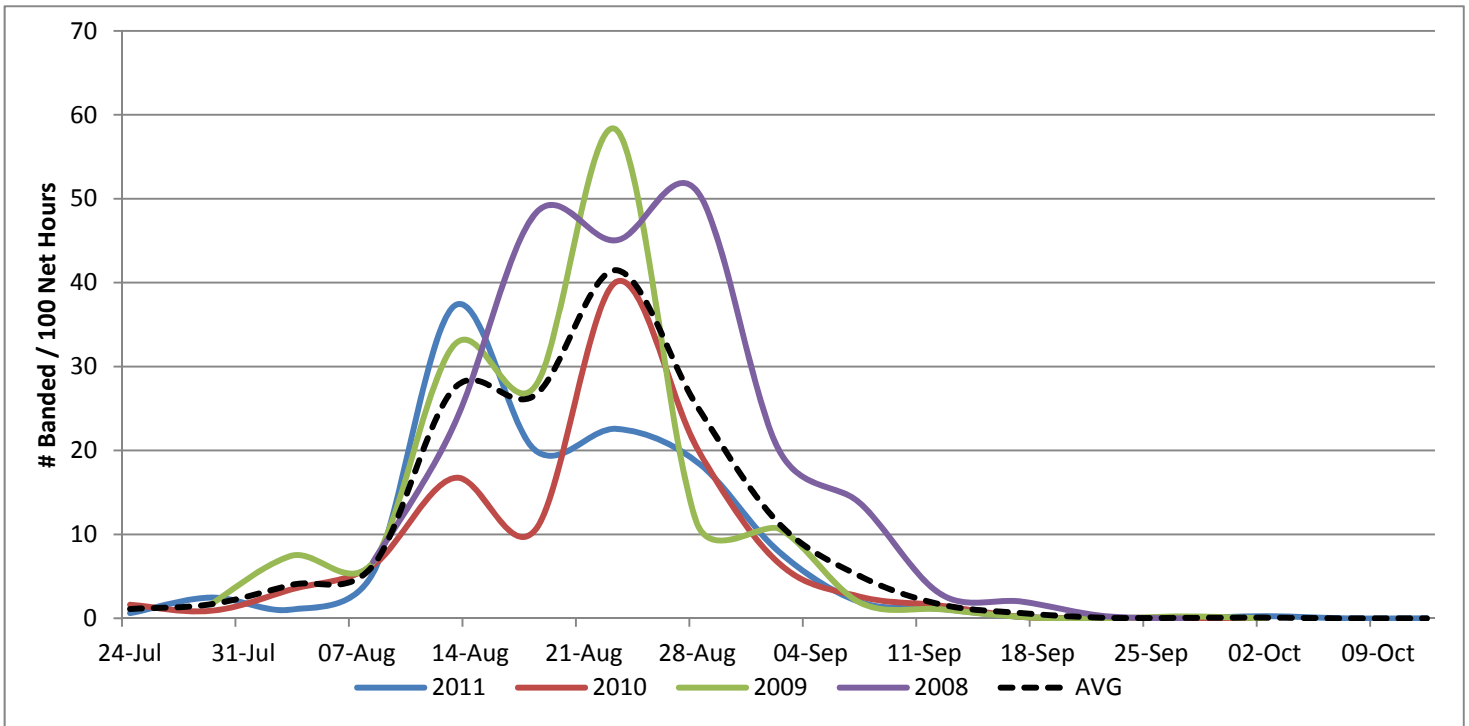


Figure 1. Alder Flycatcher fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

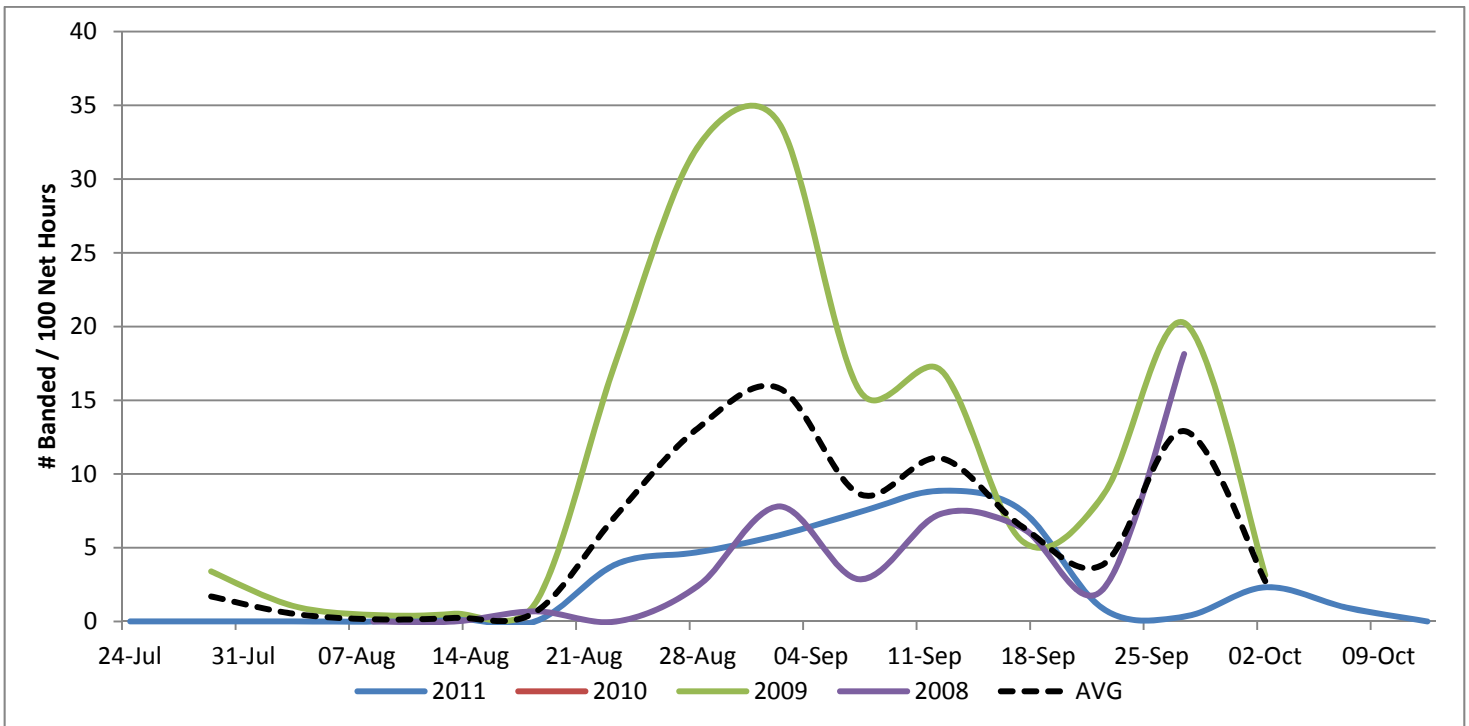


Figure 2. Boreal Chickadee fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.. Note zero individuals were banded in 2010.

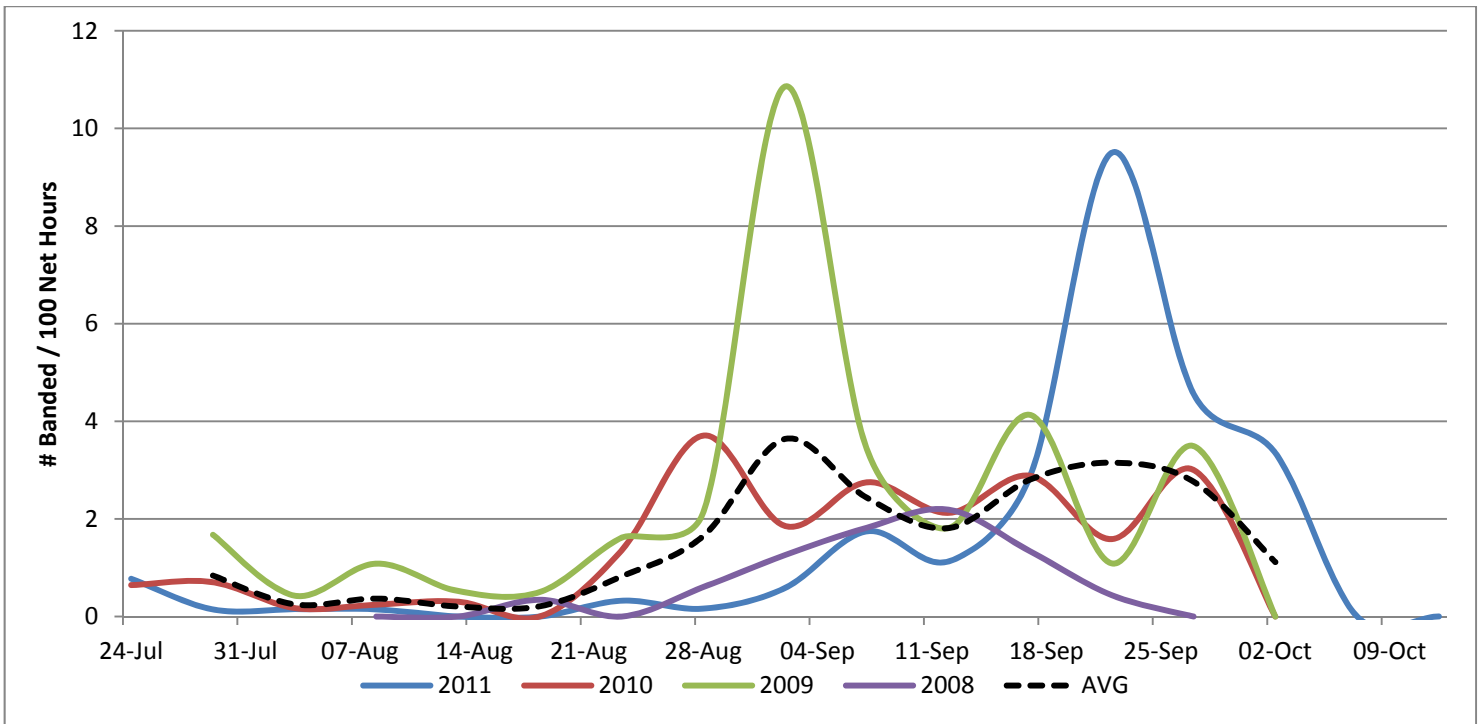


Figure 3. Ruby-crowned Kinglet fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

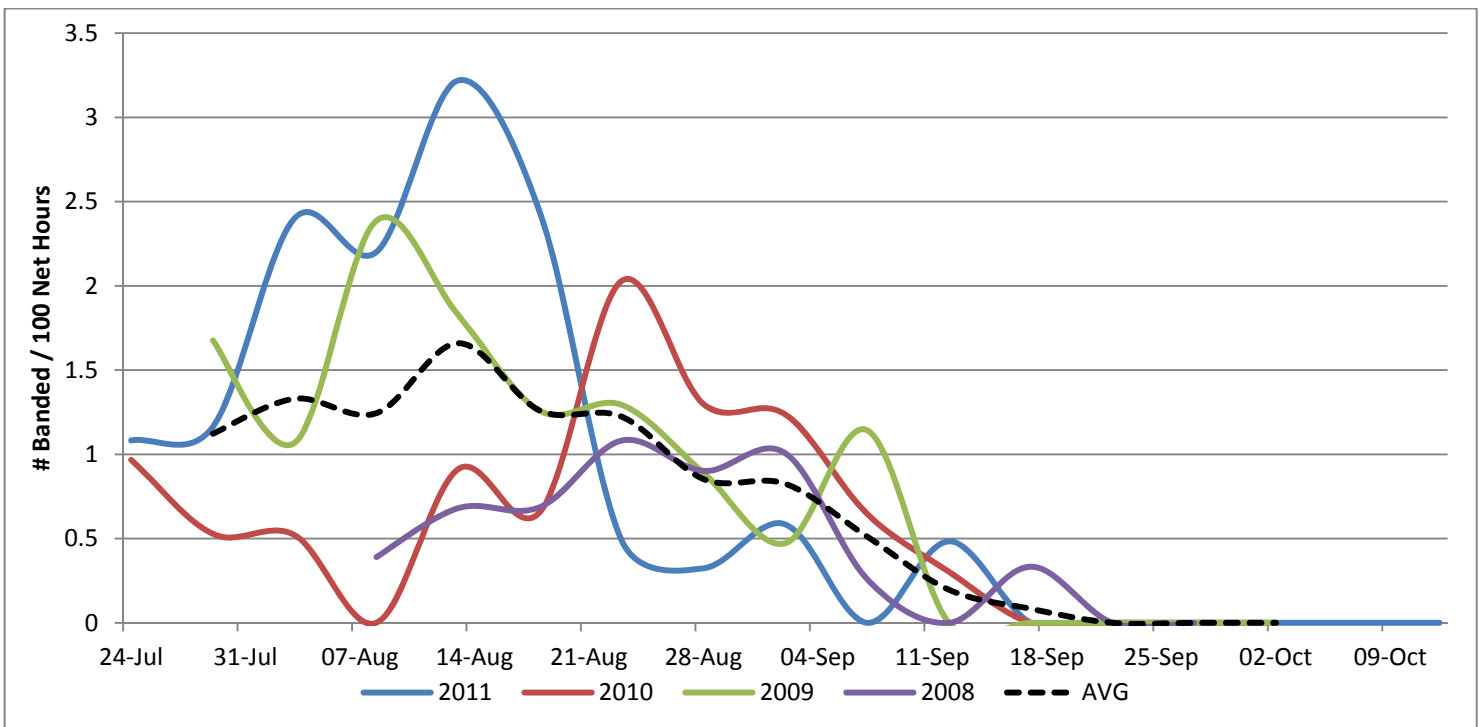


Figure 4. Swainson's Thrush fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

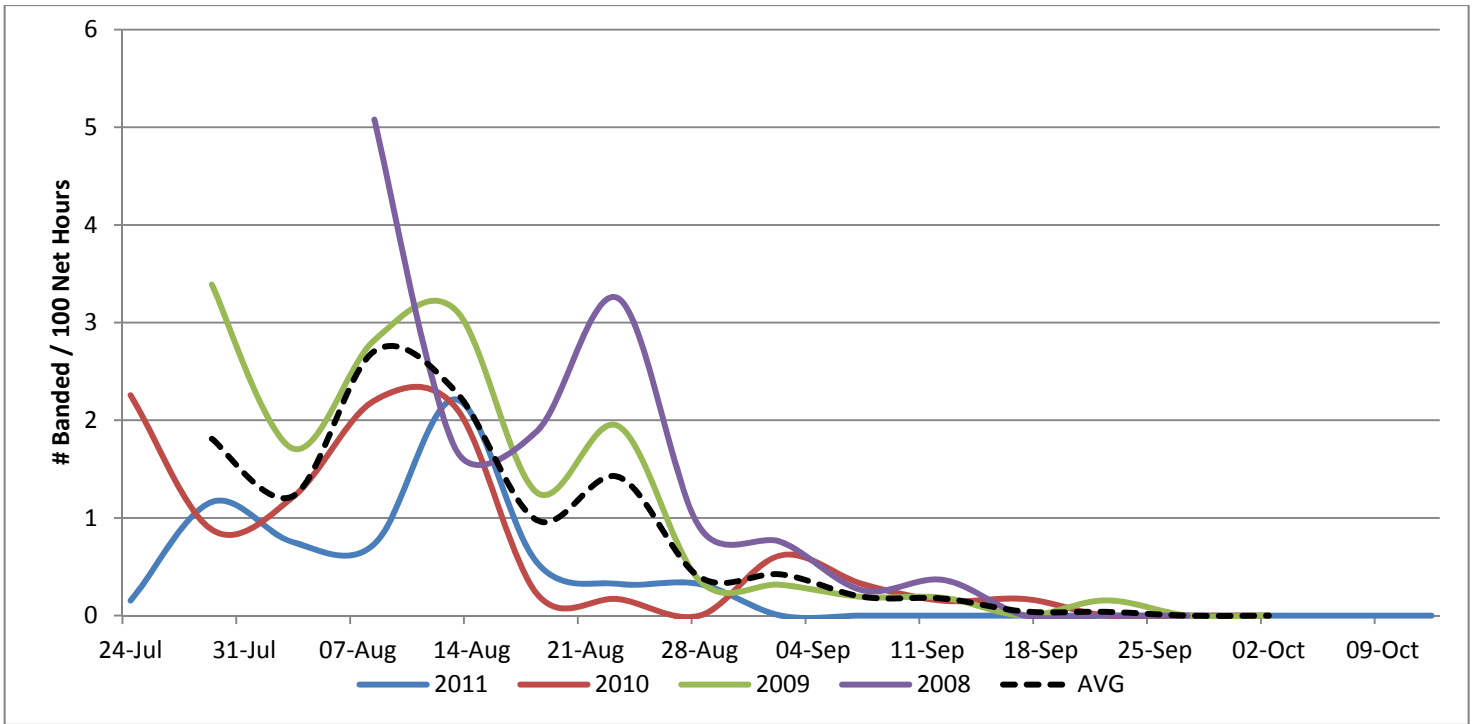


Figure 5. Northern Waterthrush fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

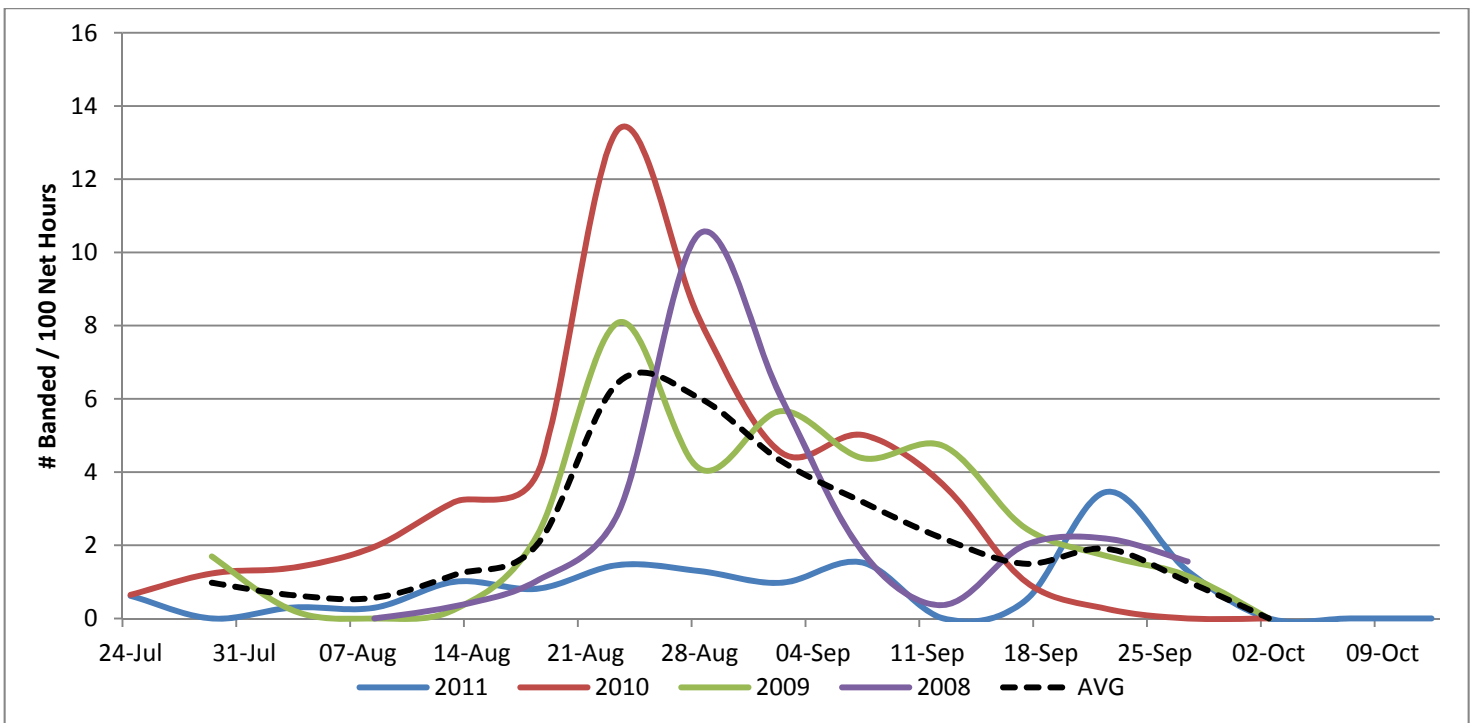


Figure 6. Orange-crowned Warbler fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

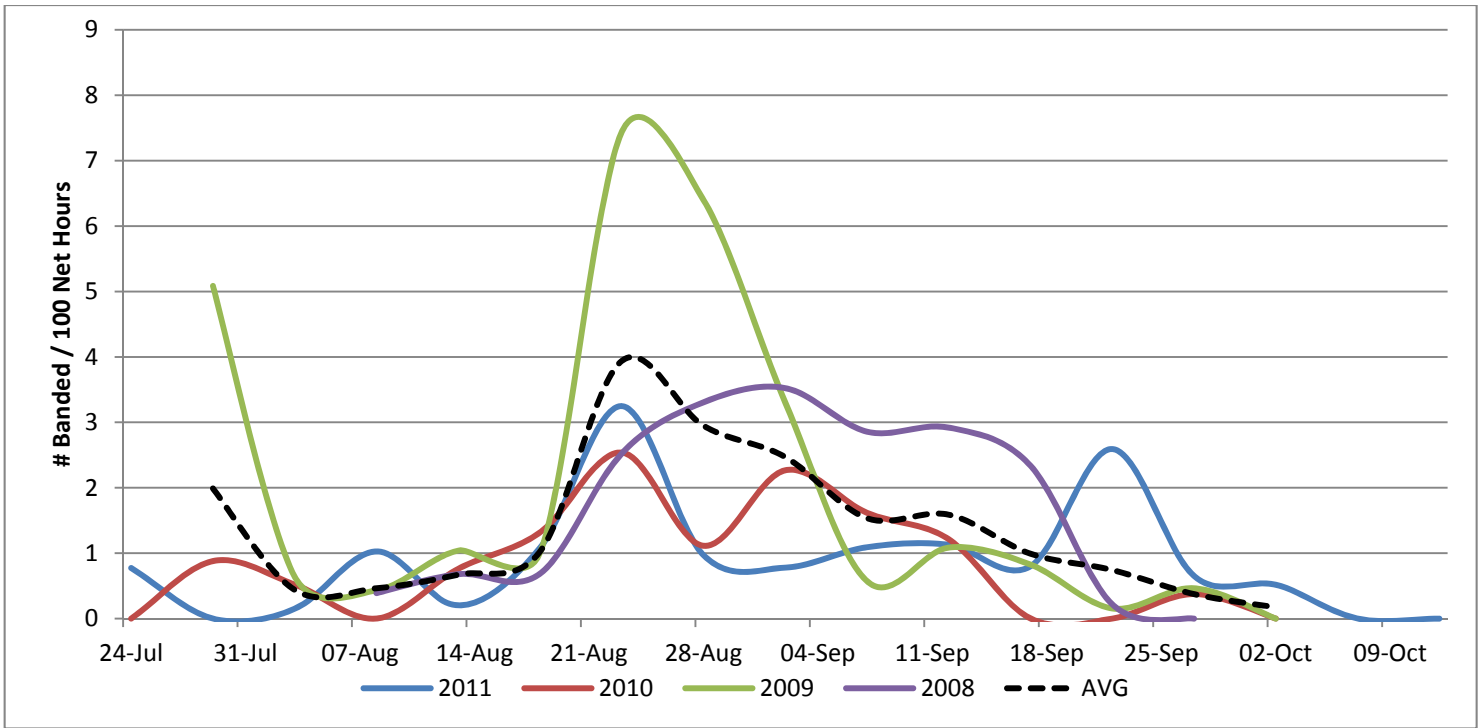


Figure 7. Common Yellowthroat fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

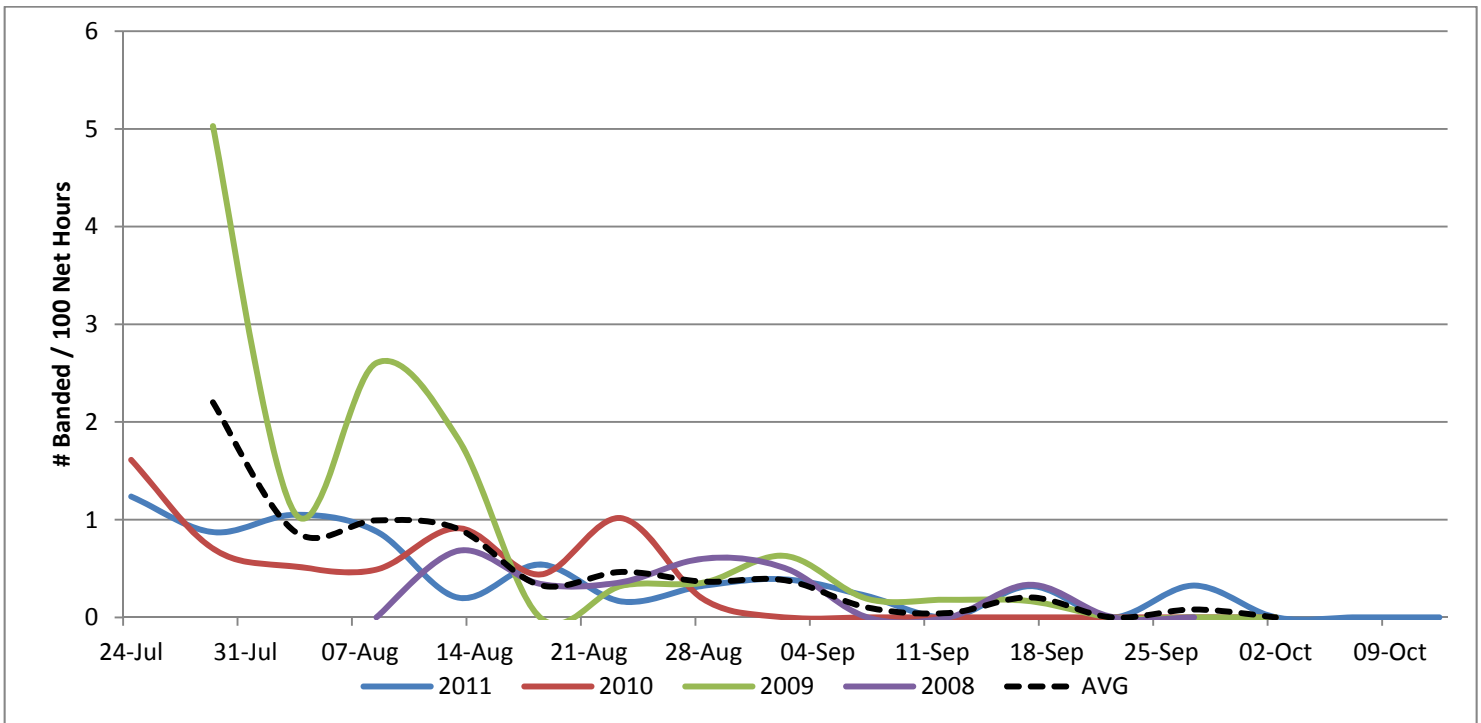


Figure 8. American Redstart fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

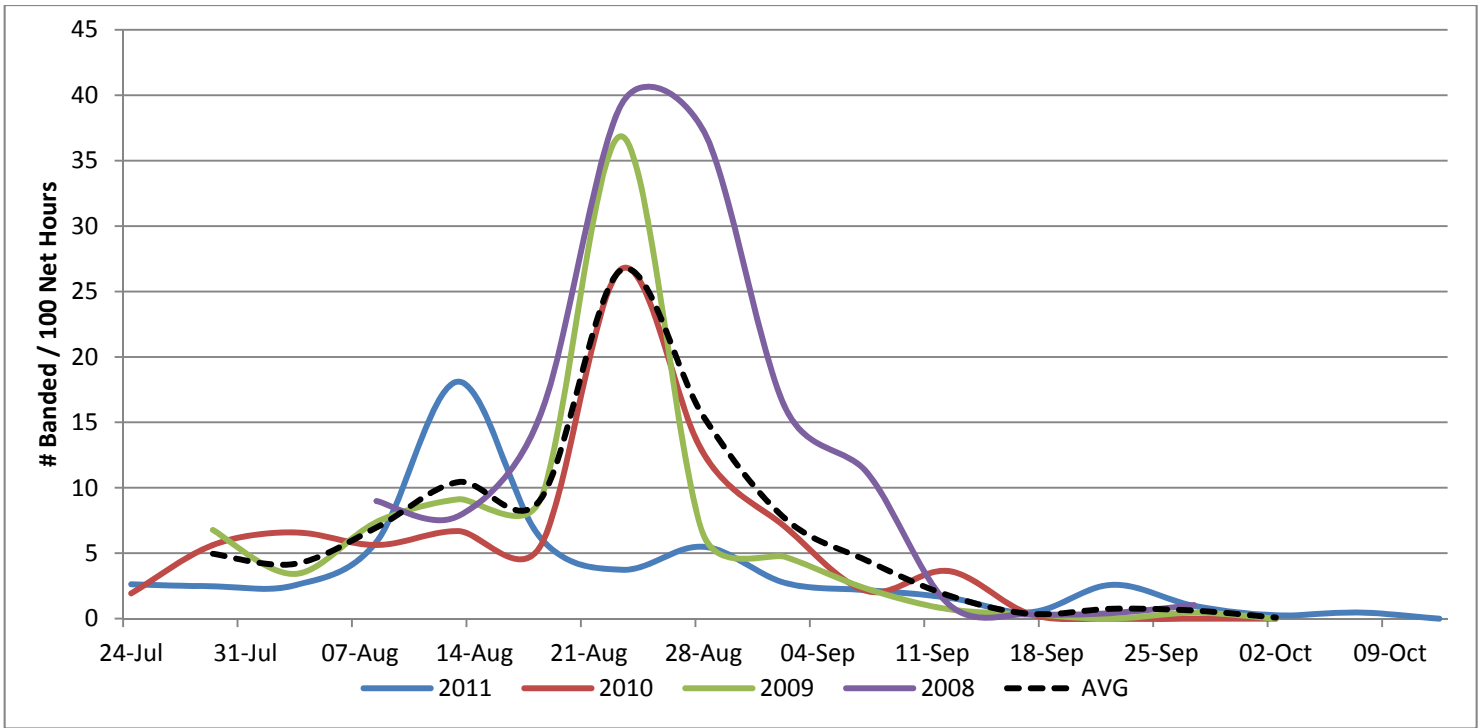


Figure 9. Yellow Warbler fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

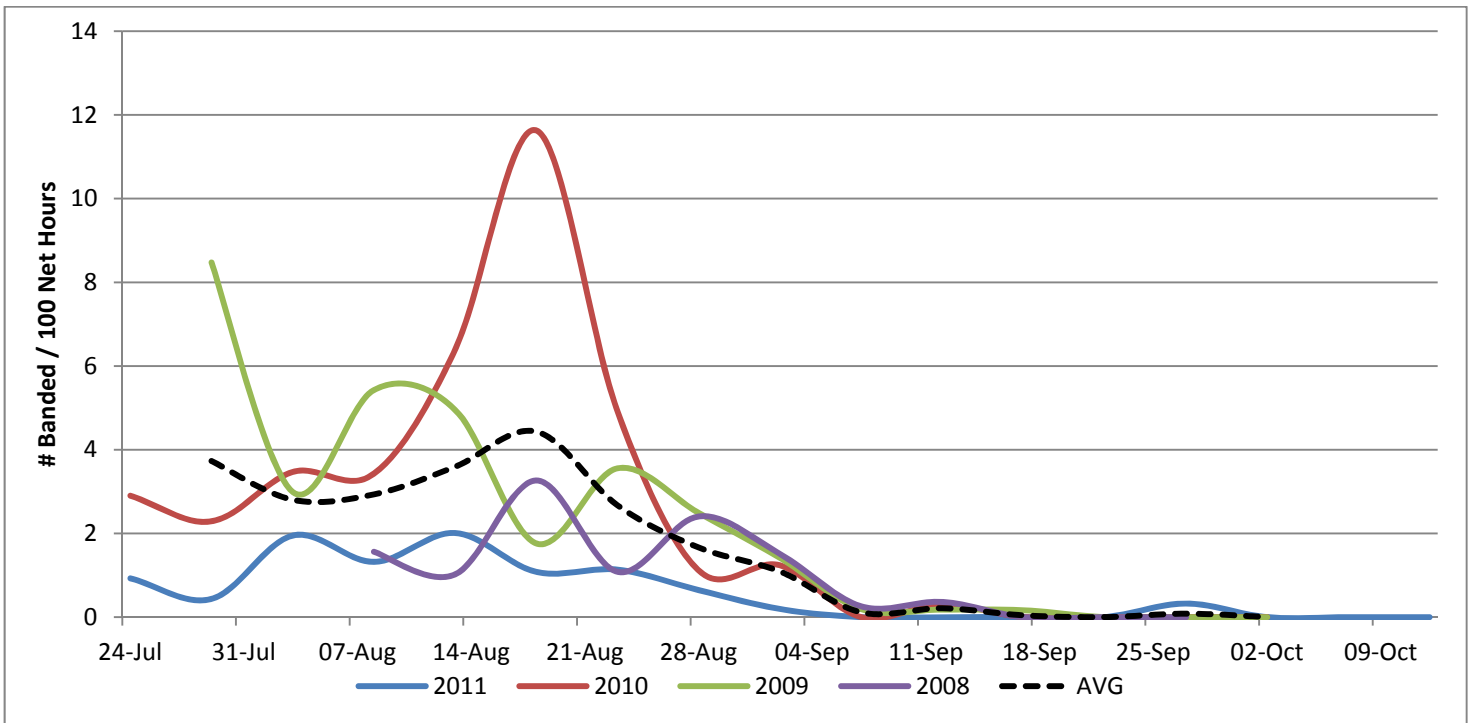


Figure 10. Blackpoll Warbler fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

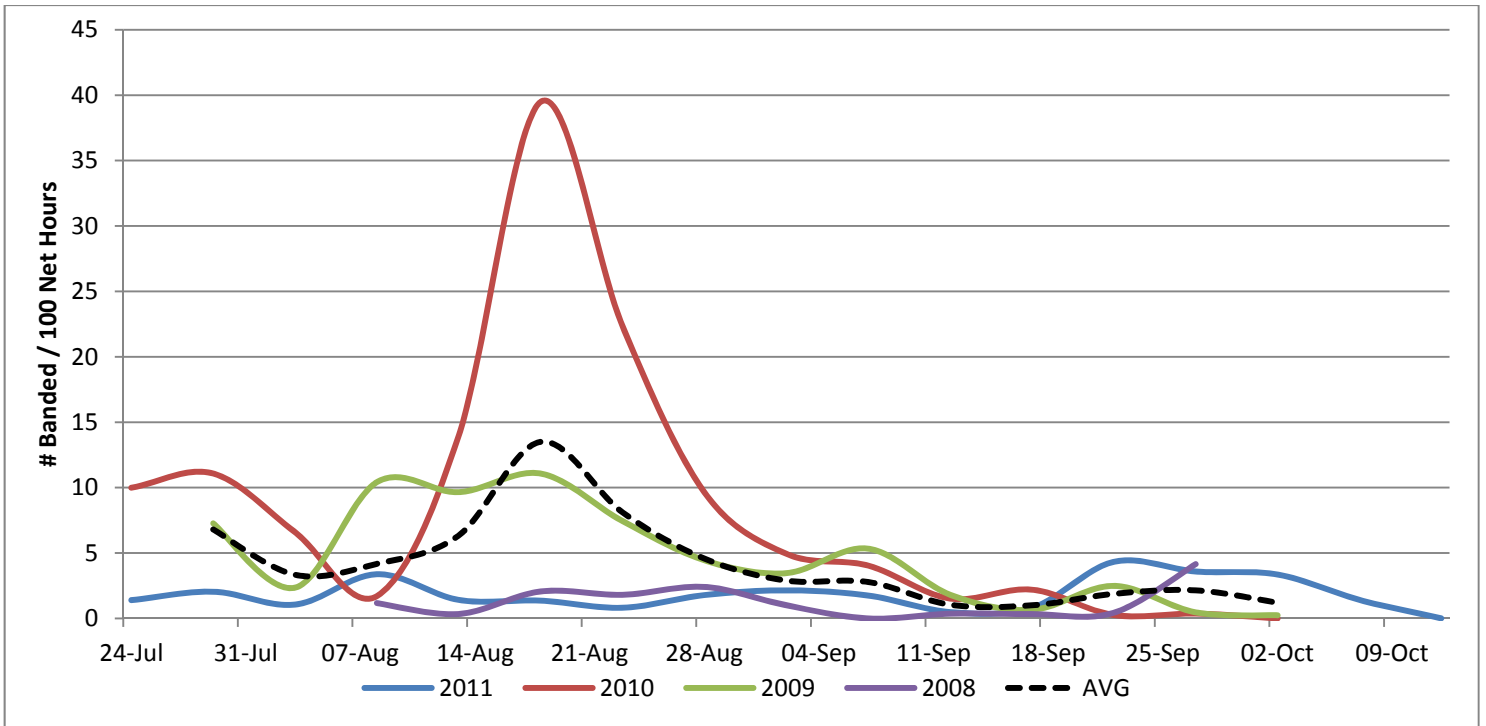


Figure 11. Myrtle Warbler fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

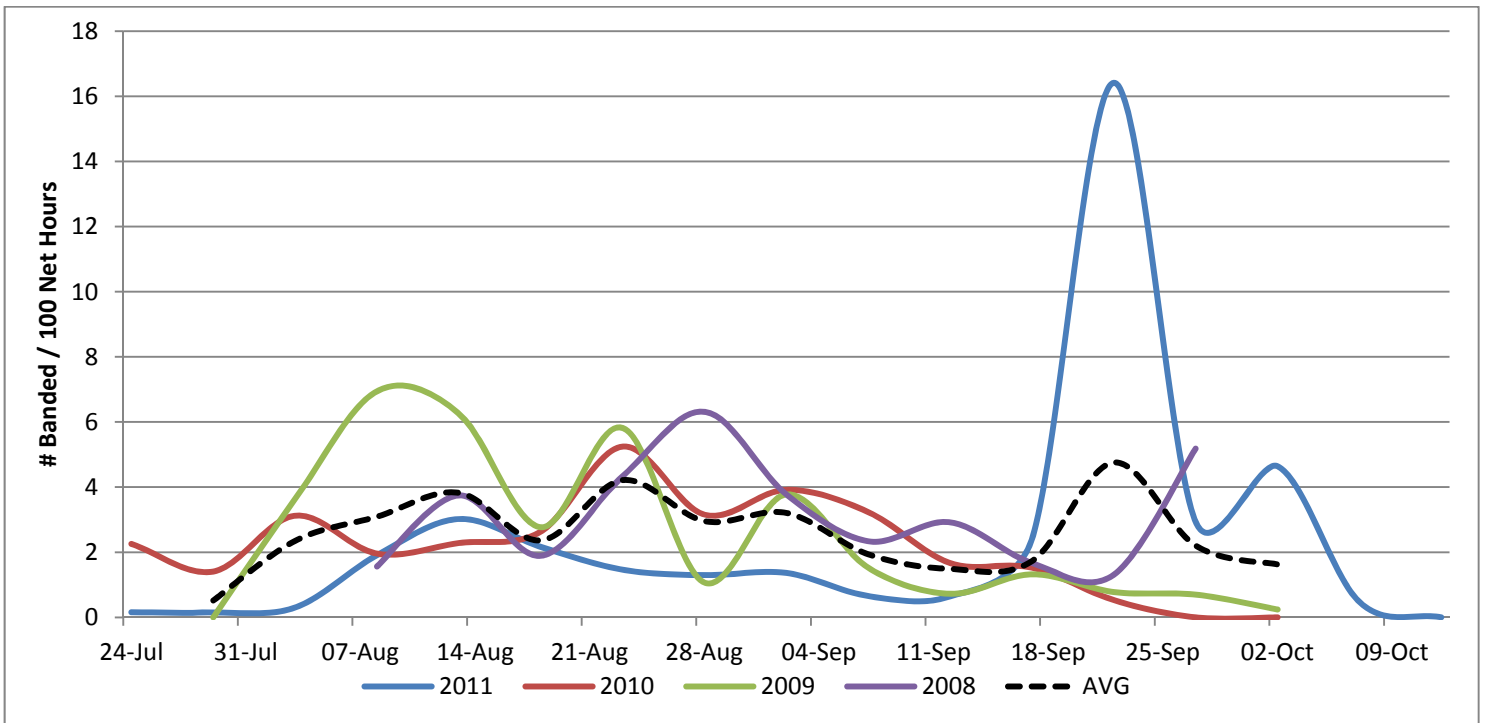


Figure 12. Wilson's Warbler fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

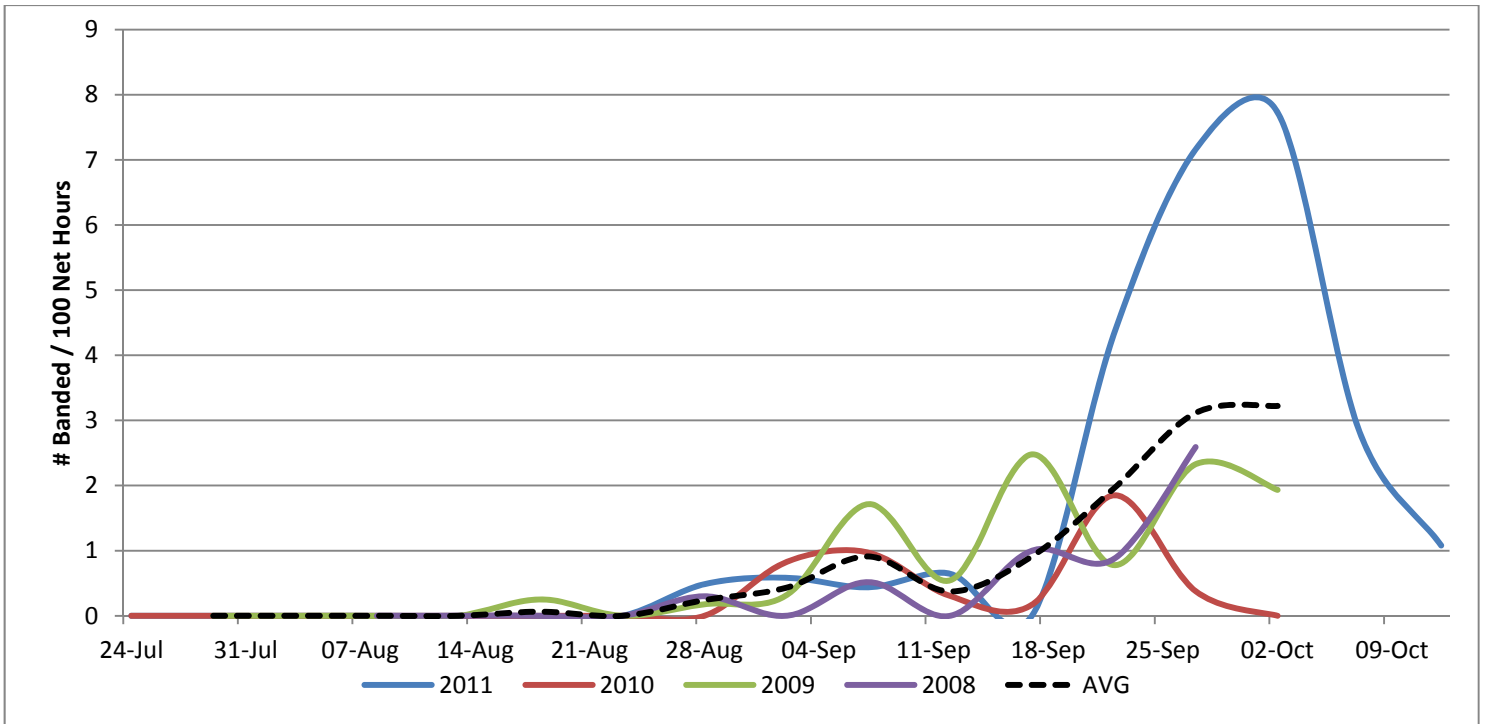


Figure 13. American Tree Sparrow fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

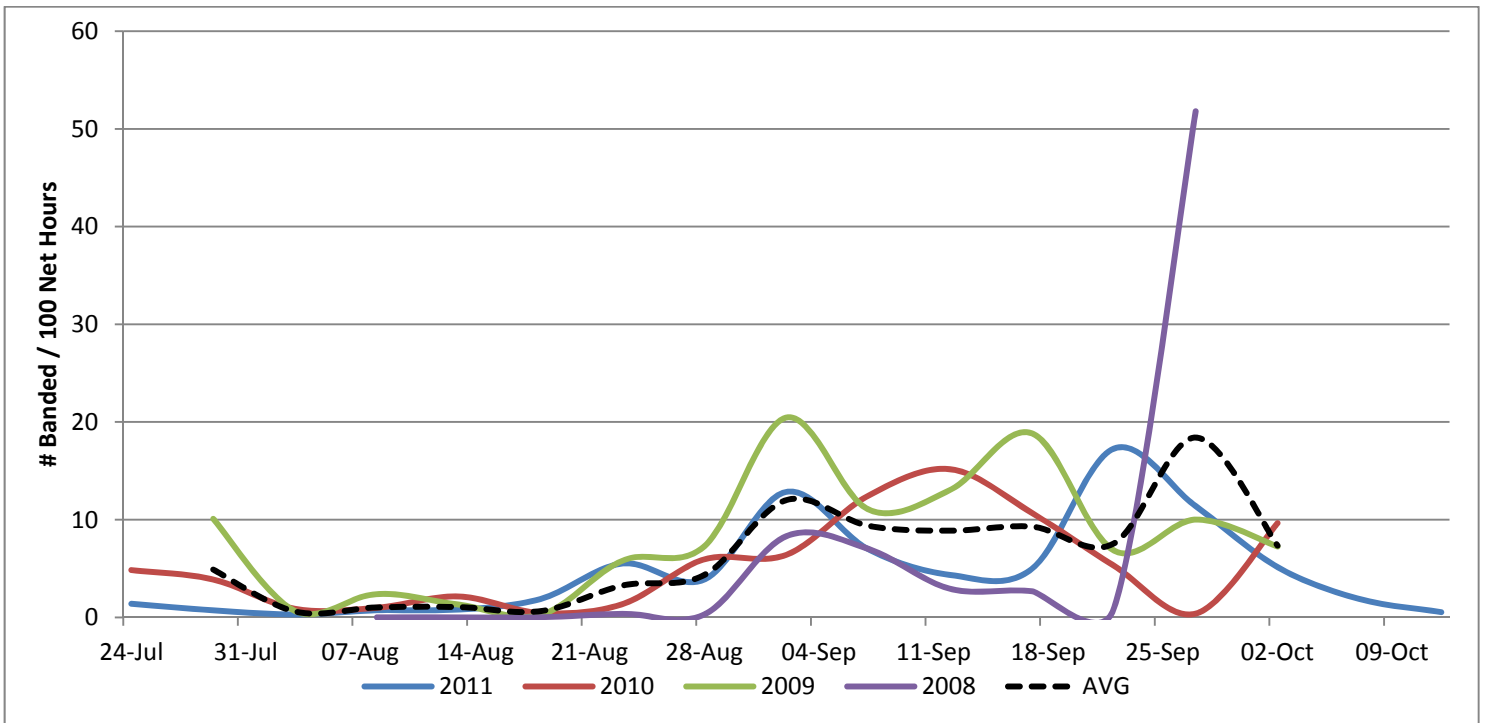


Figure 14. Dark-eyed Junco fall migration timing at Teslin Lake Bird Observatory from 2008 to 2011.

APPENDIX E – MIGRATION TIMING FIGURES (VISUAL COUNTS)

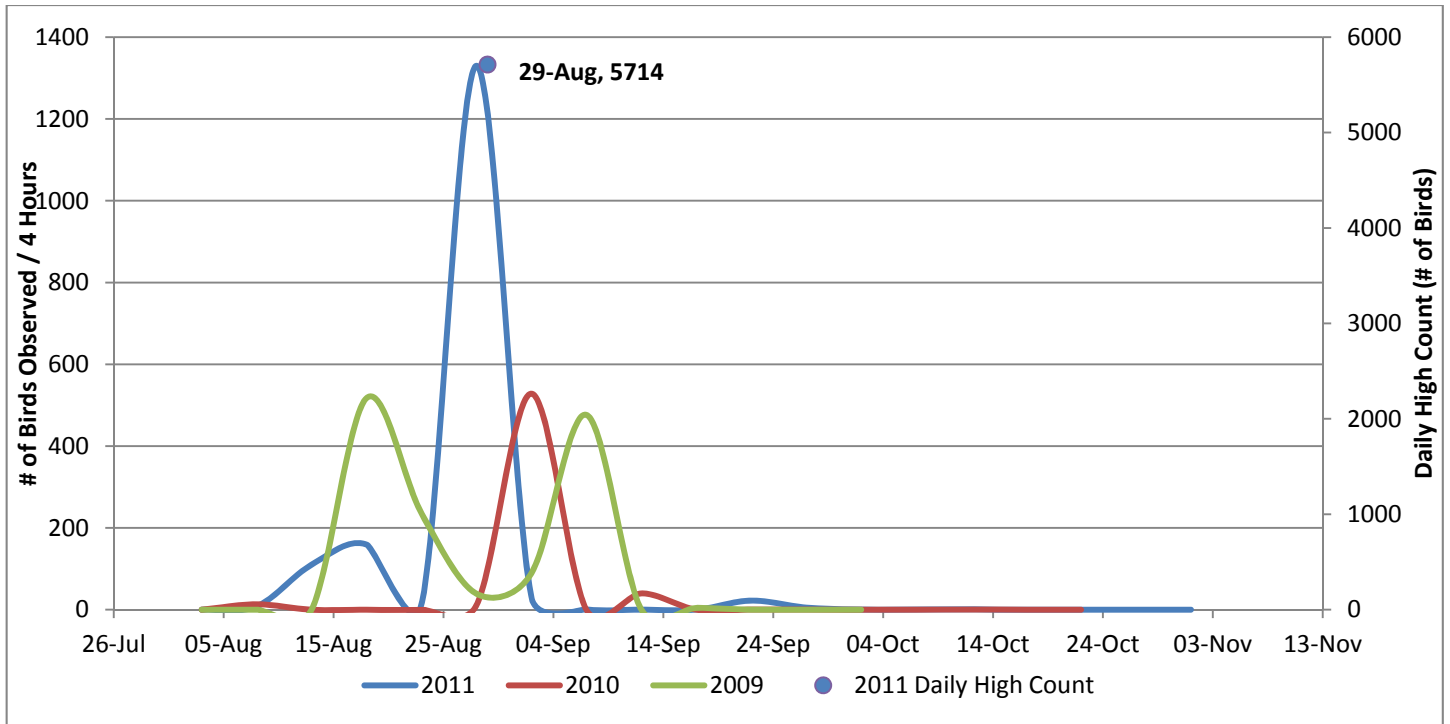


Figure 1. Greater White-fronted Goose visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

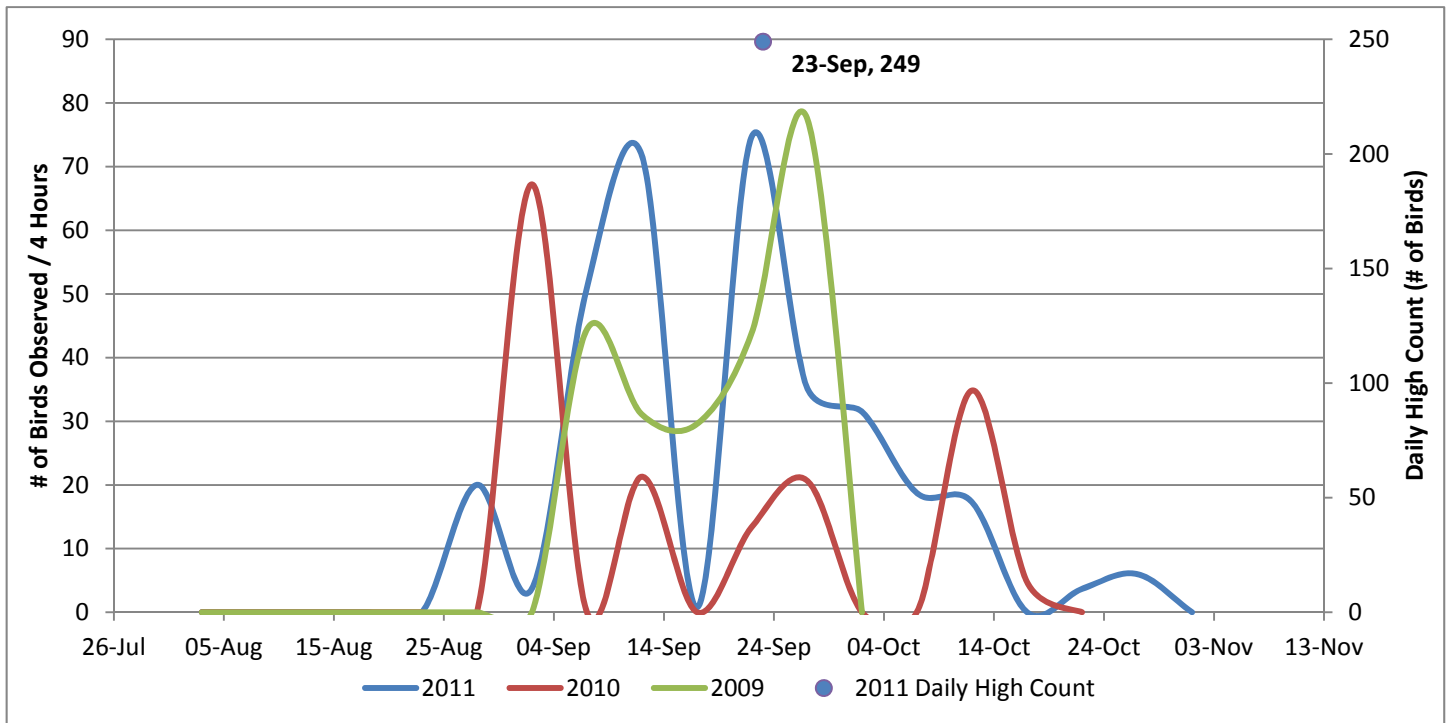


Figure 2. Canada Goose visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

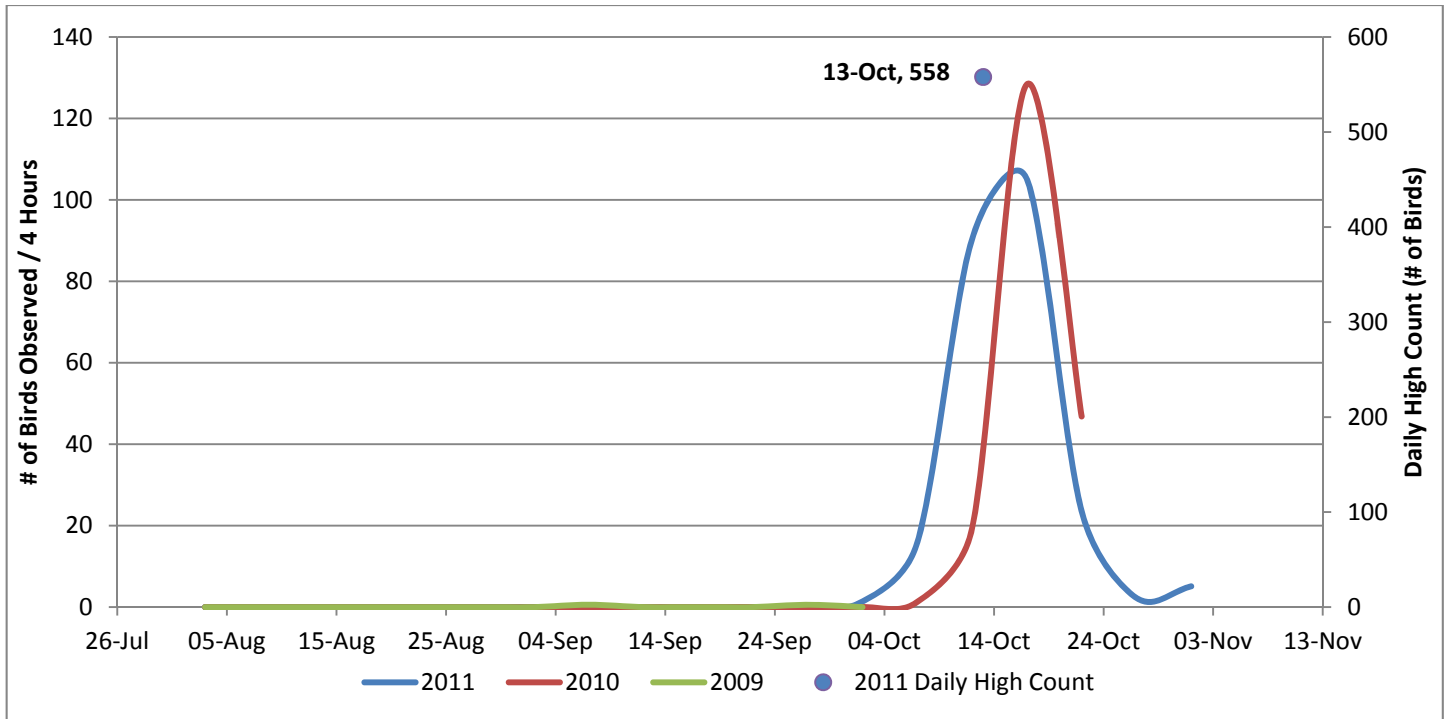


Figure 3. Trumpeter Swan visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

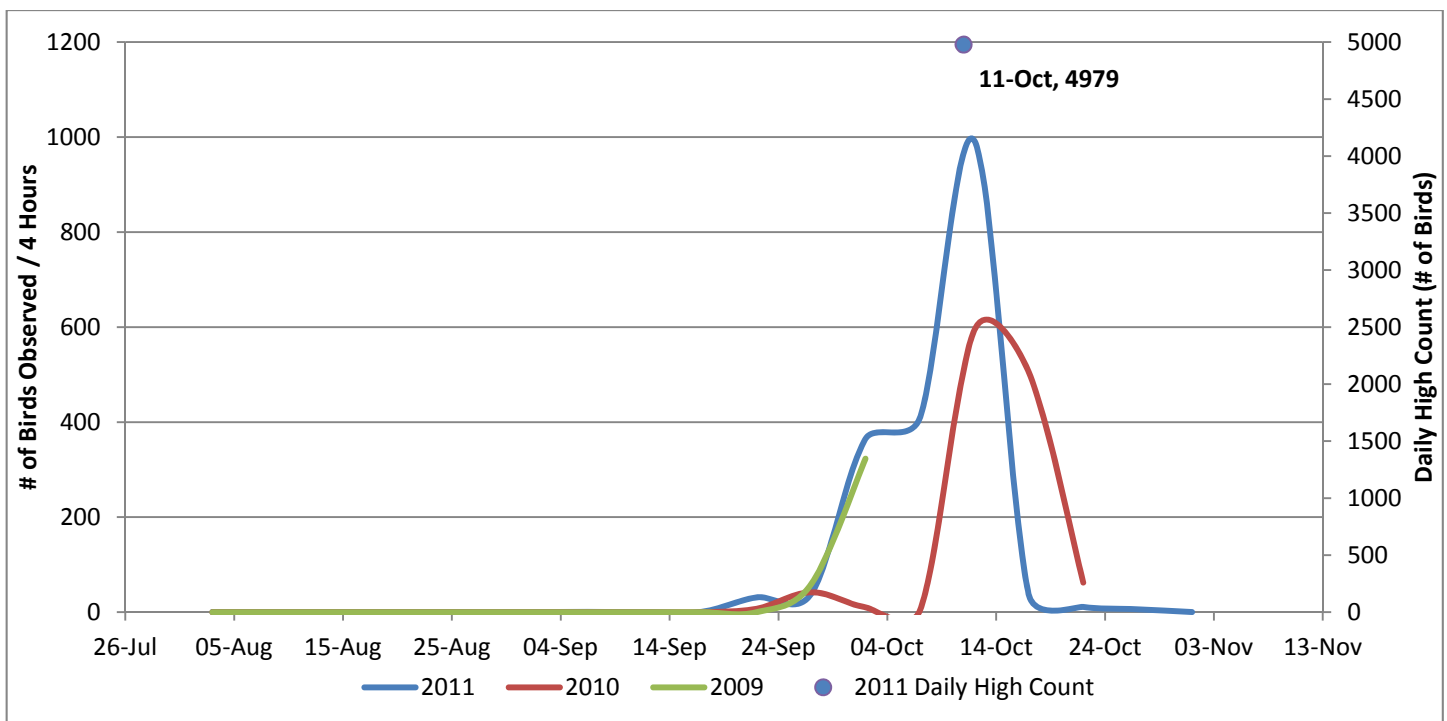


Figure 4. Tundra Swan visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

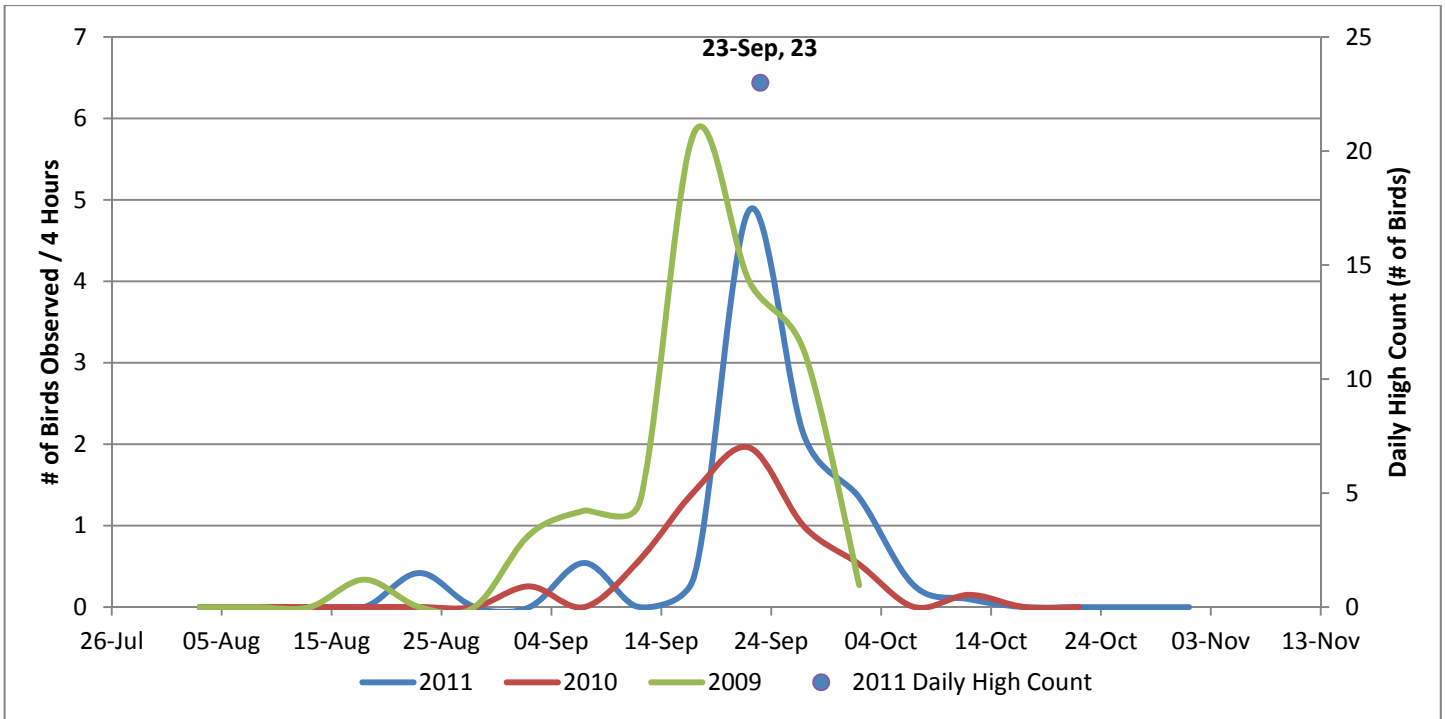


Figure 5. Osprey visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

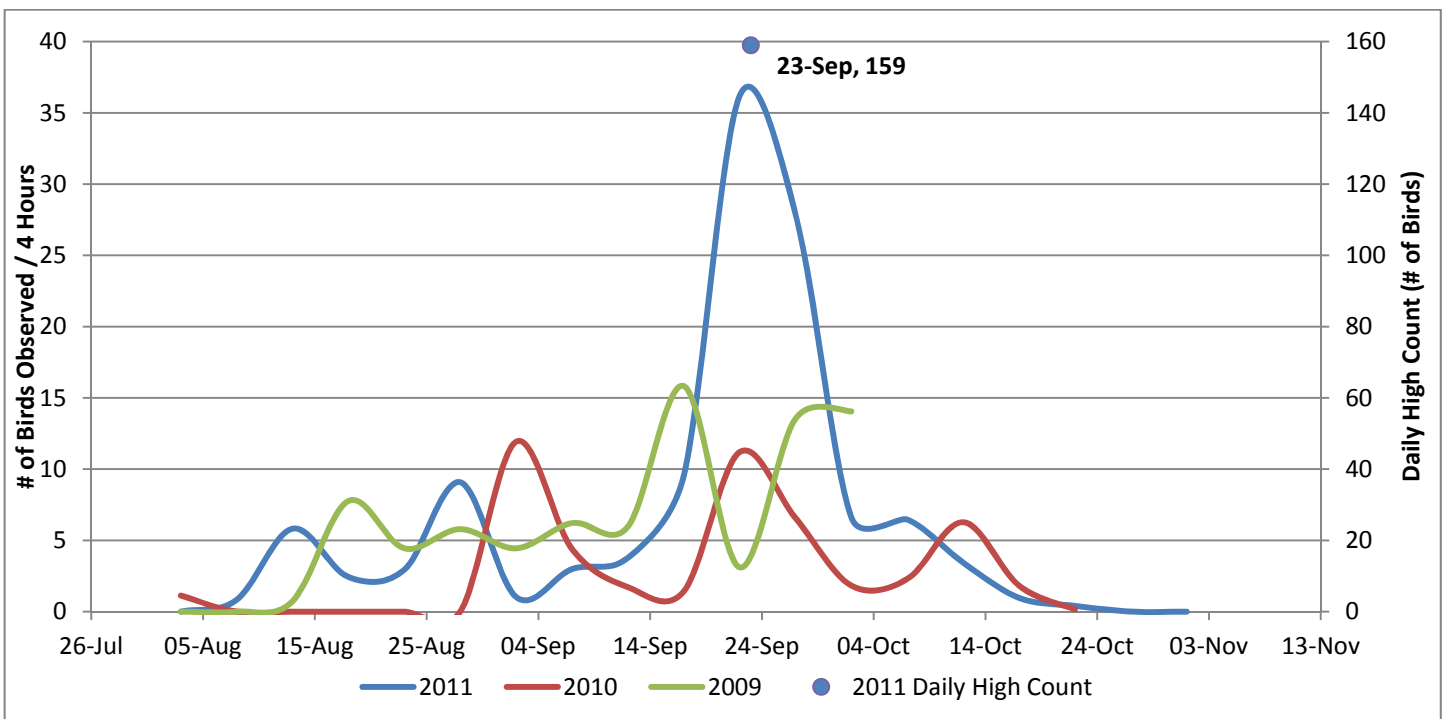


Figure 6. Northern Harrier visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

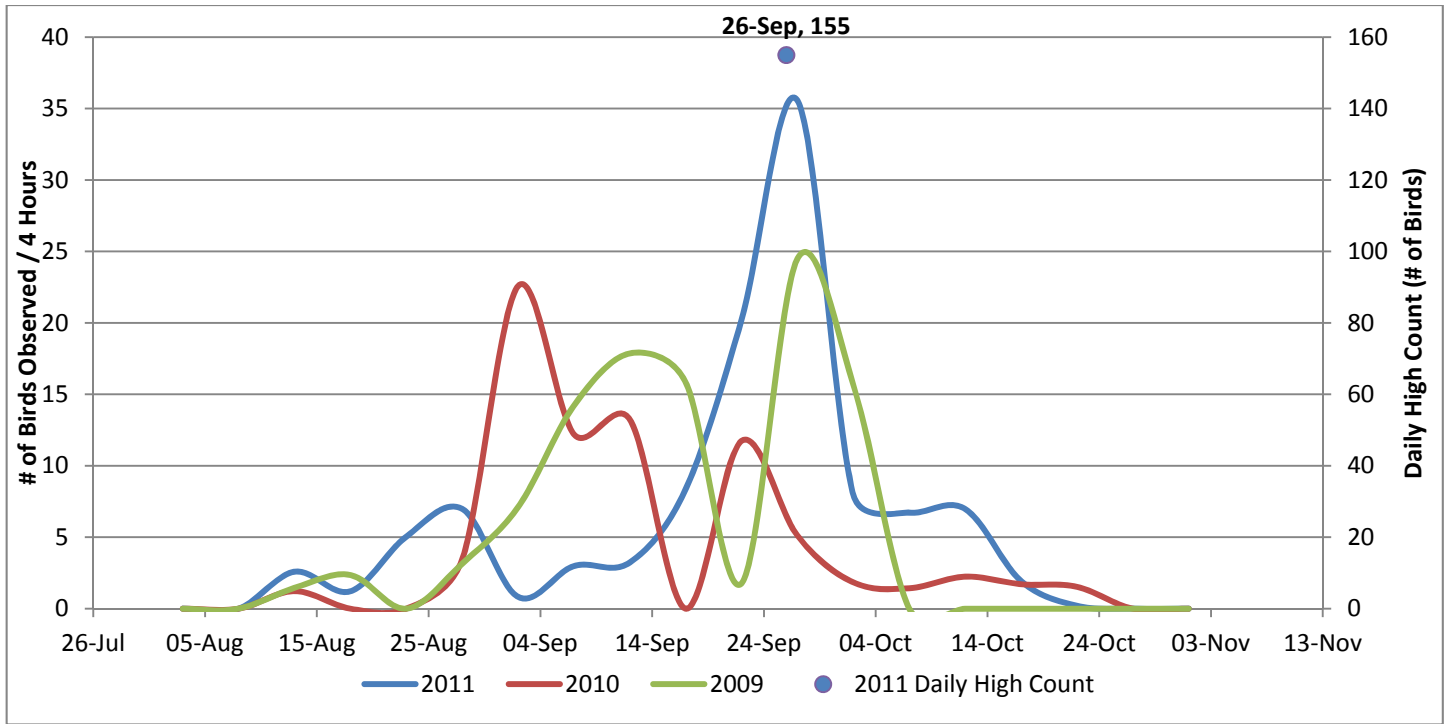


Figure 7. Sharp-shinned Hawk visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

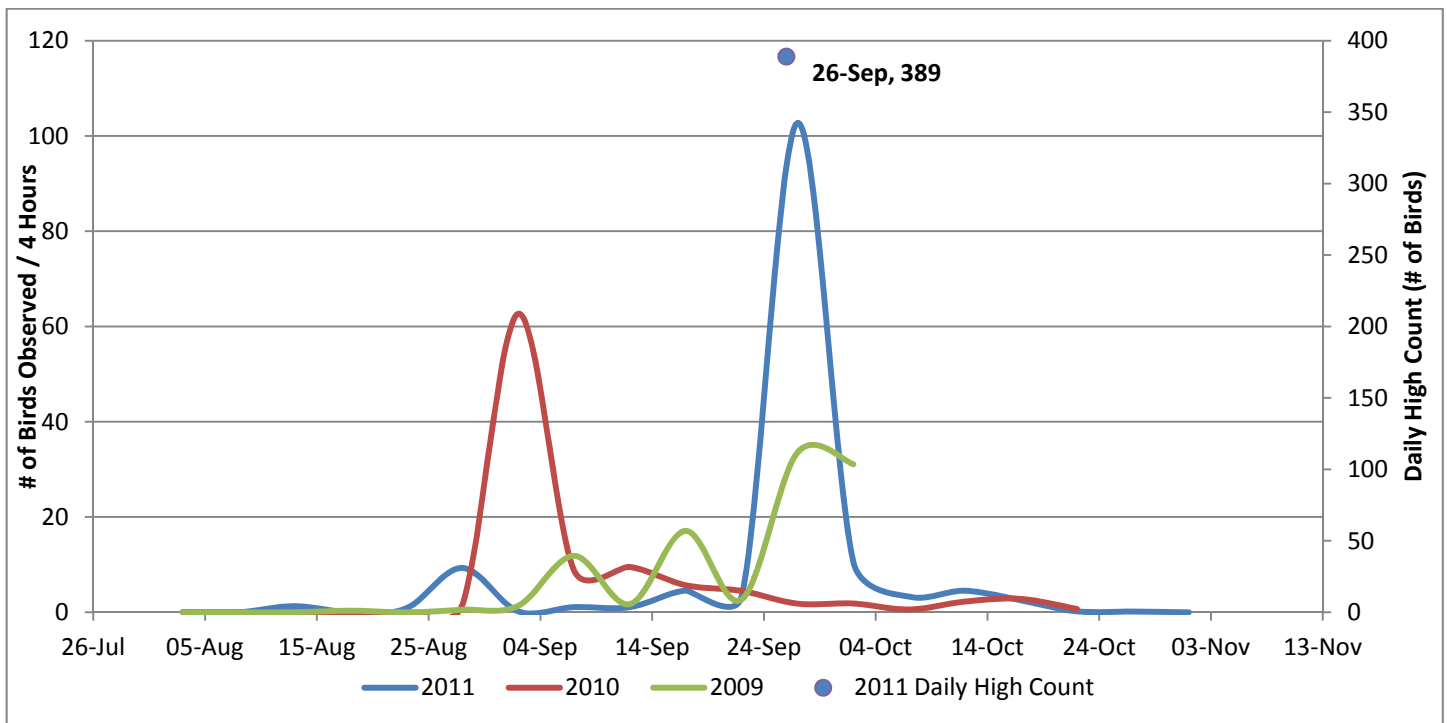


Figure 8. Red-tailed Hawk visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

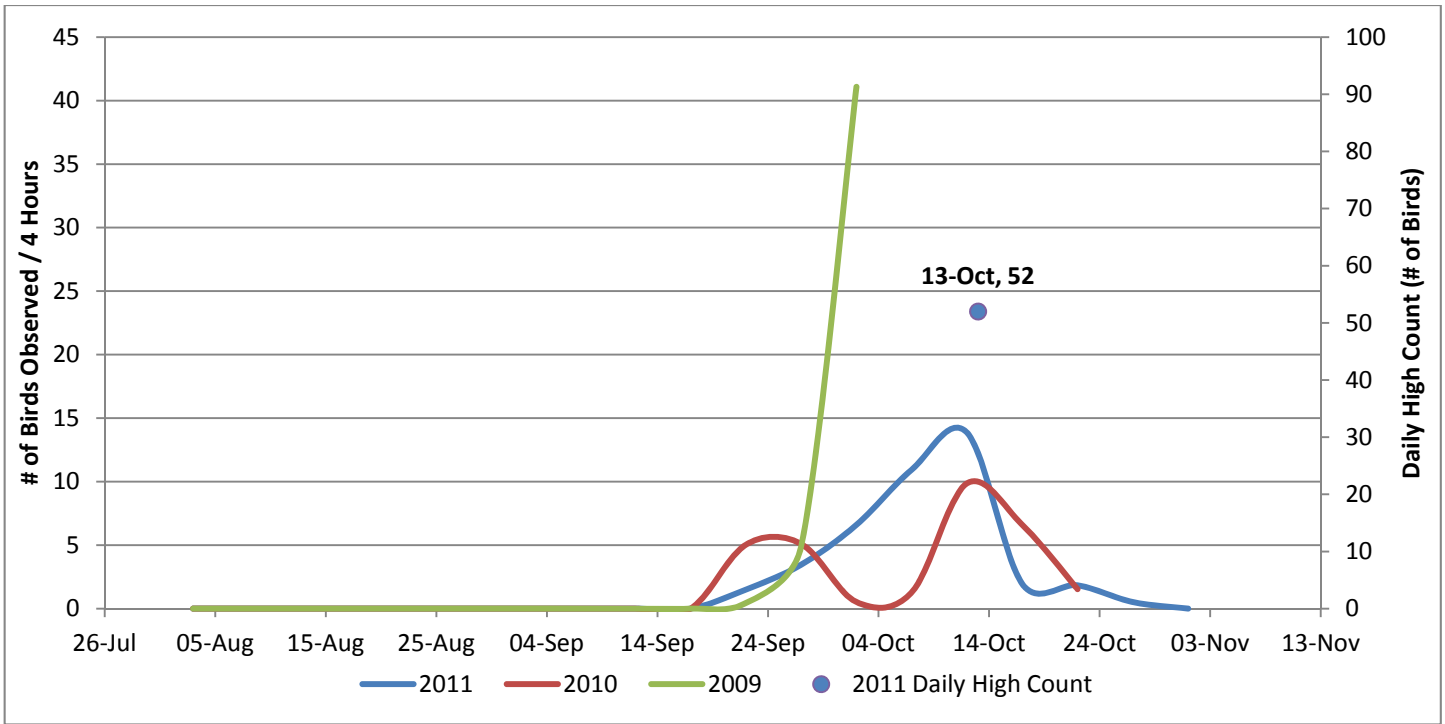


Figure 9. Rough-legged Hawk visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

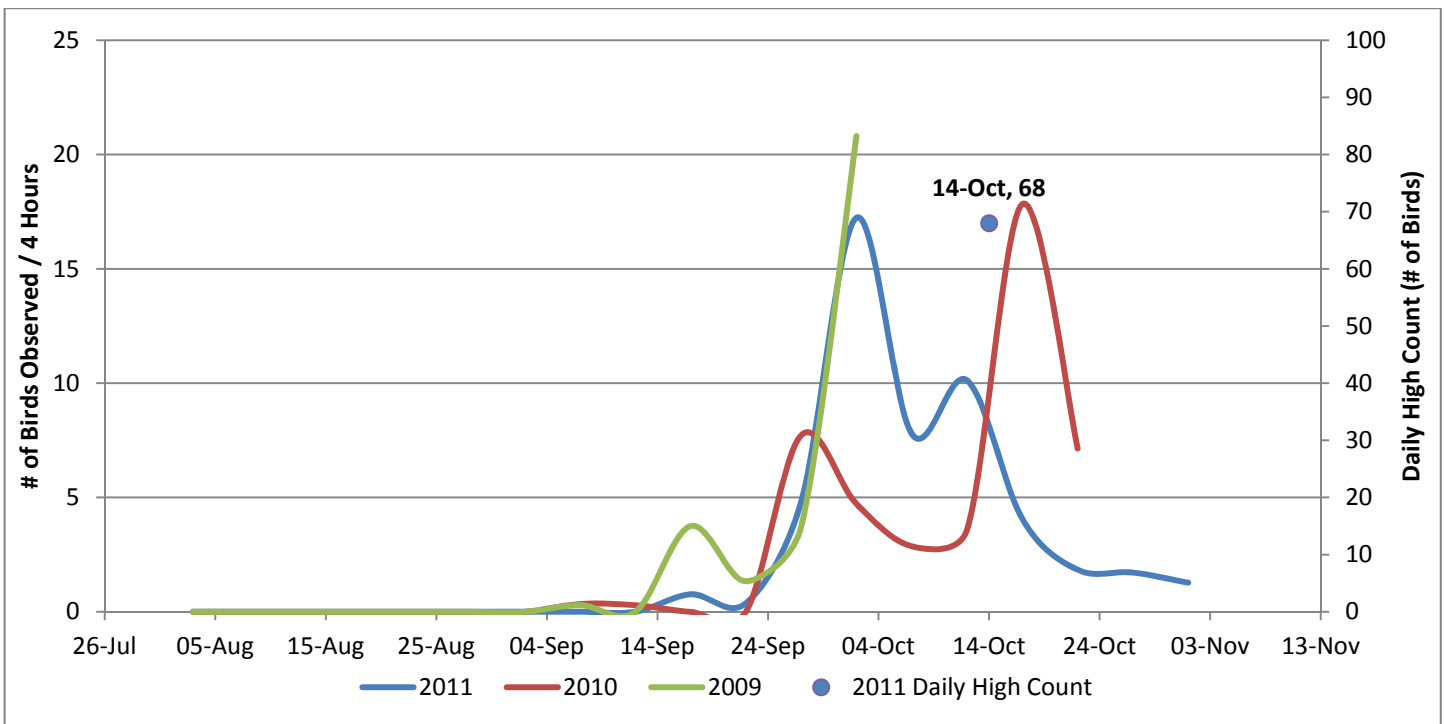


Figure 10. Golden Eagle visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

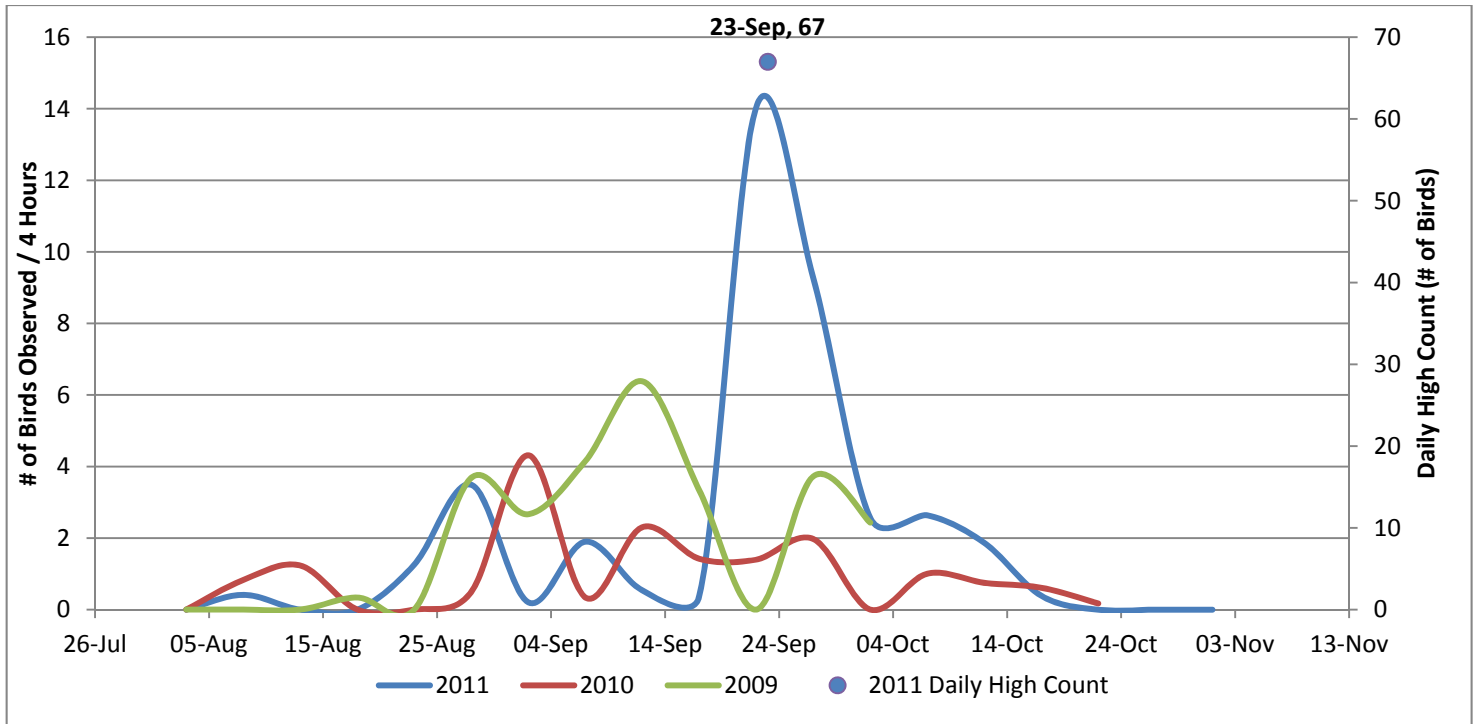


Figure 11. American Kestrel visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

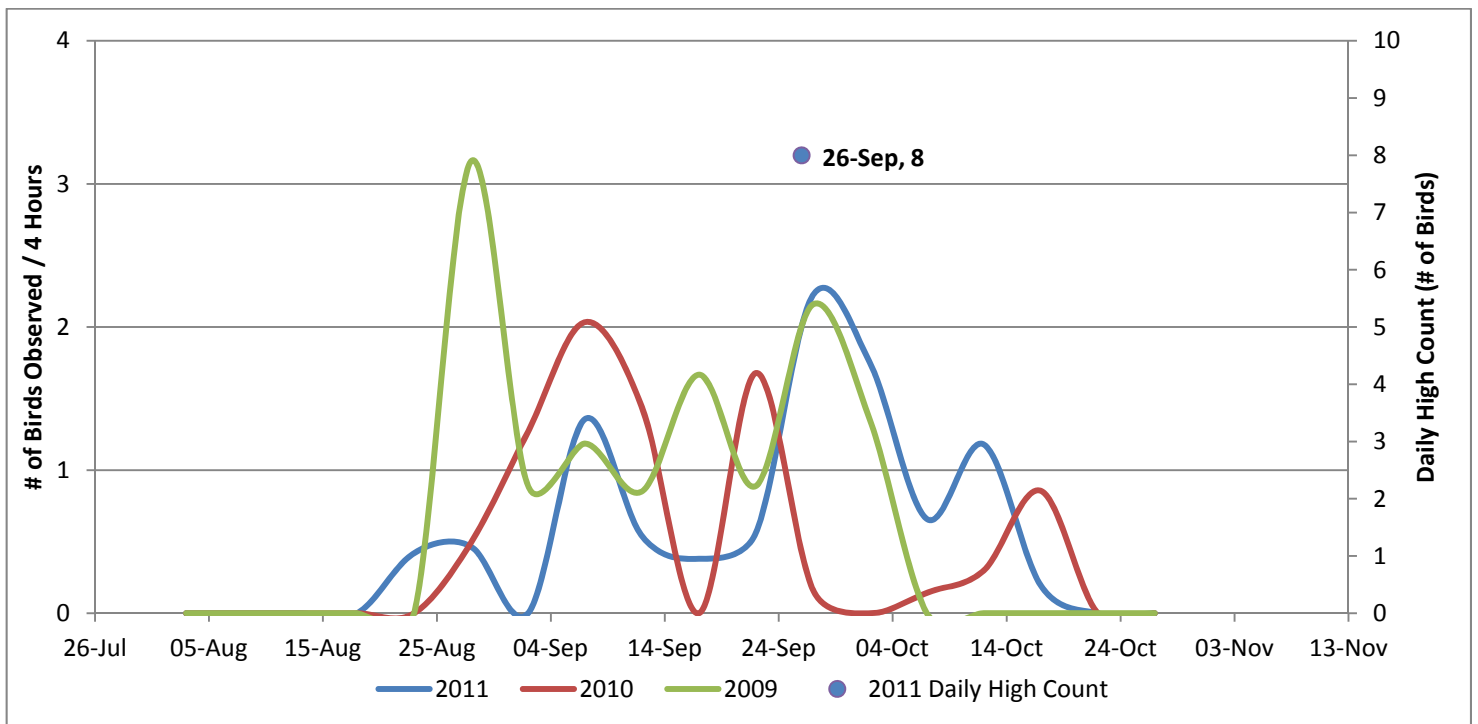


Figure 12. Merlin visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

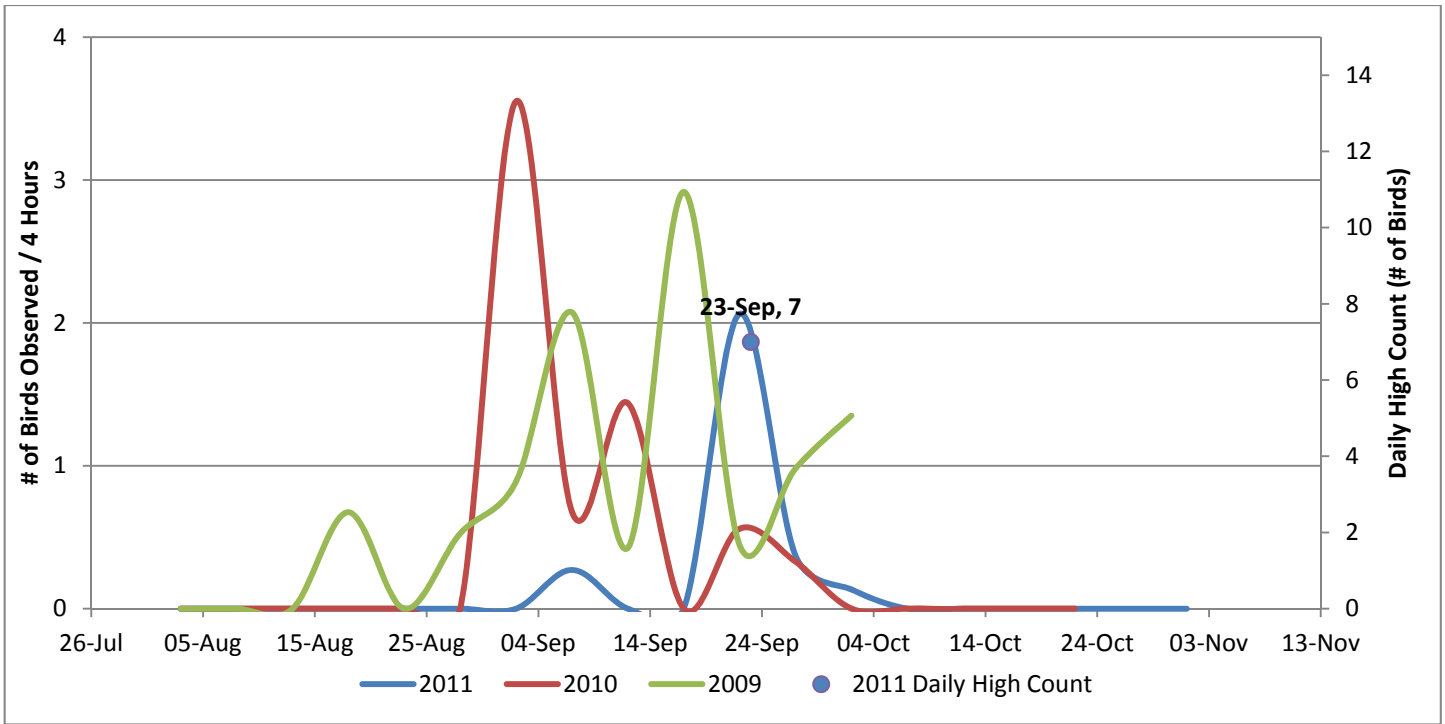


Figure 13. Peregrine Falcon visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

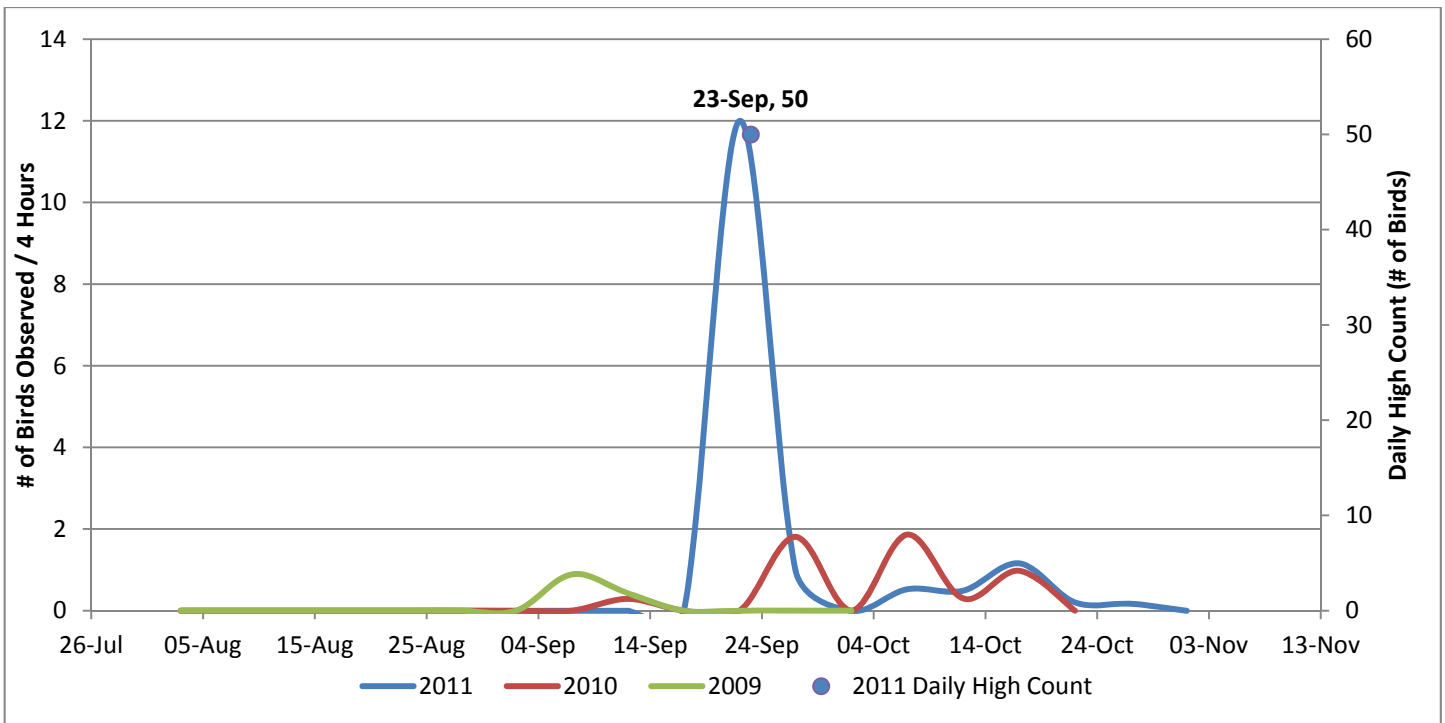


Figure 14. Mountain Bluebird visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

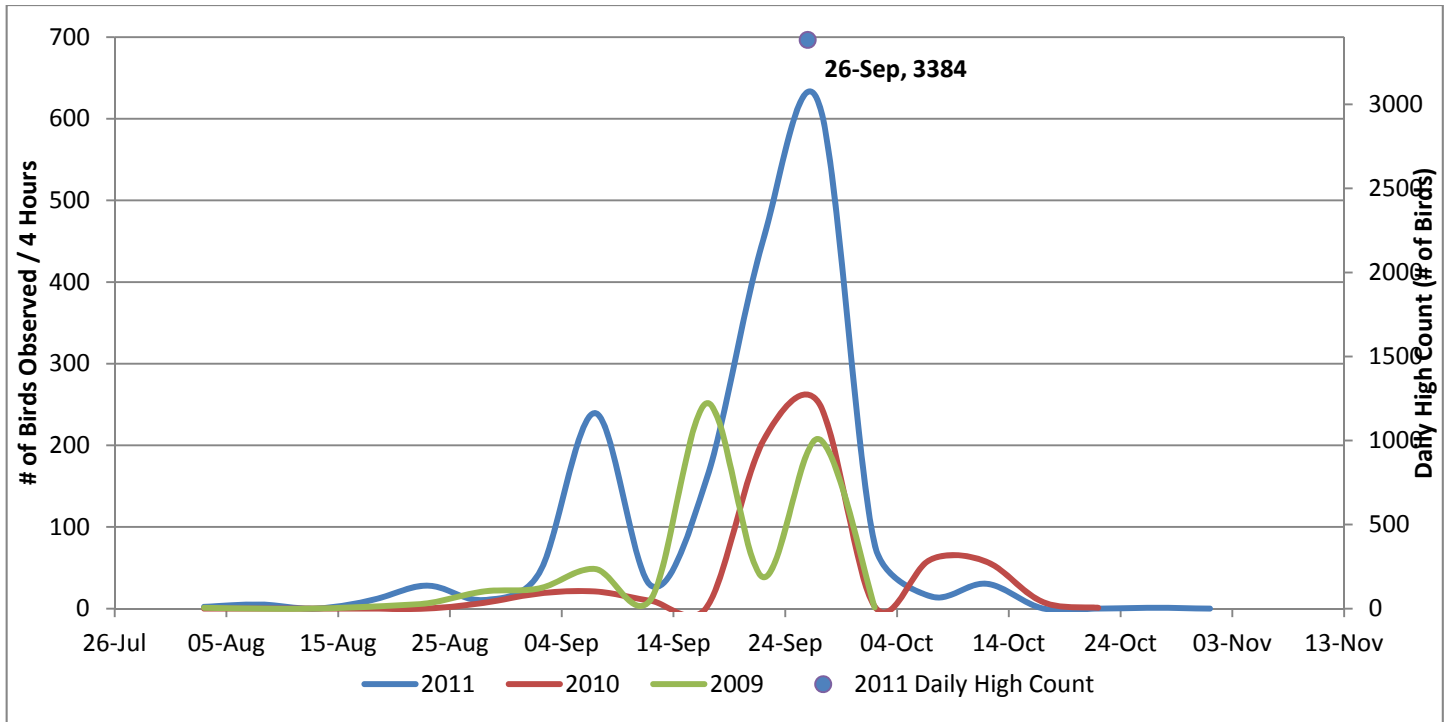


Figure 15. American Robin visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011. Note, includes data extrapolations from unidentified large thrush, see text for details.

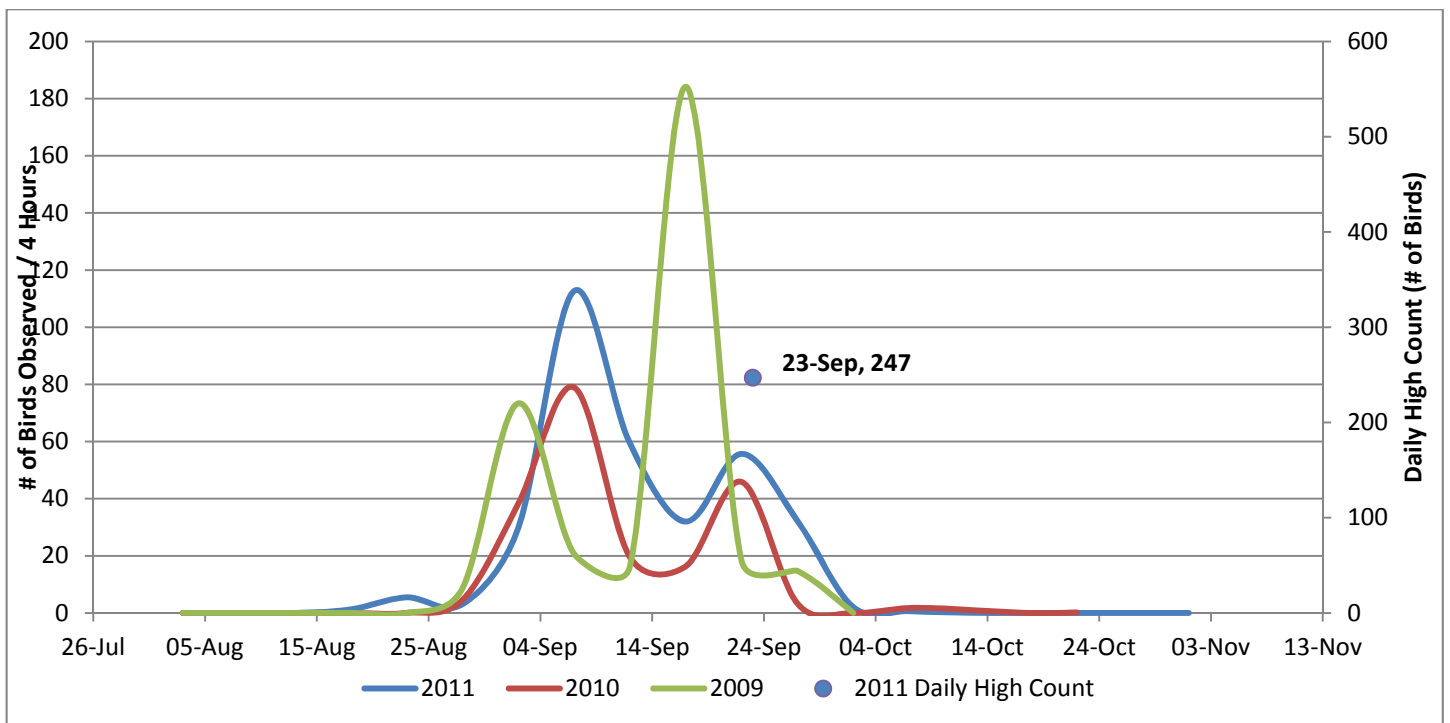


Figure 16. Varied Thrush visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011. Note, includes data extrapolations from unidentified large thrush, see text for details.

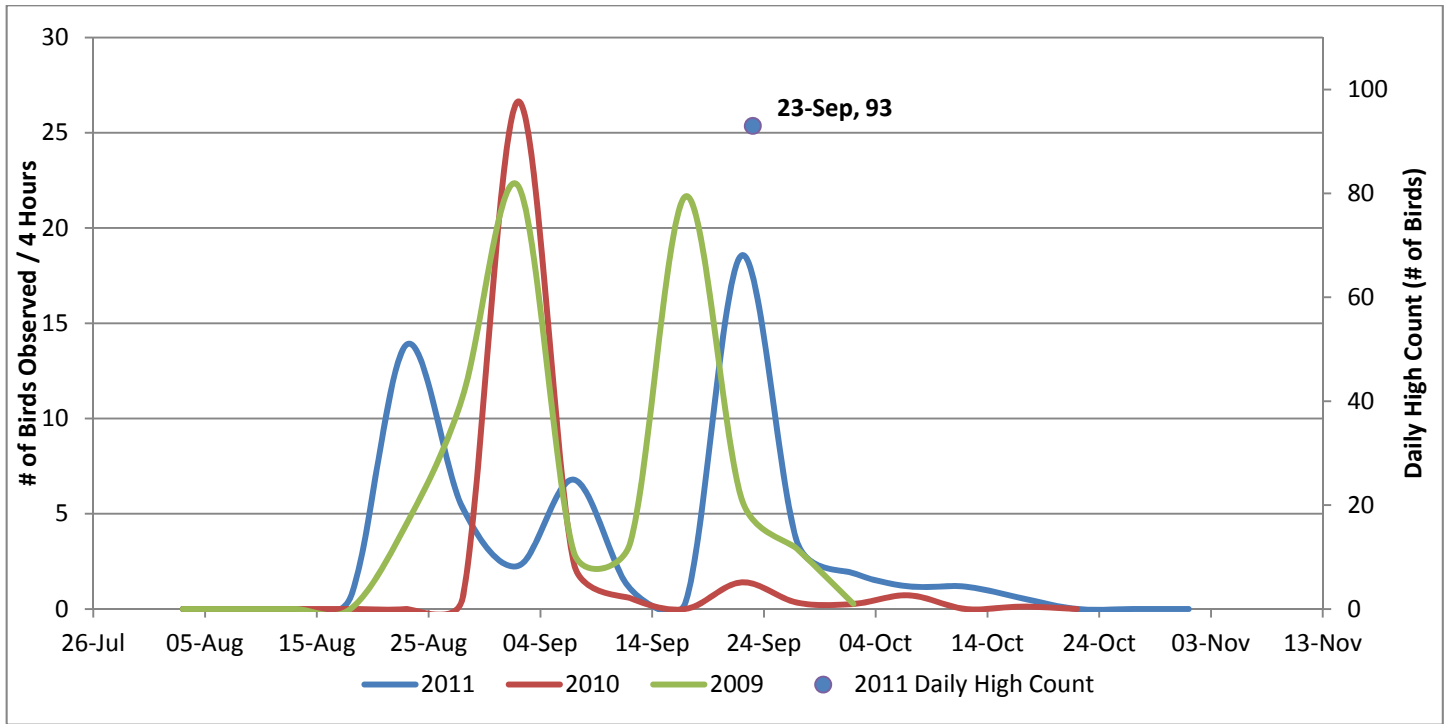


Figure 17. American Pipit visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

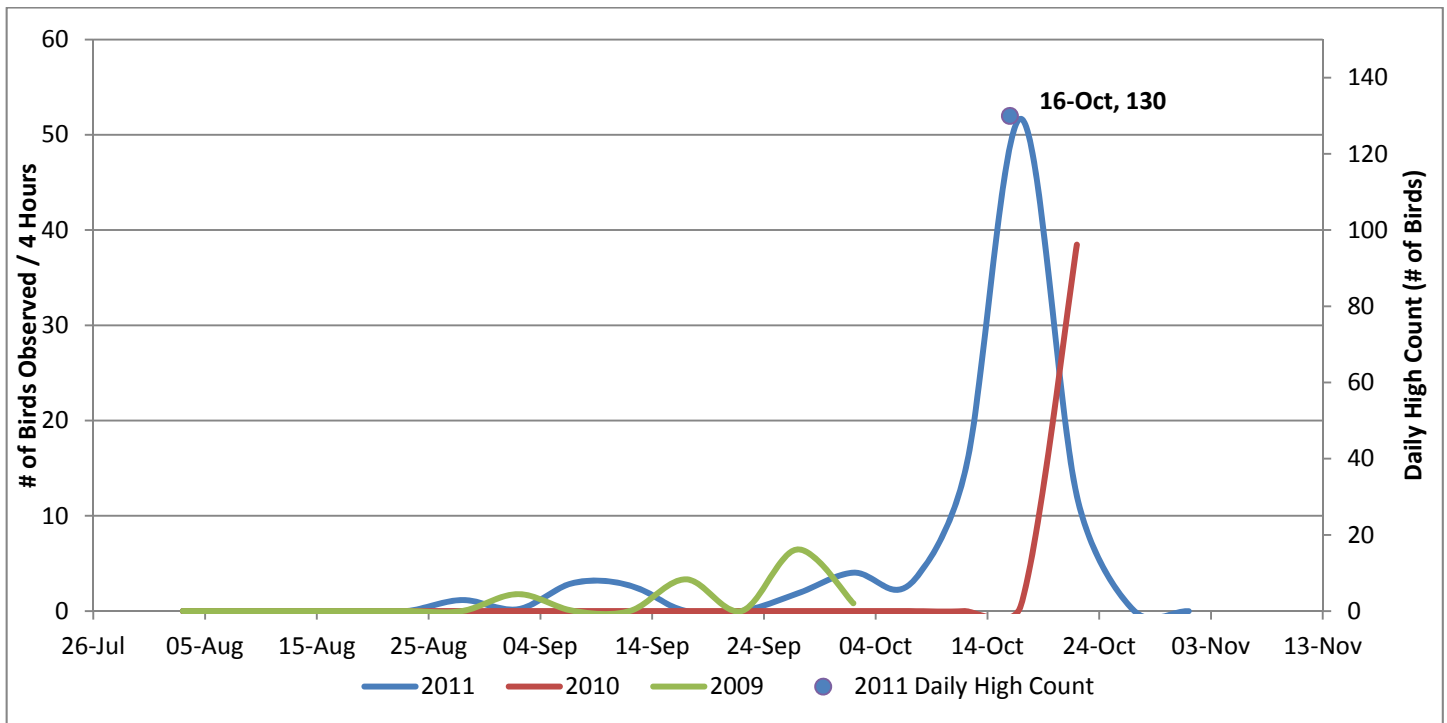


Figure 18. Pine Grosbeak visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011.

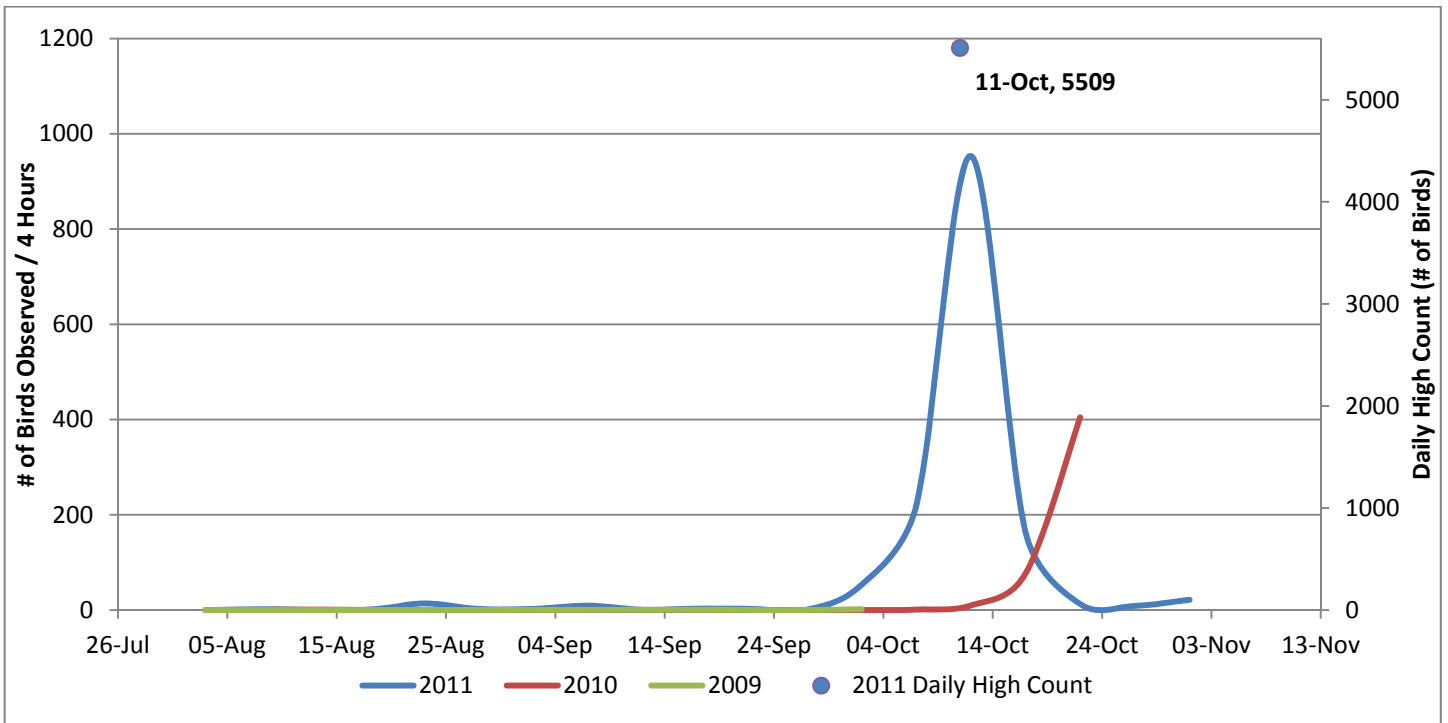


Figure 19. Common Redpoll visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011. Note, includes data extrapolations from unidentified small finch, see text for details.

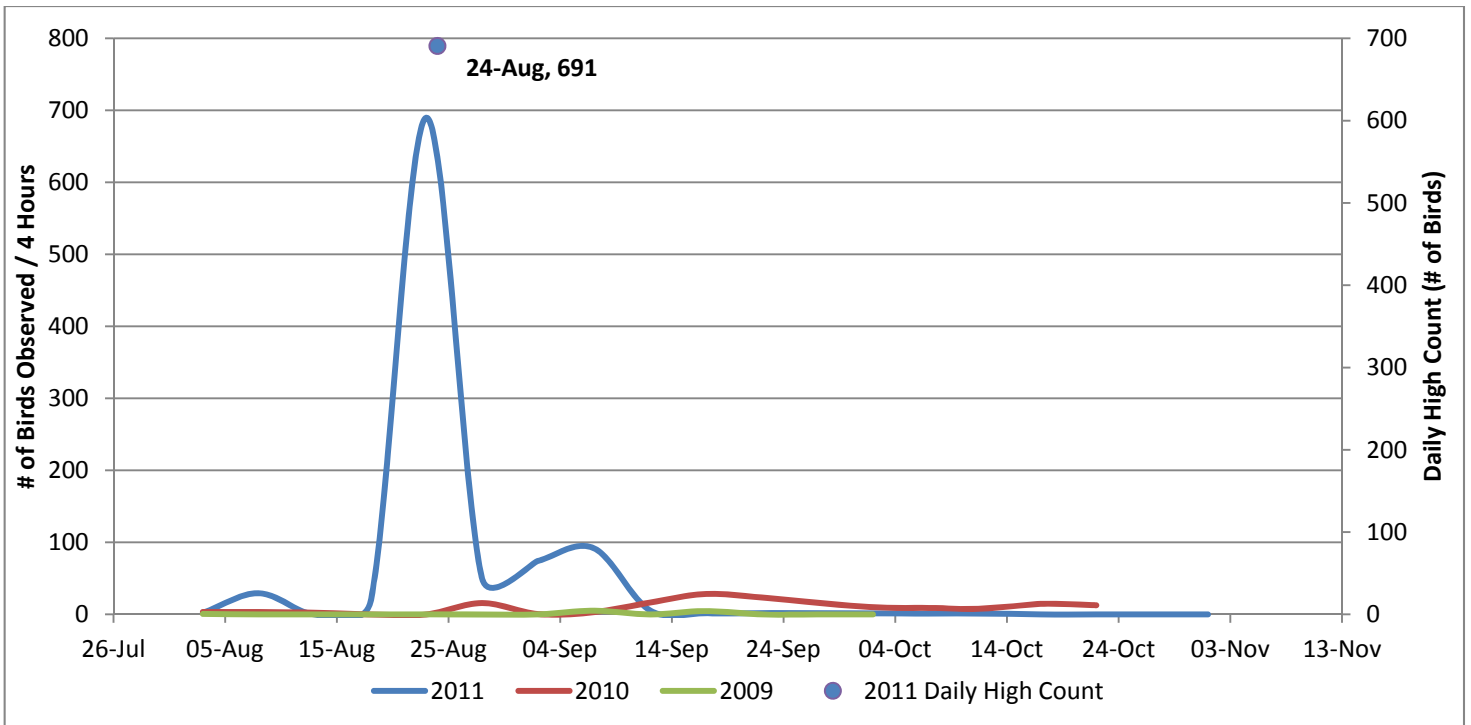


Figure 20. Pine Siskin visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2011. Note, includes data extrapolations from unidentified small finch, see text for details.

APPENDIX F – MIGRATION TIMING FIGURES (DAILY SPECIES TOTALS)

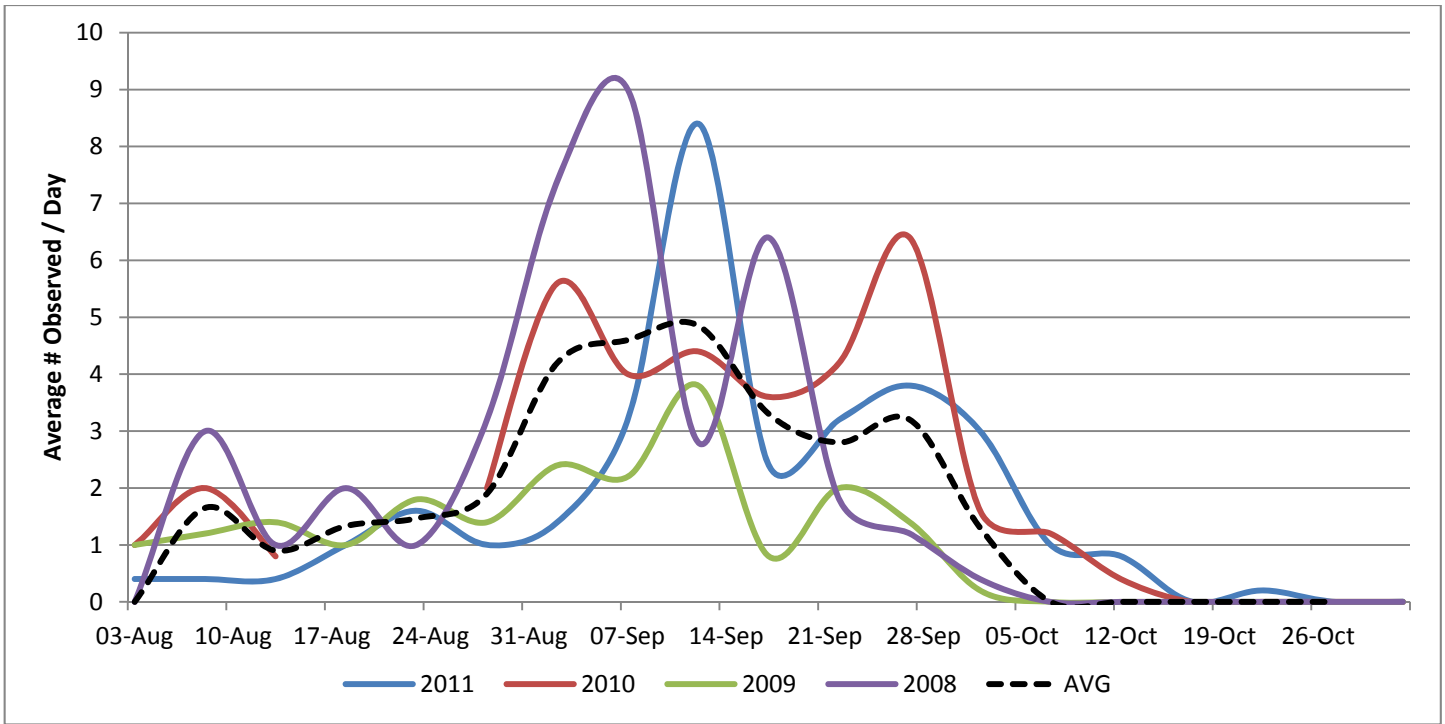


Figure 1. Red-throated Loon daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

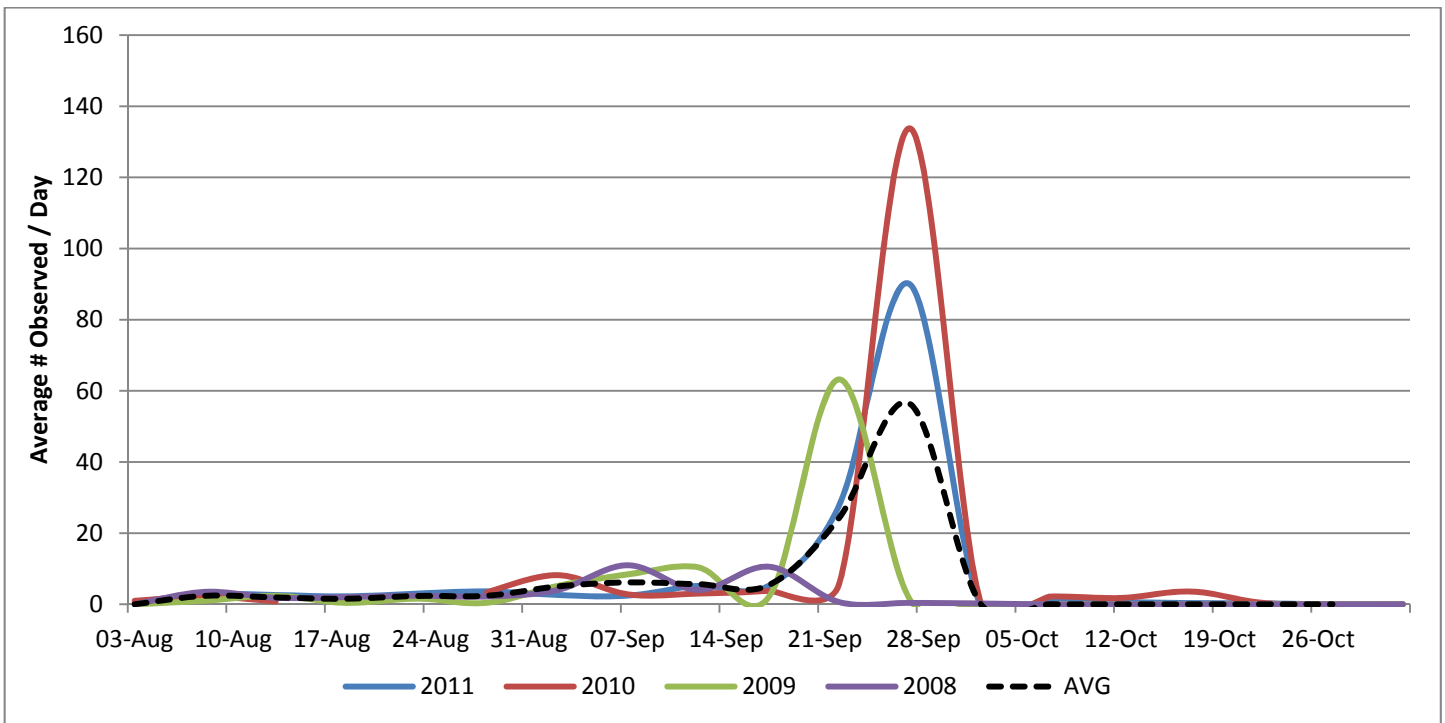


Figure 2. Pacific Loon daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

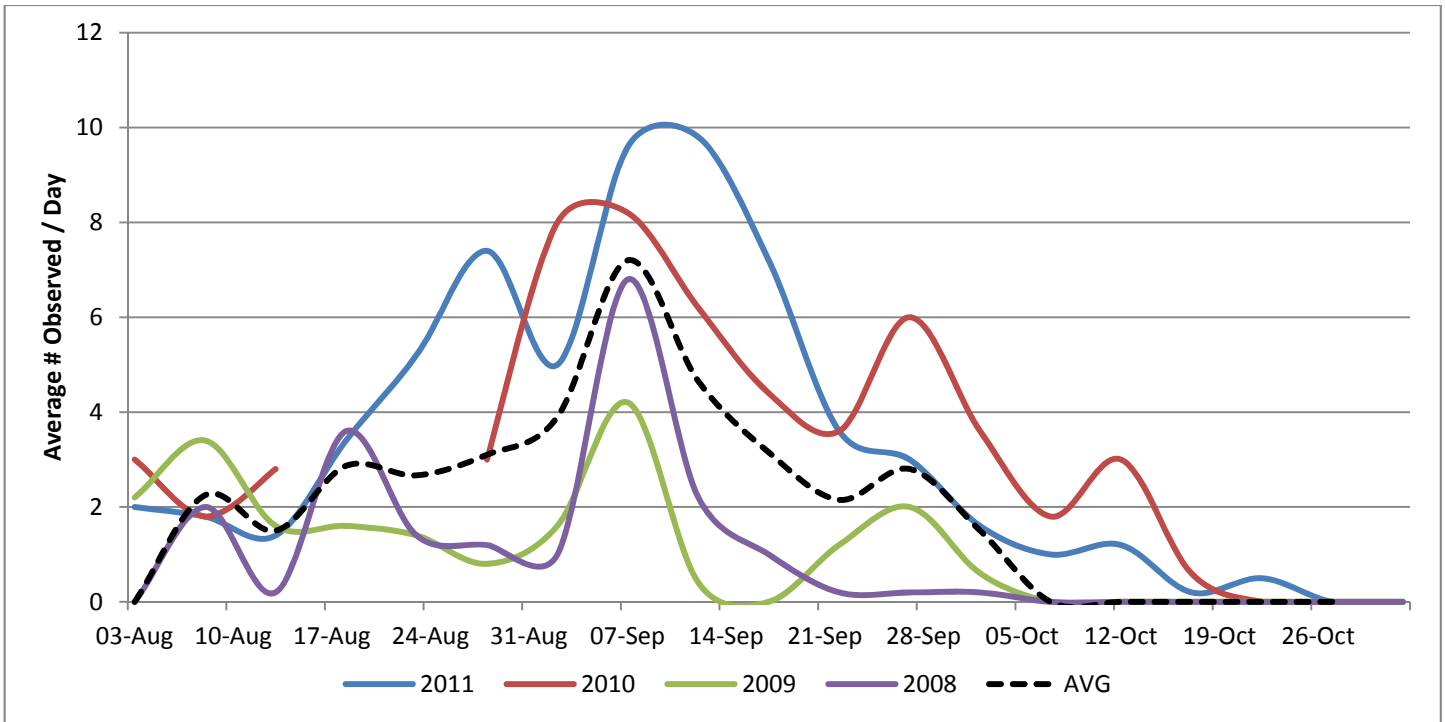


Figure 3. Common Loon daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

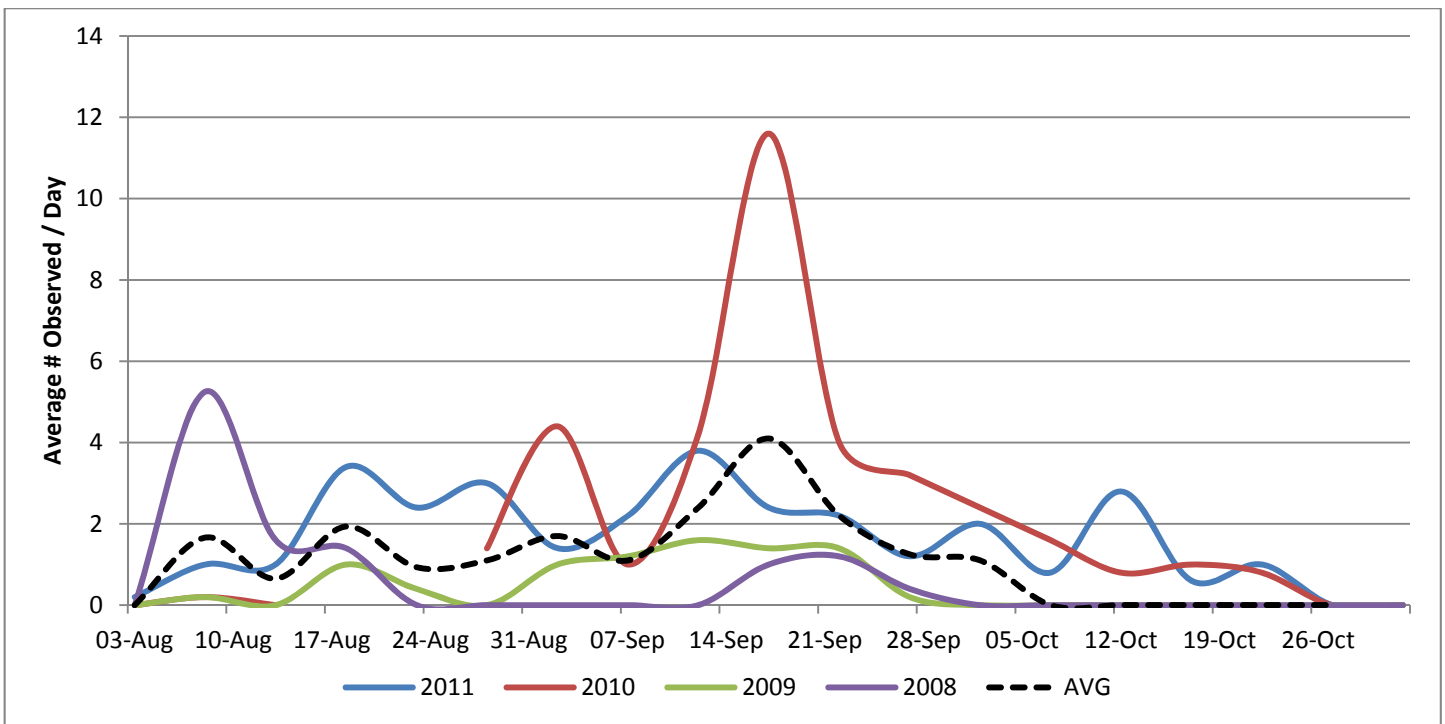


Figure 4. Horned Grebe daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

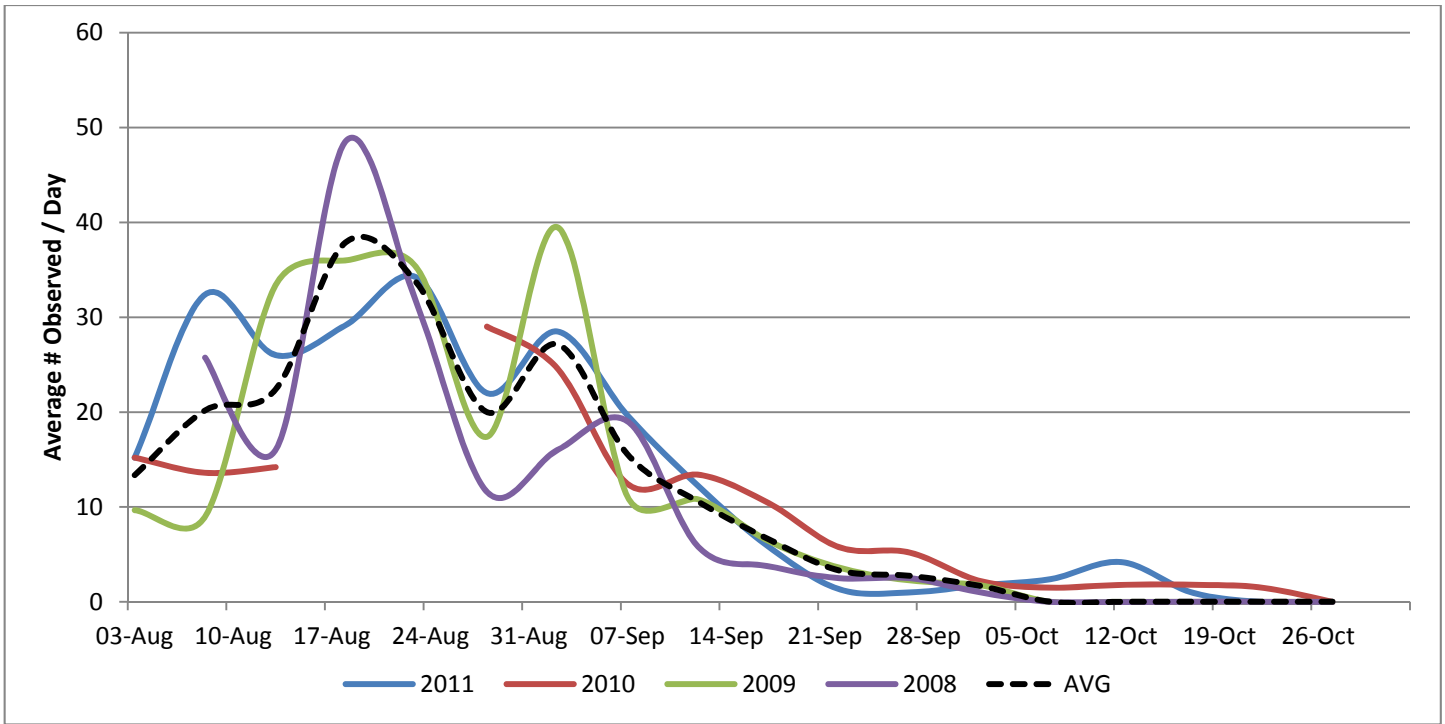


Figure 5. Red-necked Grebe daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

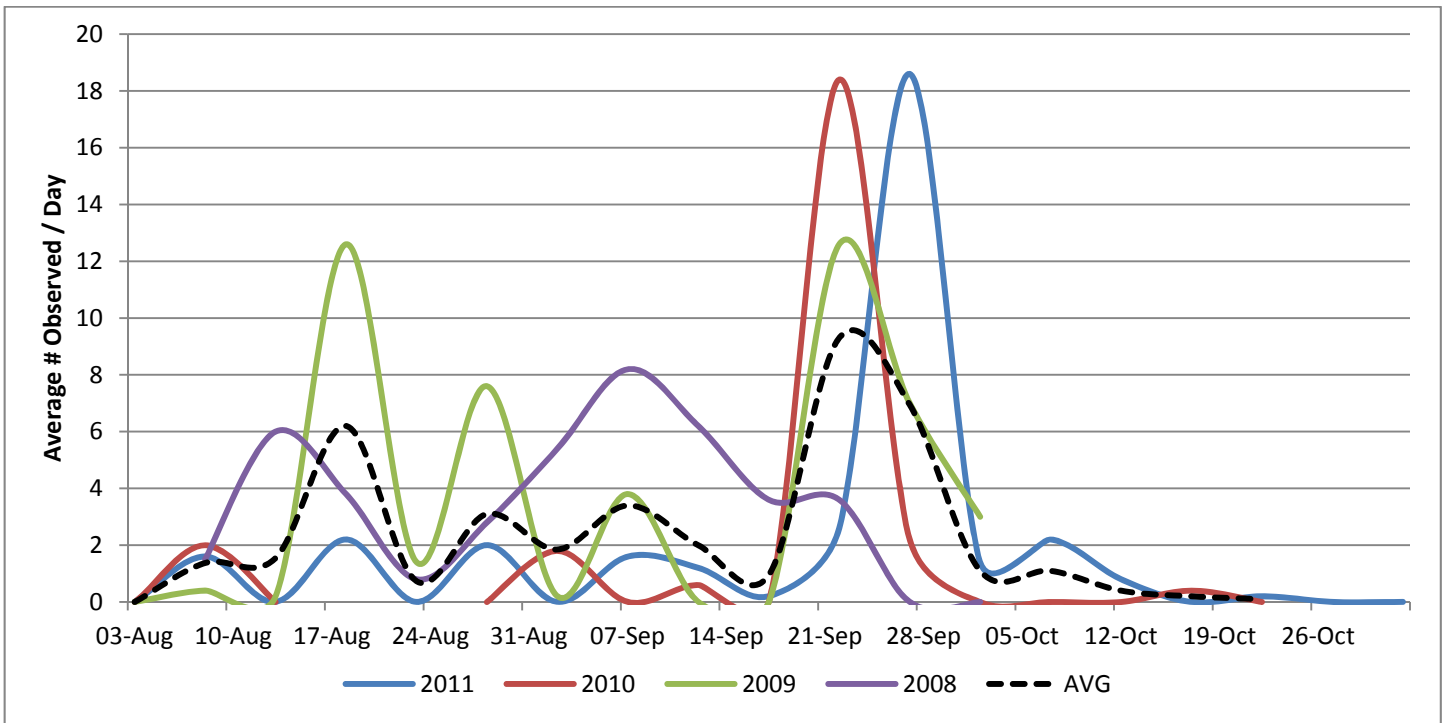


Figure 6. Northern Pintail daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

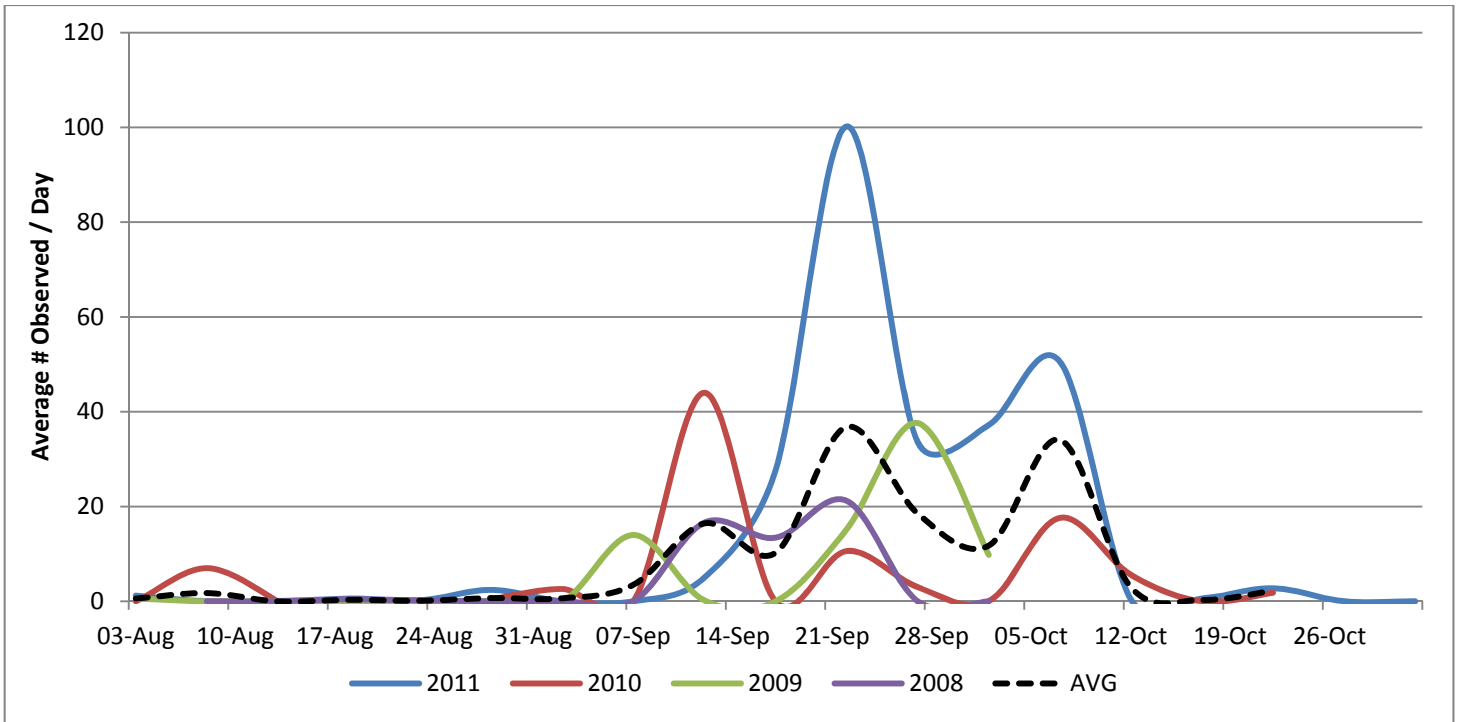


Figure 7. Lesser Scaup daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

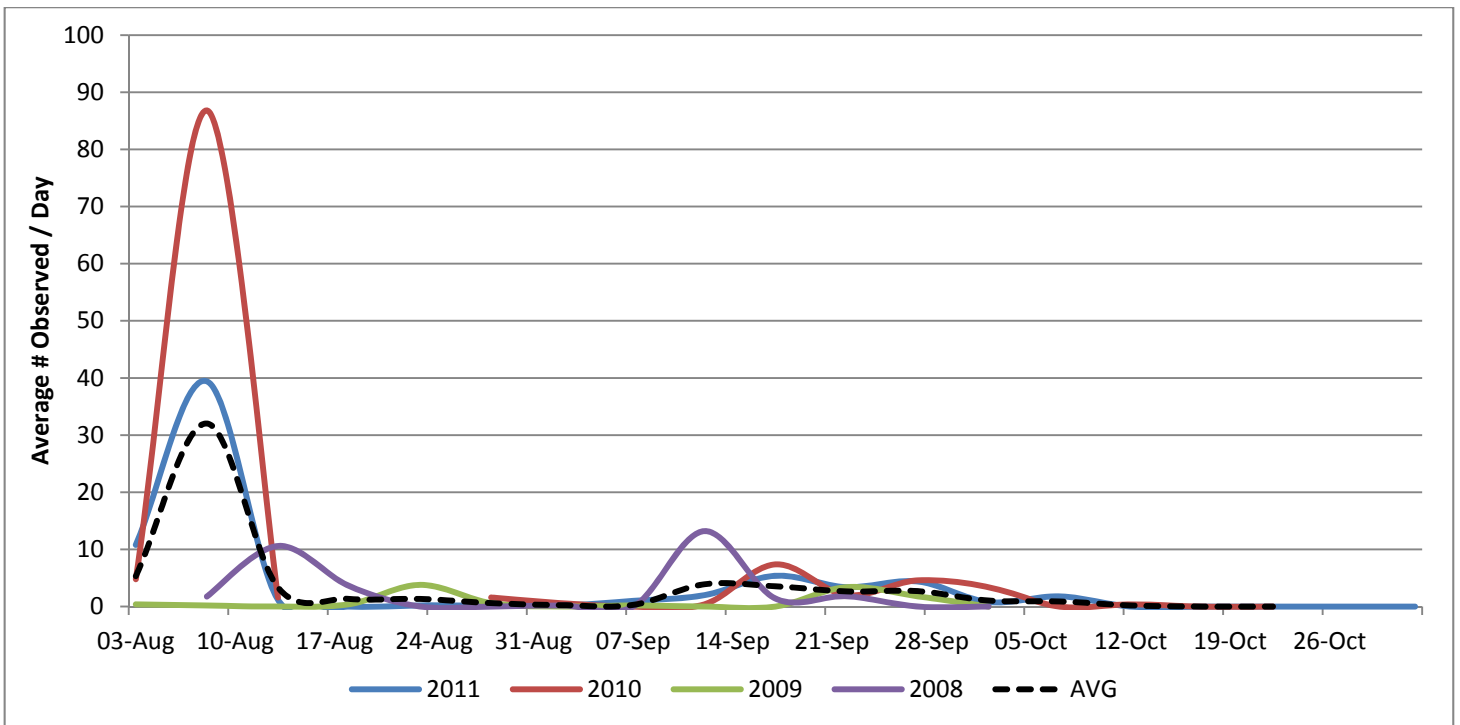


Figure 8. Surf Scoter daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

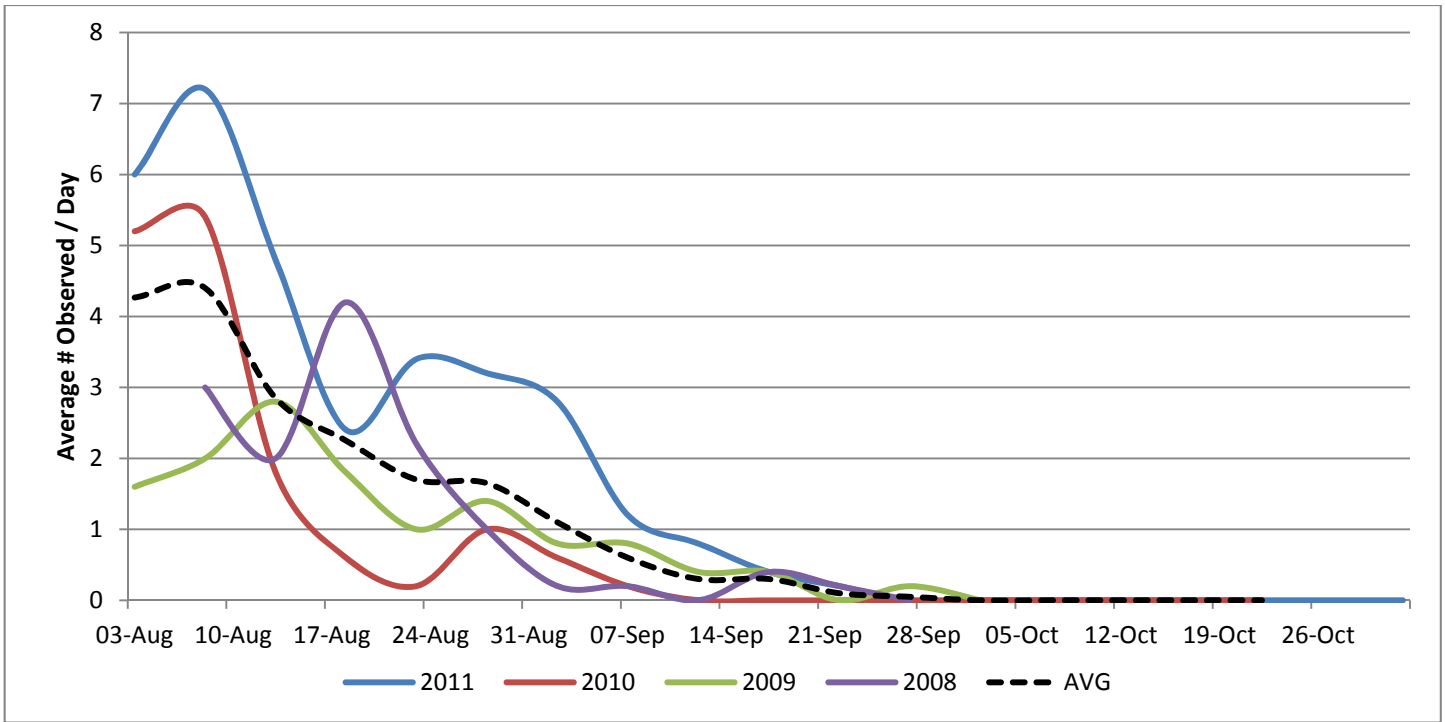


Figure 9. Spotted Sandpiper daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

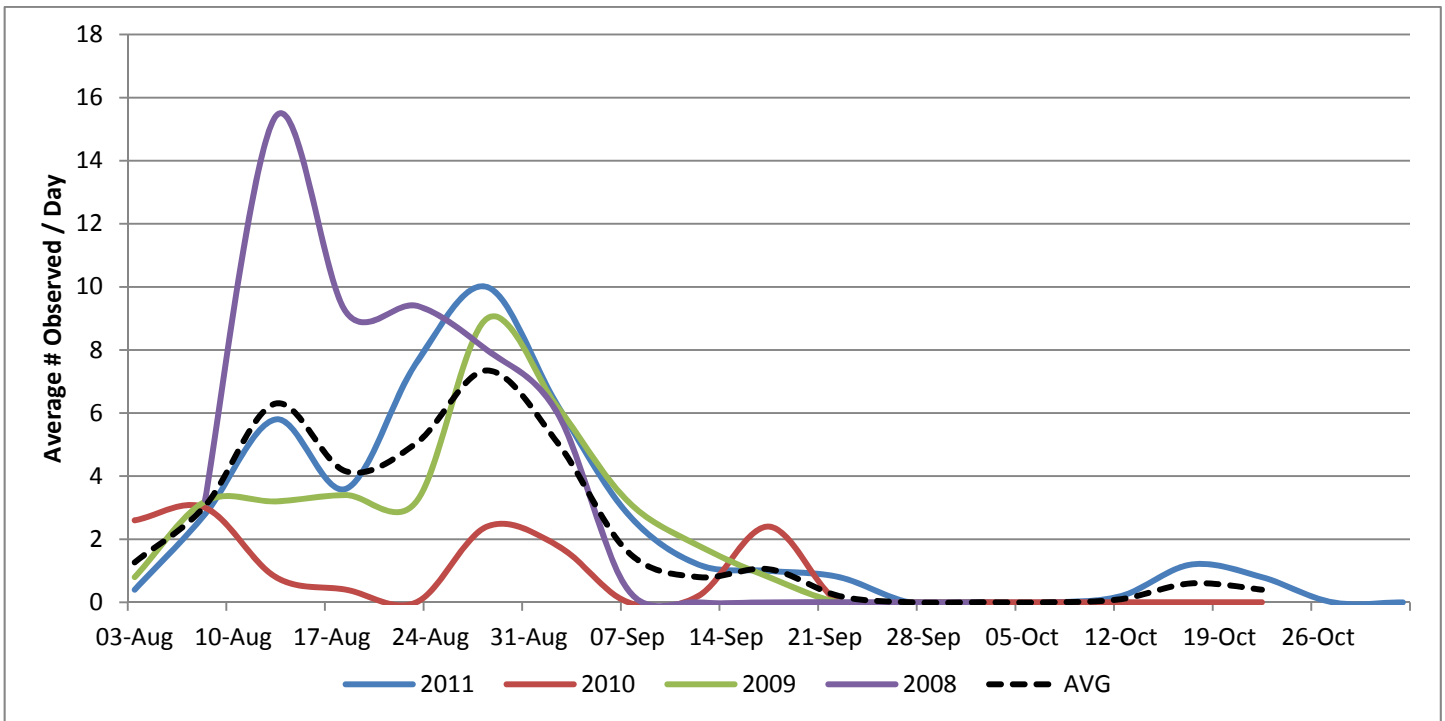


Figure 10. Mew Gull daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

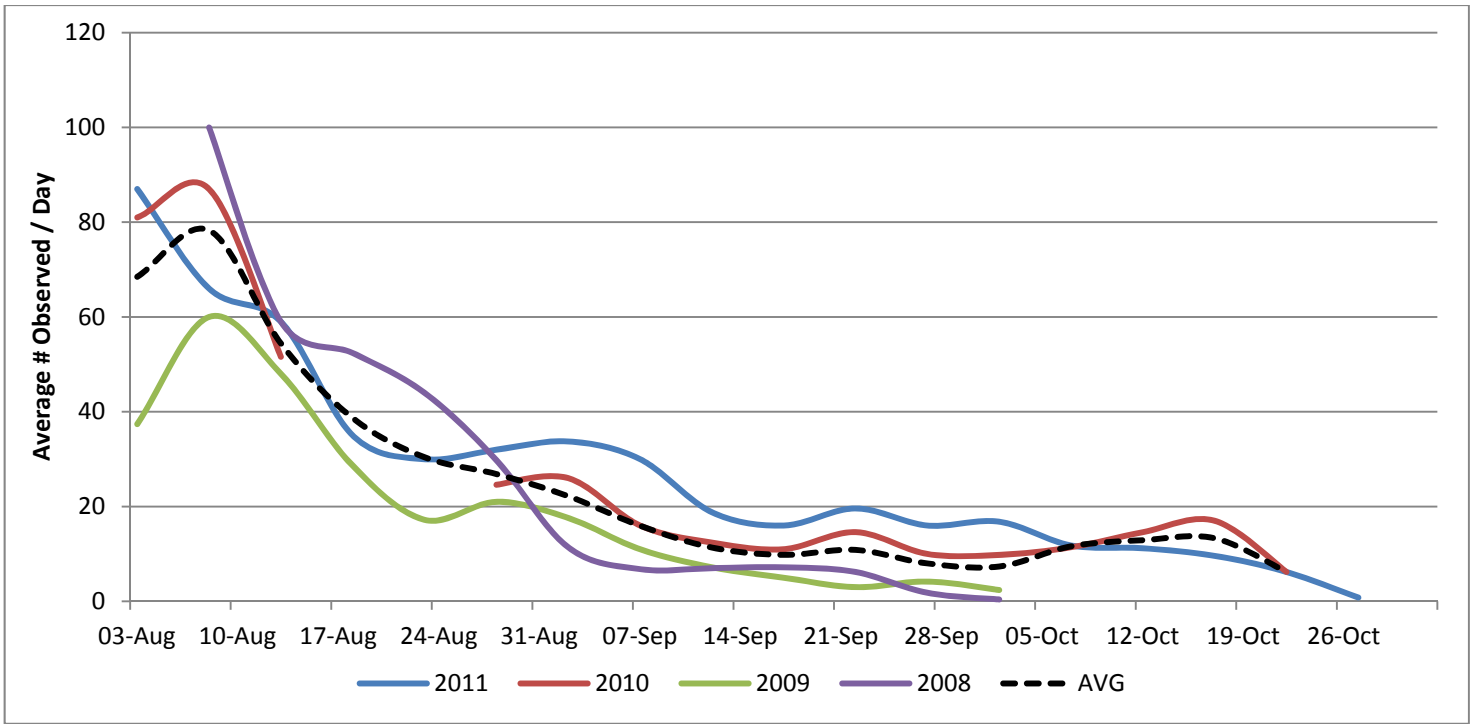


Figure 11. Herring Gull daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

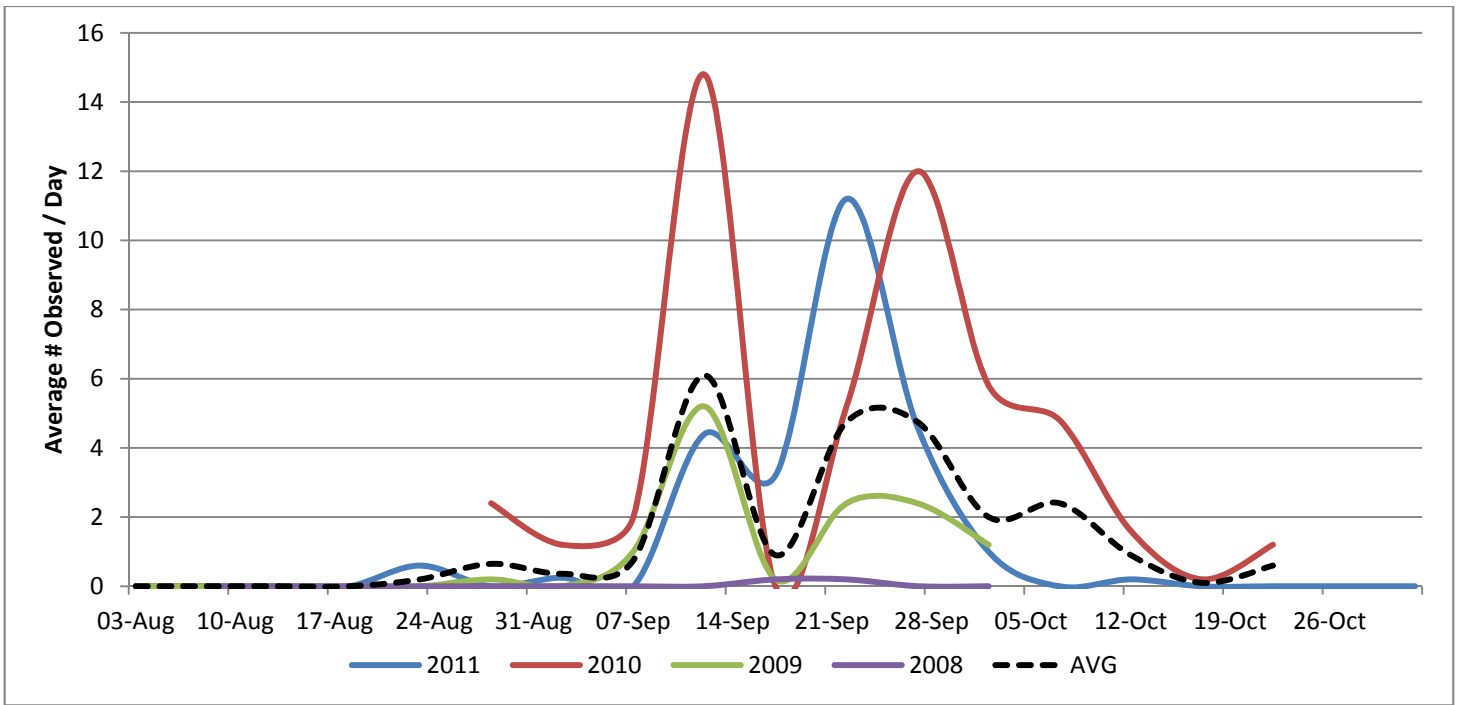


Figure 12. Thayer's Gull daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

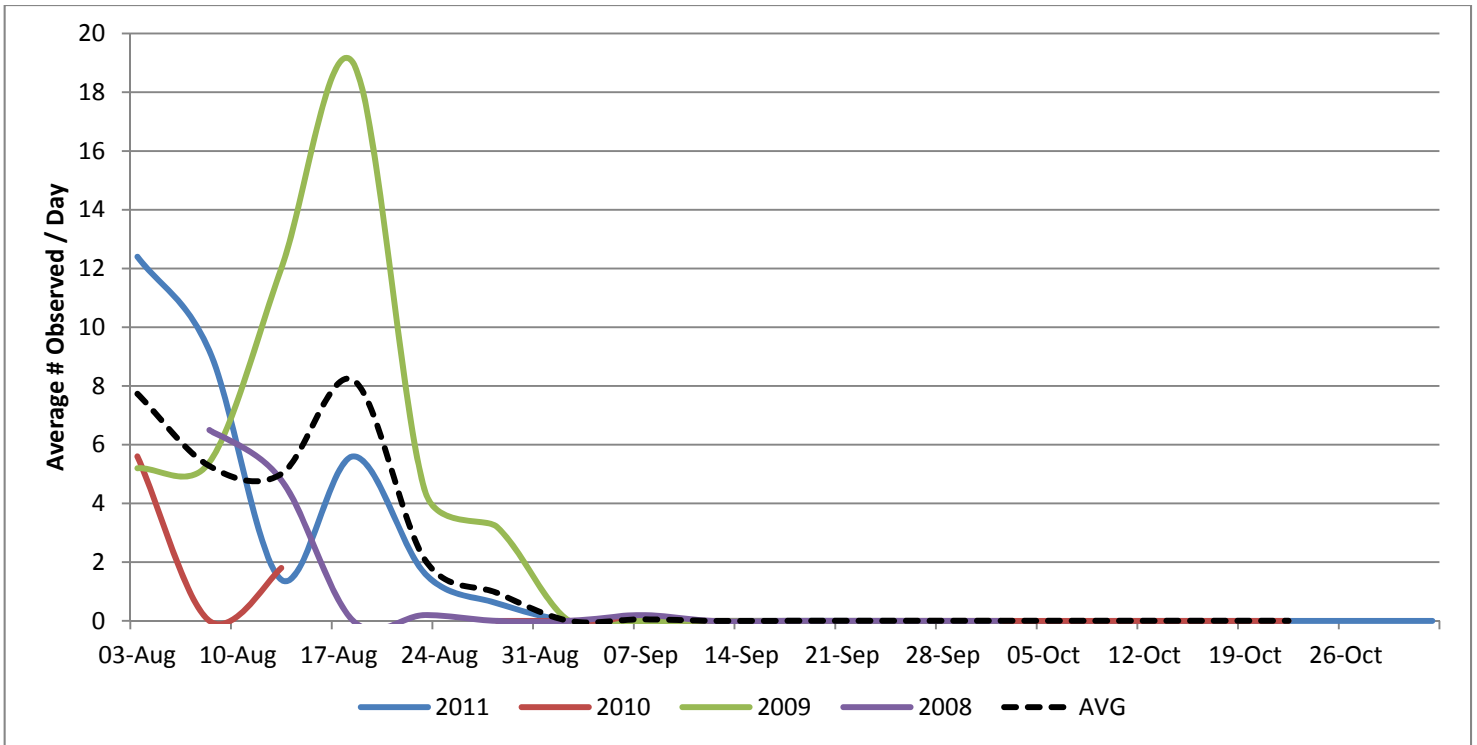


Figure 13. Arctic Tern daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

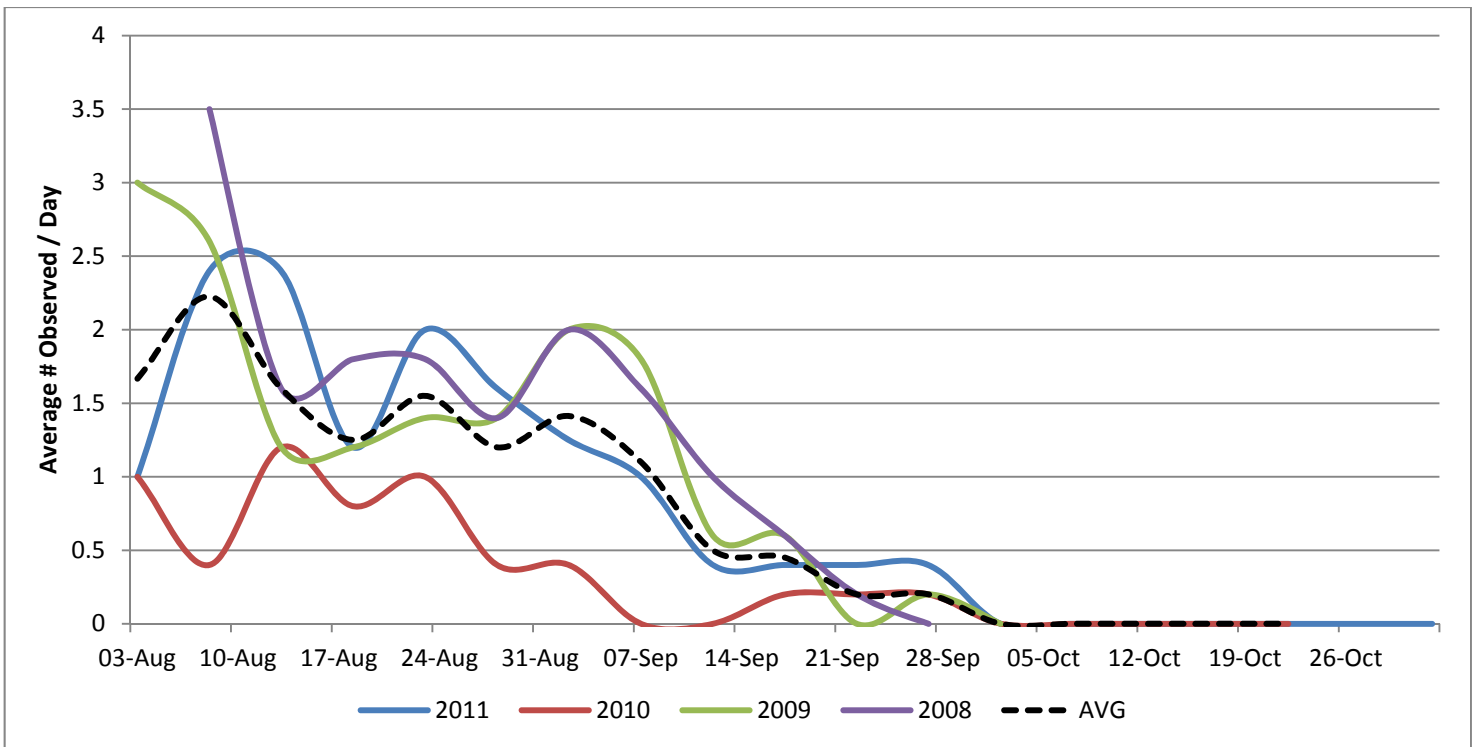


Figure 14. Belted Kingfisher daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

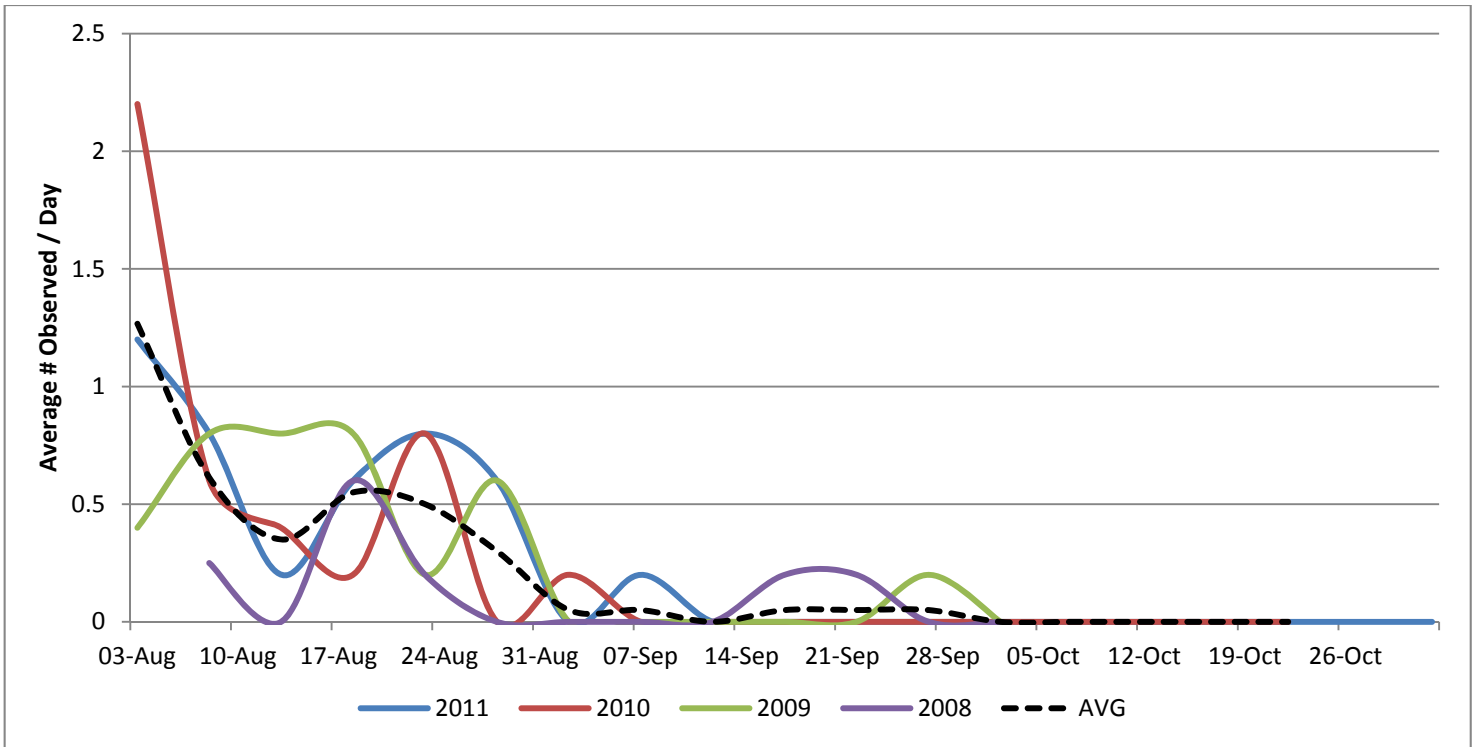


Figure 15. Hammond’s Flycatcher daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

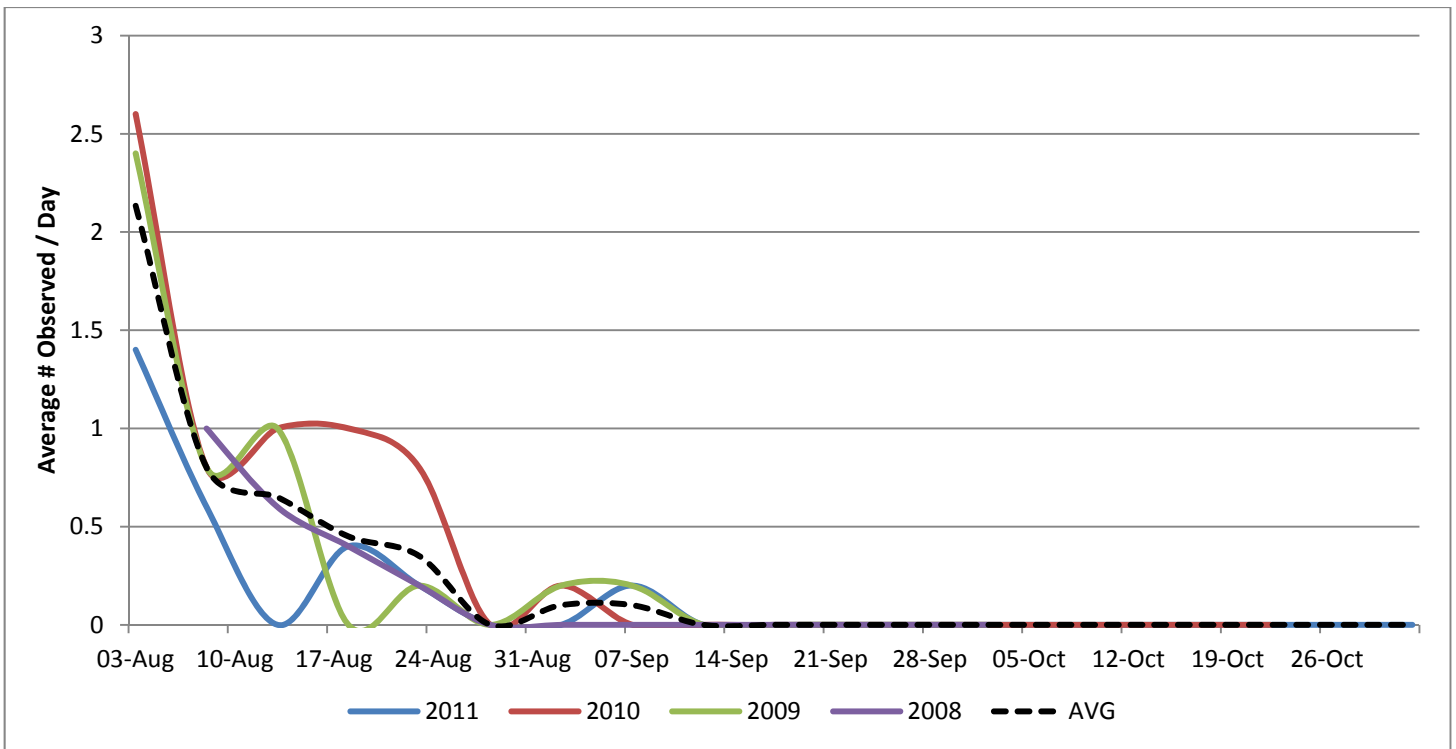


Figure 16. Warbling Vireo daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

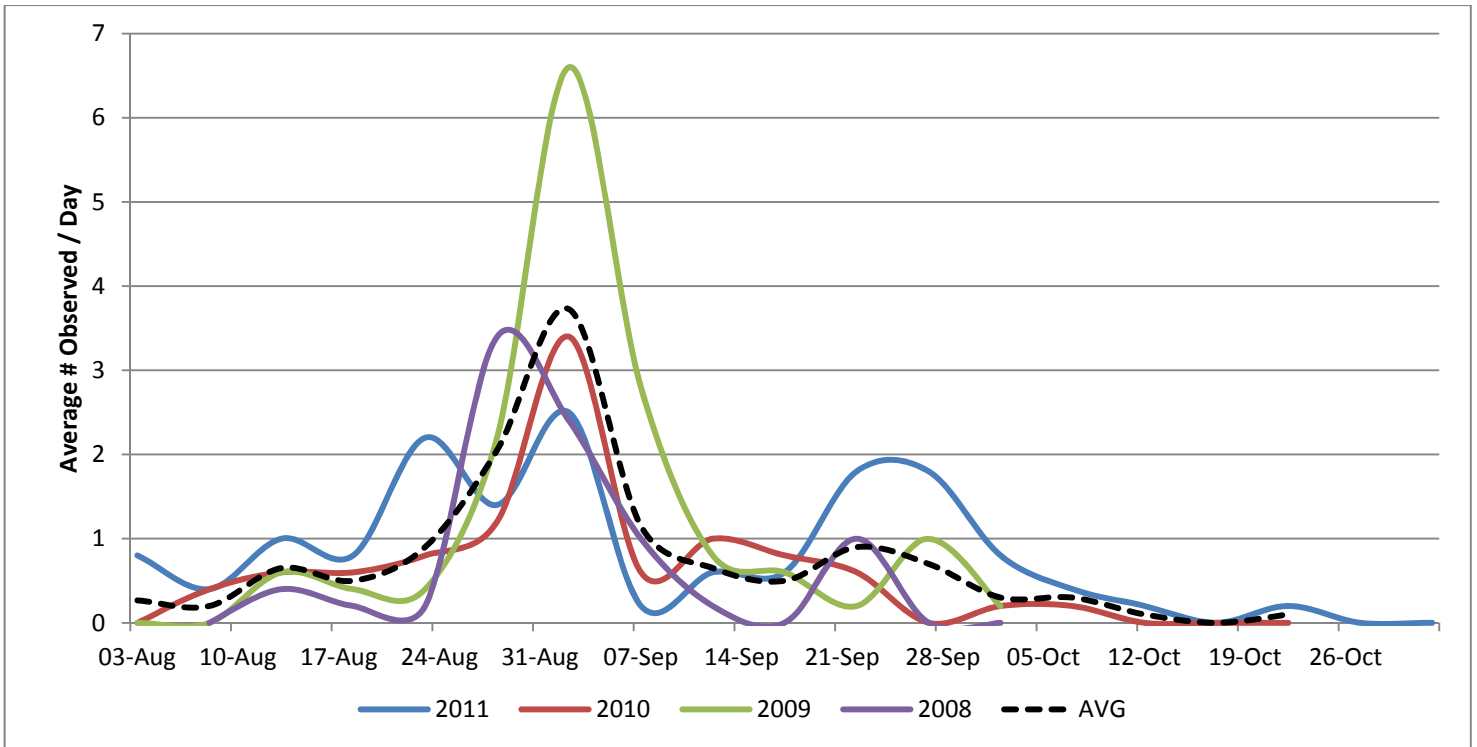


Figure 17. Savannah Sparrow daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

APPENDIX G – WATERFOWL COUNT DATA SUMMARY

Johnson's Crossing / Teslin Lake Outlet – 15 counts from August 4th to October 26th

Species	ALL OBS		First Date	Last Date	HIGH COUNT	
	# of Days	Bird Days			#	Date
Common Loon	10	60	04-Aug	08-Oct	12	10-Sep
Yellow-billed Loon	1	1	08-Oct	-	1	-
Horned Grebe	11	62	12-Aug	19-Oct	20	02-Sep
Red-necked Grebe	7	37	12-Aug	04-Oct	12	10-Sep
Greater White-fronted Goose	2	74	17-Aug	02-Sep	50	02-Sep
Snow Goose	1	1	17-Oct	-	1	-
Canada Goose	6	134	02-Sep	17-Oct	45	08-Oct
<i>Unidentified Goose</i>	1	5	26-Sep	-	5	-
Trumpeter Swan	5	374	30-Sep	26-Oct	266	17-Oct
Tundra Swan	4	652	04-Oct	19-Oct	458	04-Oct
<i>Unidentified Swan</i>	5	128	04-Aug	26-Oct	85	12-Oct
American Wigeon	7	130	12-Aug	17-Oct	38	02-Sep
Mallard	15	1166	04-Aug	26-Oct	202	08-Oct
Northern Shoveler	3	35	17-Aug	26-Sep	20	17-Aug
Northern Pintail	2	27	12-Aug	17-Aug	22	17-Aug
American Green-winged Teal	5	44	12-Aug	12-Oct	15	12/17 Aug
<i>Unidentified Dabbling Duck</i>	8	366	04-Aug	26-Oct	110	17-Aug
Ring-necked Duck	10	332	15-Sep	26-Oct	90	12-Oct
Greater Scaup	1	8	26-Oct	-	8	-
Lesser Scaup	7	192	26-Sep	26-Oct	45	12-Oct
<i>Unidentified Scaup</i>	8	497	26-Sep	26-Oct	130	26 Sep / 8 Oct
Surf Scoter	5	39	04-Aug	19-Oct	20	26-Sep
White-winged Scoter	1	3	08-Oct	-	3	-
Bufflehead	12	901	12-Aug	26-Oct	220	17-Oct
Common Goldeneye	12	693	02-Sep	26-Oct	210	26-Oct
Barrow's Goldeneye	1	1	04-Oct	-	1	-
<i>Unidentified Goldeneye</i>	12	265	04-Aug	17-Oct	70	17-Oct
<i>Unidentified Diving Duck</i>	9	833	12-Aug	26-Oct	312	04-Oct
Hooded Merganser	2	2	17-Oct	19-Oct	1	both days
Common Merganser	6	86	17-Aug	26-Oct	50	02-Sep
Red-breasted Merganser	9	25	17-Aug	26-Oct	7	02-Sep
Bald Eagle	6	8	04-Aug	12-Oct	3	02-Sep
Northern Harrier	3	5	02-Sep	19-Oct	3	19-Oct
Sharp-shinned Hawk	1	2	02-Sep	-	2	-
Red-tailed Hawk	2	3	17-Aug	26-Sep	2	17-Aug
Ruffed Grouse	3	3	04-Aug	17-Aug	1	all days
Semi-palmated Plover	1	1	17-Aug	-	1	-

Species	ALL OBS		First Date	Last Date	HIGH COUNT	
	# of Days	Bird Days			#	Date
Lesser Yellowlegs	3	113	04-Aug	17-Aug	04-Aug	105
Spotted Sandpiper	3	6	04-Aug	17-Aug	3	04-Aug
<i>Unidentified Peep Sandpiper</i>	1	5	04-Aug	0	5	-
<i>Unidentified Shorebird</i>	1	3	17-Aug	-	3	-
Mew Gull	2	11	12-Aug	17-Aug	9	17-Aug
Herring Gull	5	19	04-Aug	18-Sep	8	04-Aug
Thayer's Gull	1	8	10-Sep	-	8	
Arctic Tern	1	2	12-Aug	-	2	-
<i>Unidentified Large Gull</i>	2	7	02-Sep	15-Sep	5	15-Sep
Belted Kingfisher	3	6	04-Aug	02-Sep	2	all days
American Three-toed Woodpecker	1	1	02-Sep	-	1	-
Say's Phoebe	1	1	17-Aug	-	1	-
Gray Jay	1	1	26-Sep	-	1	-
Black-billed Magpie	3	5	15-Sep	19-Oct	2	30 sep/19 Oct
Common Raven	12	46	12-Aug	26-Oct	9	10-Sep
Bank Swallow	2	14	12-Aug	17-Aug	9	17-Aug
Cliff Swallow	1	20	04-Aug	-	20	-
<i>Unidentified Swallow</i>	1	80	17-Aug	-	80	-
Black-capped Chickadee	4	8	12-Aug	26-Sep	4	12-Aug
Boreal Chickadee	7	25	17-Aug	12-Oct	12	15-Sep
Brown Creeper	1	1	19-Oct	-	1	-
Golden-crowned Kinglet	2	3	17-Aug	15-Sep	2	17-Aug
Ruby-crowned Kinglet	1	1	26-Sep	-	1	-
American Robin	1	1	02-Sep	-	1	-
Varied Thrush	1	11	02-Sep	-	11	-
Yellow Warbler	2	4	12-Aug	17-Aug	2	both days
Yellow-rumped "Myrtle" Warbler	4	27	12-Aug	08-Oct	21	17-Aug
Common Yellowthroat	2	2	04-Aug	17-Aug	1	both days
Wilson's Warbler	2	2	10-Sep	30-Sep	1	both days
American Tree Sparrow	3	5	30-Sep	12-Oct	3	30-Sep
Lincoln's Sparrow	1	1	17-Aug	-	1	-
Dark-eyed Junco	7	11	10-Sep	26-Oct	3	26-Sep
White-winged Crossbill	1	1	02-Sep	-	1	-
Common Redpoll	2	33	17-Aug	08-Oct	30	08-Oct
Pine Siskin	1	4	17-Aug	-	4	-

Little Atlin Lake (Boat Launch) – 3 counts from September 20th to October 19th

Species	ALL OBS		First Date	Last Date	HIGH COUNT	
	# of Days	Bird Days			#	Date
Common Loon	3	117	20-Sep	19-Oct	60	09-Oct
Horned Grebe	3	107	20-Sep	19-Oct	55	09-Oct
Red-necked Grebe	3	56	20-Sep	19-Oct	30	09-Oct
Canada Goose	2	58	09-Oct	19-Oct	40	19-Oct
Trumpeter Swan	1	3	19-Oct	-	3	-
Tundra Swan	1	189	09-Oct	-	189	-
<i>Unidentified Swan</i>	2	54	09-Oct	19-Oct	45	19-Oct
Mallard	1	30	19-Oct	-	30	-
<i>Unidentified Dabbling Duck</i>	1	30	19-Oct	-	30	-
White-winged Scoter	1	2	19-Oct	-	2	-
Bufflehead	2	110	09-Oct	19-Oct	60	19-Oct
Common Goldeneye	3	70	20-Sep	19-Oct	40	19-Oct
<i>Unidentified Goldeneye</i>	1	15	20-Sep	-	15	-
<i>Unidentified Diving Duck</i>	1	20	20-Sep	-	20	-
Common Merganser	1	1	19-Oct	-	1	-
Red-breasted Merganser	3	28	20-Sep	19-Oct	18	20-Sep
Bald Eagle	2	2	20-Sep	09-Oct	1	both days
Northern Harrier	2	2	20-Sep	09-Oct	1	both days
Sharp-shinned Hawk	1	1	20-Sep	-	1	-
Herring Gull	3	9	20-Sep	19-Oct	5	09-Oct
Black-billed Magpie	1	1	09-Oct	-	1	-
Common Raven	1	2	20-Sep	-	2	-
Ruby-crowned Kinglet	1	1	20-Sep	-	1	-
American Robin	1	4	09-Oct	-	4	-
Yellow-rumped "Myrtle" Warbler	1	1	20-Sep	-	1	-
American Tree Sparrow	1	2	20-Sep	-	2	-
Dark-eyed Junco	1	1	09-Oct	-	1	-
Common Redpoll	1	40	09-Oct	-	40	-

Marsh Lake (Judas Creek Marina) – 9 counts from August 7th to October 19th

Species	ALL OBS		First Date	Last Date	HIGH COUNT	
	# of Days	Bird Days			#	Date
Red-throated Loon	1	1	20-Sep	-	1	-
Pacific Loon	2	3	13-Sep	15-Sep	2	13-Sep
Common Loon	8	117	17-Aug	19-Oct	40	27-Sep
Horned Grebe	7	71	17-Aug	19-Oct	21	17-Aug
Red-necked Grebe	9	1360	07-Aug	19-Oct	477	17-Aug
Canada Goose	1	10	27-Sep	-	10	-
Trumpeter Swan	1	15	19-Oct	-	15	-
Tundra Swan	1	1	19-Oct	-	1	-
Ring-necked Duck	1	1	02-Oct	-	1	-
Lesser Scaup	2	15	27-Sep	19-Oct	14	27-Sep
<i>Unidentified Scaup</i>	1	1	17-Aug	-	1	-
Surf Scoter	6	217	17-Aug	02-Oct	195	15-Sep
White-winged Scoter	2	5	02-Oct	19-Oct	4	02-Oct
Bufflehead	4	34	20-Sep	19-Oct	25	19-Oct
Common Goldeneye	1	45	19-Oct	-	45	-
Barrow's Goldeneye	1	3	15-Sep	-	3	-
<i>Unidentified Goldeneye</i>	1	1	22-Aug	-	1	-
Common Merganser	1	4	19-Oct	-	4	-
Red-breasted Merganser	5	37	22-Aug	19-Oct	17	17-Aug
<i>Unidentified Merganser</i>	1	8	02-Oct	-	8	-
Bald Eagle	2	3	17-Aug	15-Sep	2	15-Sep
Northern Harrier	1	1	22-Aug	-	1	-
Bonaparte's Gull	2	21	17-Aug	22-Aug	11	17-Aug
Mew Gull	2	21	17-Aug	22-Aug	15	17-Aug
Herring Gull	7	21	17-Aug	19-Oct	4	many days
Thayer's Gull	2	2	20-Sep	19-Oct	1	both days
Arctic Tern	1	1	13-Sep	-	1	-
American Three-toed Woodpecker	1	1	19-Oct	-	1	-
Black-billed Magpie	5	7	17-Aug	02-Oct	2	17/22 Aug
Common Raven	2	3	22-Aug	19-Sep	2	19-Oct
Black-capped Chickadee	2	4	15-Sep	19-Oct	2	both days
Boreal Chickadee	2	11	17-Aug	20-Sep	10	20-Sep
Red-breasted Nuthatch	1	1	15-Sep	-	1	-
Bohemian Waxwing	1	1	19-Oct	-	1	-
Yellow Warbler	1	1	20-Sep	-	1	-
Yellow-rumped "Myrtle" Warbler	4	30	17-Aug	27-Sep	20	20-Sep
Lapland Longspur	1	1	19-Oct	-	1	-

Species	ALL OBS		First Date	Last Date	HIGH COUNT	
	# of Days	Bird Days			#	Date
American Tree Sparrow	2	2	27-Sep	19-Oct	1	both days
Savannah Sparrow	1	3	17-Aug	-	3	-
Dark-eyed Junco	2	7	17-Aug	27-Sep	5	27-Sep
White-winged Crossbill	1	1	19-Oct	-	1	-

Marsh Lake (North Lookout) – 2 counts, August 7th and 17th

Species	ALL OBS		First Date	Last Date	HIGH COUNT	
	# of Days	Bird Days			#	Date
Common Loon	2	3	07-Aug	17-Aug	2	17-Aug
Horned Grebe	2	18	07-Aug	17-Aug	13	17-Aug
Red-necked Grebe	2	108	07-Aug	17-Aug	81	17-Aug
Canada Goose	1	9	17-Aug	-	9	-
Surf Scoter	1	4	17-Aug	-	4	-
Bald Eagle	1	1	17-Aug	-	1	-
Spotted Sandpiper	1	1	07-Aug	-	1	-
Herring Gull	2	30	07-Aug	17-Aug	20	17-Aug

Squanga Lake – 18 counts from August 4th to October 26th

Species	ALL OBS		First Date	Last Date	HIGH COUNT	
	# of Days	Bird Days			#	Date
Red-throated Loon	2	3	02-Sep	10-Sep	2	02-Sep
Pacific Loon	2	2	02-Sep	19-Oct	1	both days
Common Loon	17	85	04-Aug	26-Oct	4	many days
Horned Grebe	13	75	22-Aug	26-Oct	14	10-Sep
Red-necked Grebe	9	32	04-Aug	08-Oct	7	28-Aug
Trumpeter Swan	1	10	19-Oct	-	10	-
Tundra Swan	2	72	04-Oct	12-Oct	65	04-Oct
<i>Unidentified Swan</i>	1	4	17-Oct	-	4	-
American Wigeon	3	24	02-Sep	30-Sep	12	30-Sep
Mallard	5	17	12-Aug	12-Oct	10	12-Aug
Northern Shoveler	1	3	30-Sep	-	3	-
Northern Pintail	1	2	30-Sep	-	2	-
American Green-winged Teal	3	11	22-Aug	02-Sep	7	02-Sep
Canvasback	3	3	27-Sep	08-Oct	1	all days
Ring-necked Duck	8	19	17-Aug	30-Sep	5	02-Sep
Greater Scaup	1	8	27-Sep	-	8	-
Lesser Scaup	8	57	02-Sep	19-Oct	20	27-Sep
<i>Unidentified Scaup</i>	7	134	15-Sep	19-Oct	50	04-Oct
Surf Scoter	12	109	04-Aug	19-Oct	16	10-Sep
White-winged Scoter	5	35	02-Sep	26-Oct	18	30-Sep
Bufflehead	13	768	12-Aug	26-Oct	180	17-Oct
Common Goldeneye	12	227	04-Oct	26-Oct	70	17-Oct
Barrow's Goldeneye	1	1	19-Oct	-	1	-
<i>Unidentified Goldeneye</i>	7	100	02-Sep	12-Oct	40	04-Oct
<i>Unidentified Diving Duck</i>	3	60	27-Sep	12-Oct	30	12-Oct
Common Merganser	3	12	27-Sep	26-Oct	9	27-Sep
Osprey	1	1	28-Aug	-	1	-
Bald Eagle	4	5	15-Sep	12-Oct	2	15-Sep
Northern Harrier	1	1	27-Sep	-	1	-
Merlin	1	1	28-Aug	-	1	-
Spotted Sandpiper	1	2	04-Aug	-	2	-
Red-necked Phalarope	3	33	12-Aug	28-Aug	15	12-Aug
Bonaparte's Gull	1	1	12-Aug	-	1	-
Mew Gull	3	3	17-Aug	28-Aug	1	all days
Thayer's Gull	1	40	20-Sep	-	40	-
Belted Kingfisher	2	3	04-Aug	10-Sep	2	04-Aug
Black-billed Magpie	3	3	04-Aug	12-Oct	1	all days
Common Raven	4	4	04-Aug	19-Oct	1	all days

Species	ALL OBS		First Date	Last Date	HIGH COUNT	
	# of Days	Bird Days			#	Date
Black-capped Chickadee	1	1	17-Aug	-	1	-
American Pipit	1	1	19-Oct	-	1	-
Bohemian Waxwing	1	10	20-Sep	-	10	-
Yellow Warbler	1	1	17-Aug	-	1	-
Yellow-rumped "Myrtle" Warbler	3	6	17-Aug	02-Sep	3	17-Aug
Common Yellowthroat	2	2	04-Aug	17-Aug	1	both days
Wilson's Warbler	1	1	10-Sep	-	1	-
<i>Unidentified Warbler</i>	1	1	02-Sep	-	2	-
White-crowned Sparrow	1	1	28-Aug	-	1	-
Rusty Blackbird	1	2	02-Sep	-	2	-

Teslin (Nisutlin Bay) – 5 counts from August 2nd to October 19th

Species	ALL OBS		First Date	Last Date	HIGH COUNT	
	# of Days	Bird Days			#	Date
Common Loon	3	23	02-Aug	19-Oct	18	04-Sep
Tundra Swan	1	2	07-Oct	-	2	-
Mallard	2	34	02-Aug	19-Oct	20	19-Oct
Northern Pintail	1	2	02-Aug	-	2	-
Ring-necked Duck	1	1	07-Oct	-	1	-
Greater Scaup	1	2	07-Oct	-	2	-
Lesser Scaup	1	2	07-Oct	-	2	-
Surf Scoter	1	4	02-Aug	-	4	-
Bufflehead	2	65	07-Oct	19-Oct	50	19-Oct
Common Goldeneye	4	38	02-Aug	19-Oct	15	19-Oct
Common Merganser	1	3	07-Oct	-	3	-
Bald Eagle	1	1	07-Oct	-	1	-
Northern Harrier	1	1	04-Sep	-	1	-
Killdeer	1	1	02-Aug	-	1	-
Lesser Yellowlegs	1	14	02-Aug	-	14	-
Mew Gull	1	1	04-Sep	-	1	-
Arctic Tern	1	4	02-Aug	-	4	-
<i>Unidentified Woodpecker</i>	1	1	31-Aug	-	1	-
Say's Phoebe	1	1	02-Aug	-	1	-
American Crow	1	2	31-Aug	-	2	-
Common Raven	1	2	02-Aug	-	2	-
Barn Swallow	1	2	02-Aug	-	2	-
Boreal Chickadee	1	18	31-Aug	-	18	-
Rusty Blackbird	1	7	04-Sep	-	7	-

APPENDIX H – WATERFOWL COUNT DATA EXTRAPOLATION FIGURES

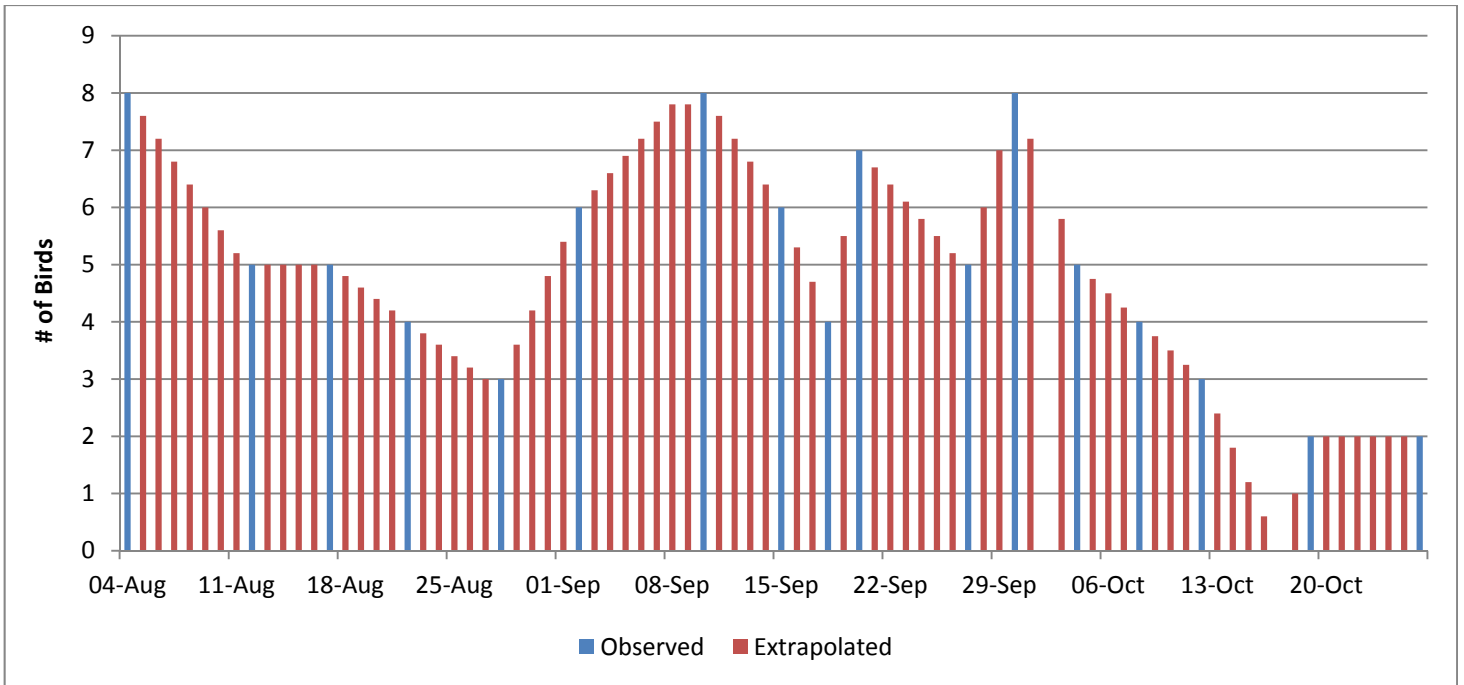


Figure 1. Waterfowl count data extrapolation for Common Loon at Squanga Lake.

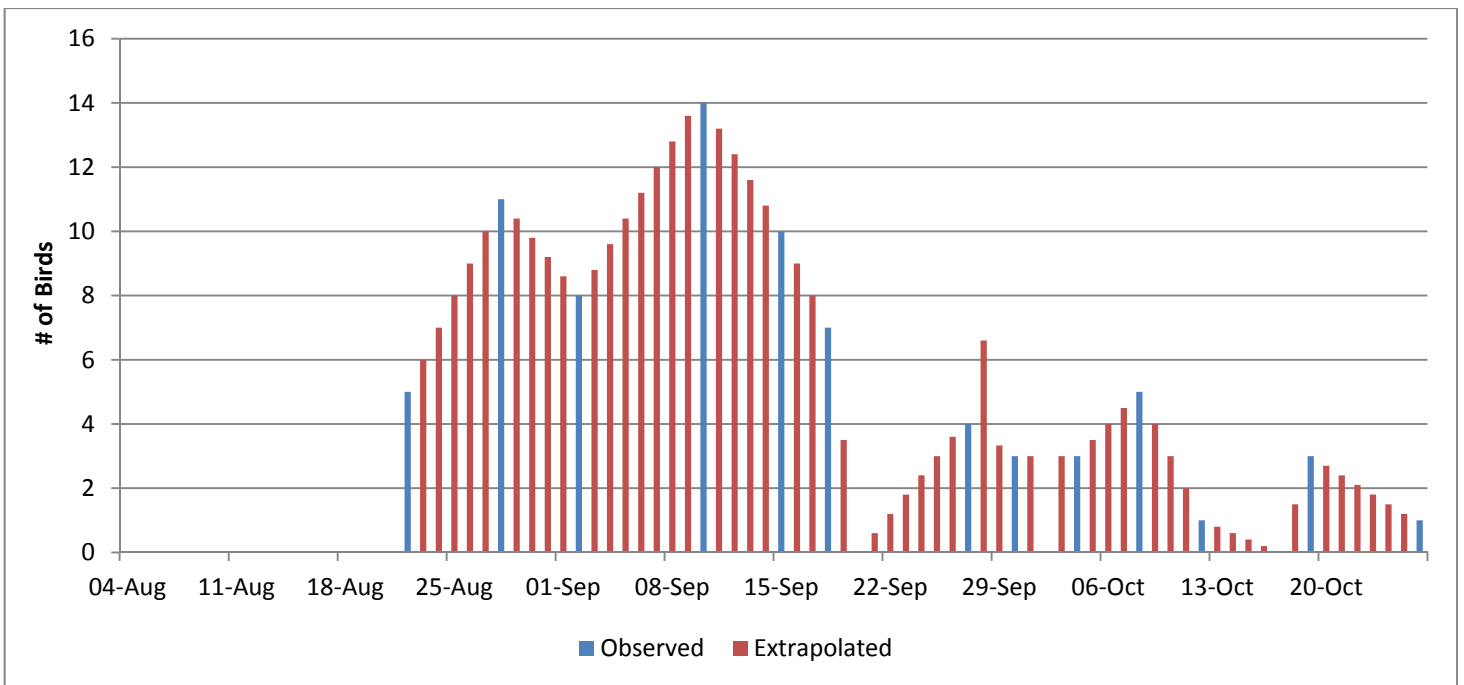


Figure 2. Waterfowl count data extrapolation for Horned Grebe at Squanga Lake.

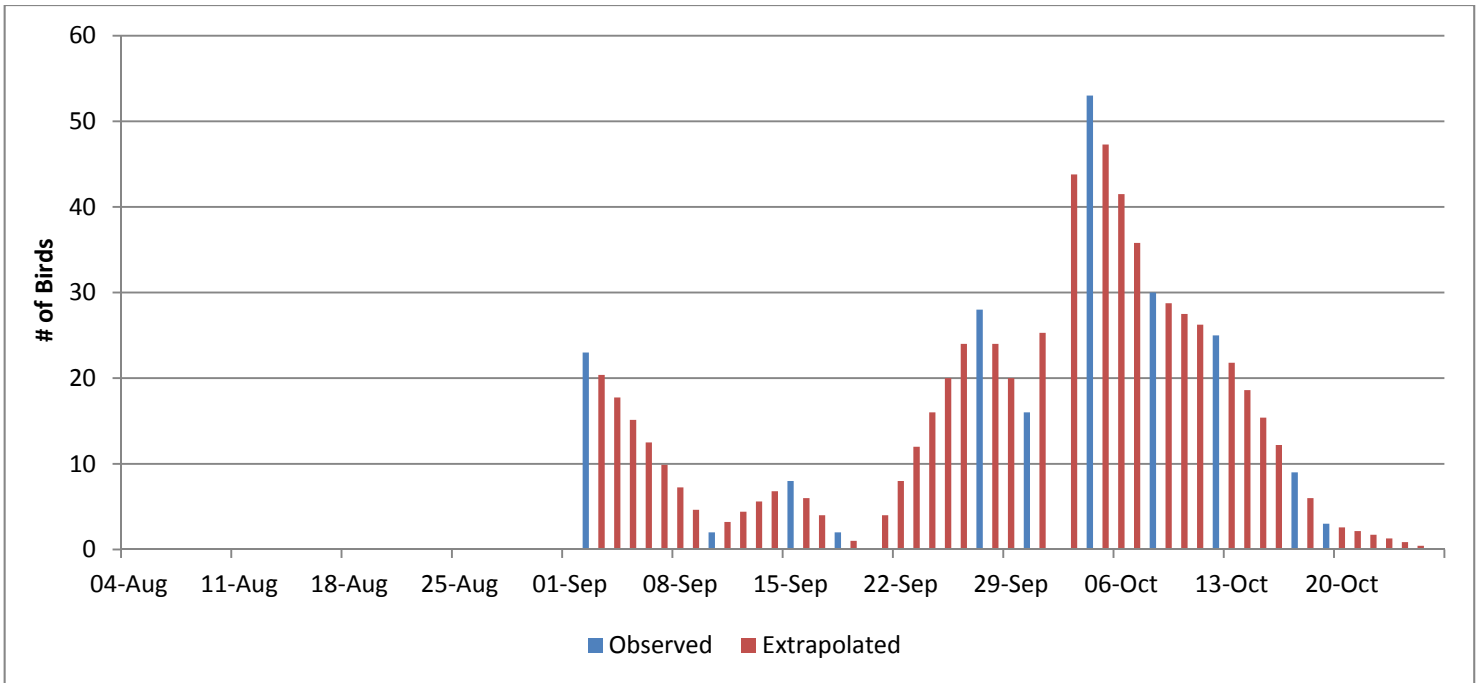


Figure 3. Waterfowl count data extrapolation for Greater Scaup / Lesser Scaup at Squanga Lake.

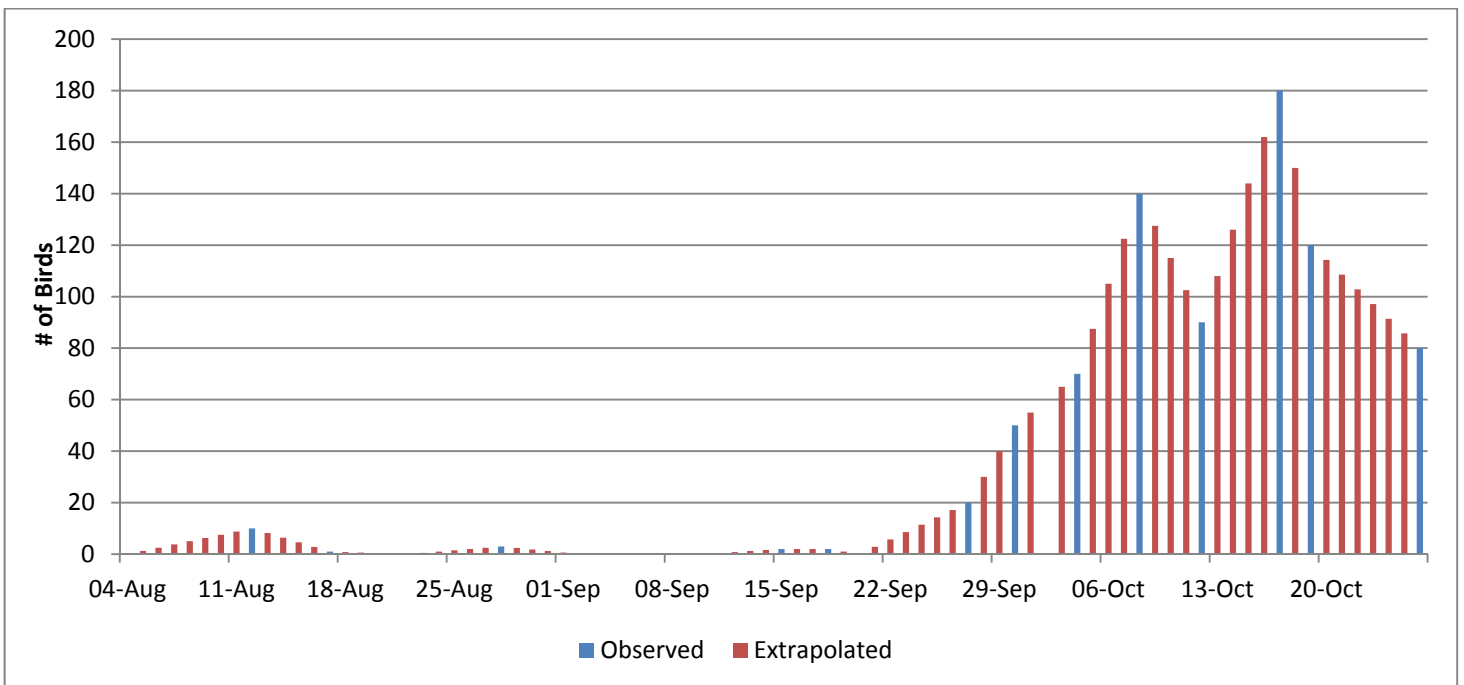


Figure 4. Waterfowl count data extrapolation for Bufflehead at Squanga Lake.

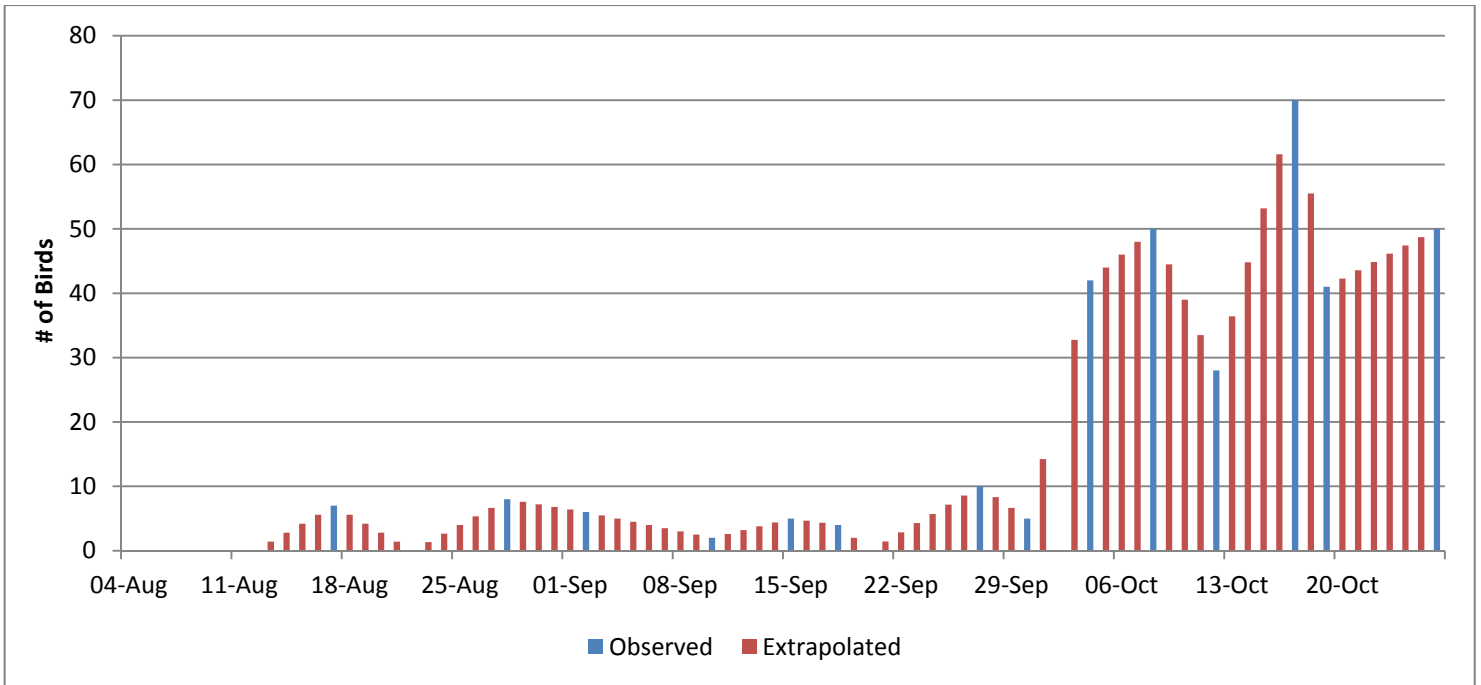


Figure 5. Waterfowl count data extrapolation for Greater Scaup / Lesser Scaup at Squanga Lake.

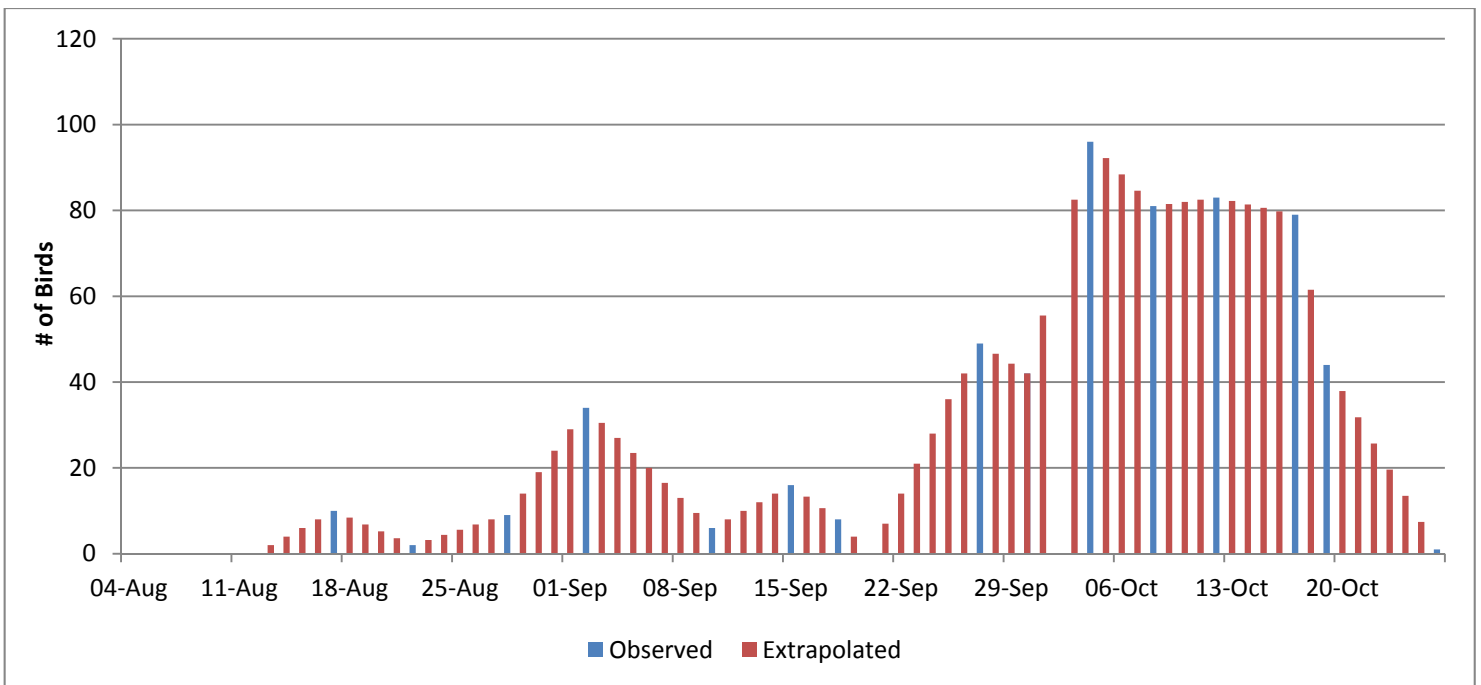


Figure 6. Waterfowl count data extrapolation for Diving Ducks at Squanga Lake. Includes scaup, goldeneyes and Ring-necked Duck.

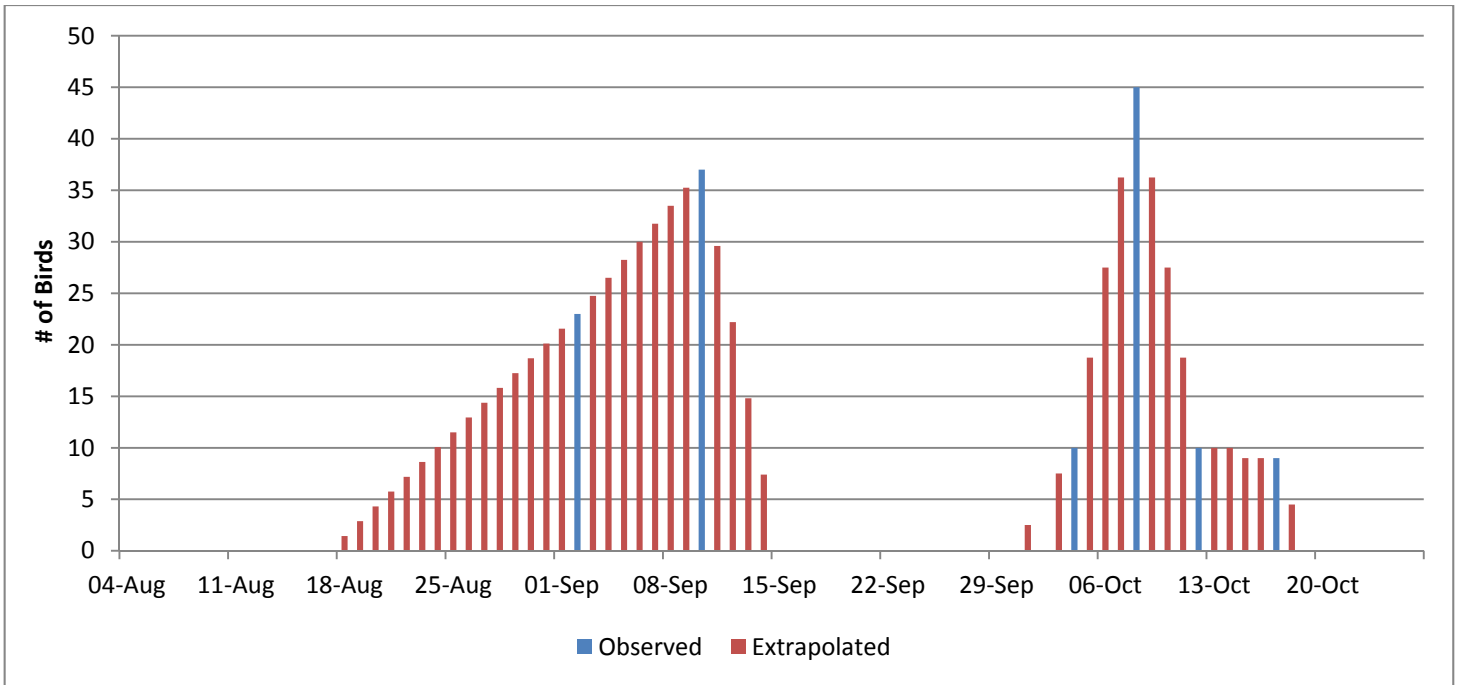


Figure 7. Waterfowl count data extrapolation for Canada Goose at Johnson's Crossing / Teslin Lake outlet.

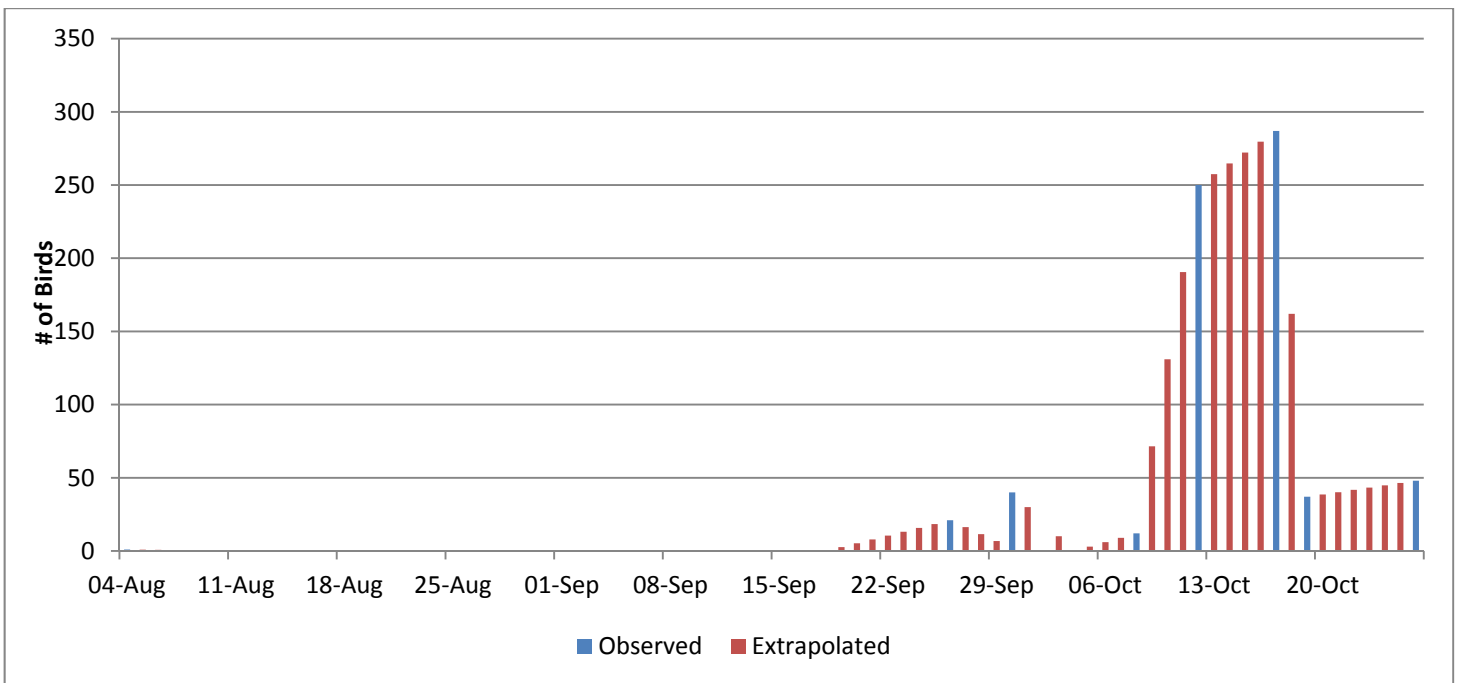


Figure 8. Waterfowl count data extrapolation for Tundra / Trumpeter Swans at Johnson's Crossing / Teslin Lake outlet.

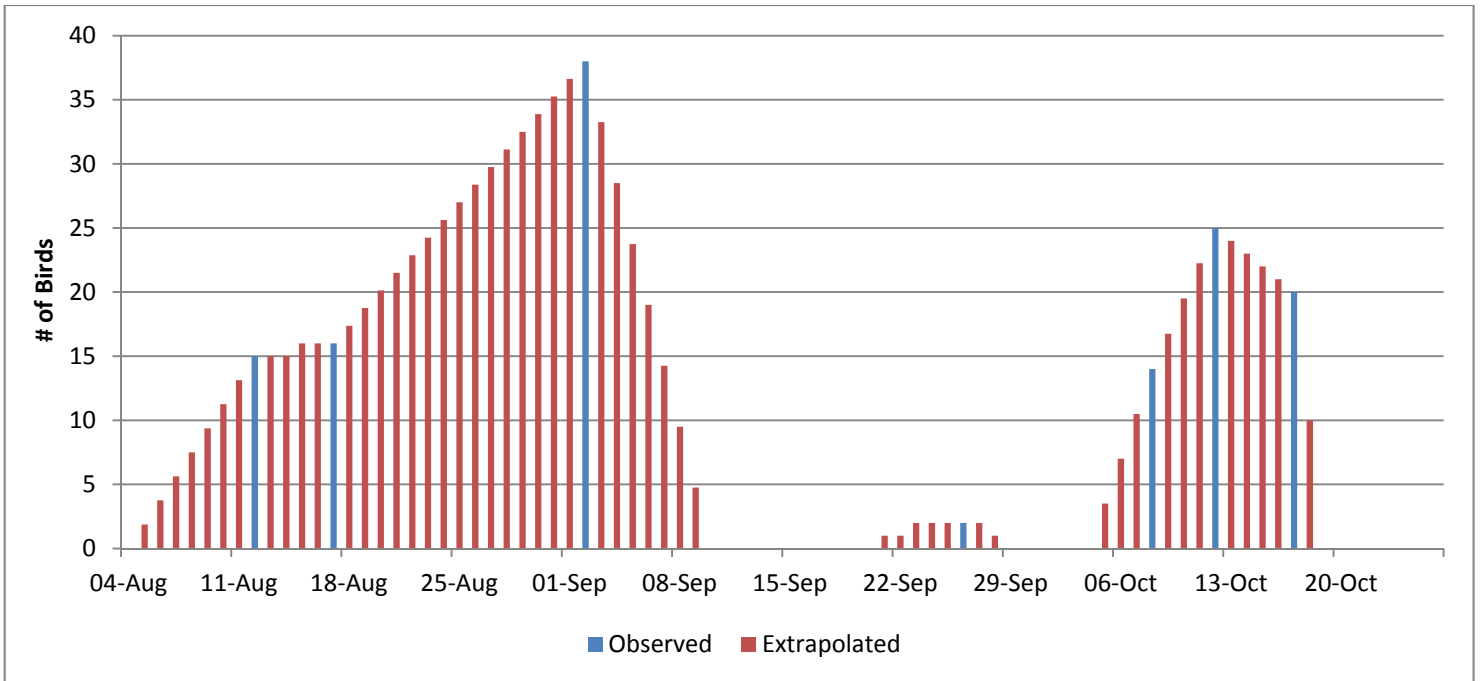


Figure 9. Waterfowl count data extrapolation for American Wigeon at Johnson's Crossing / Teslin Lake outlet.

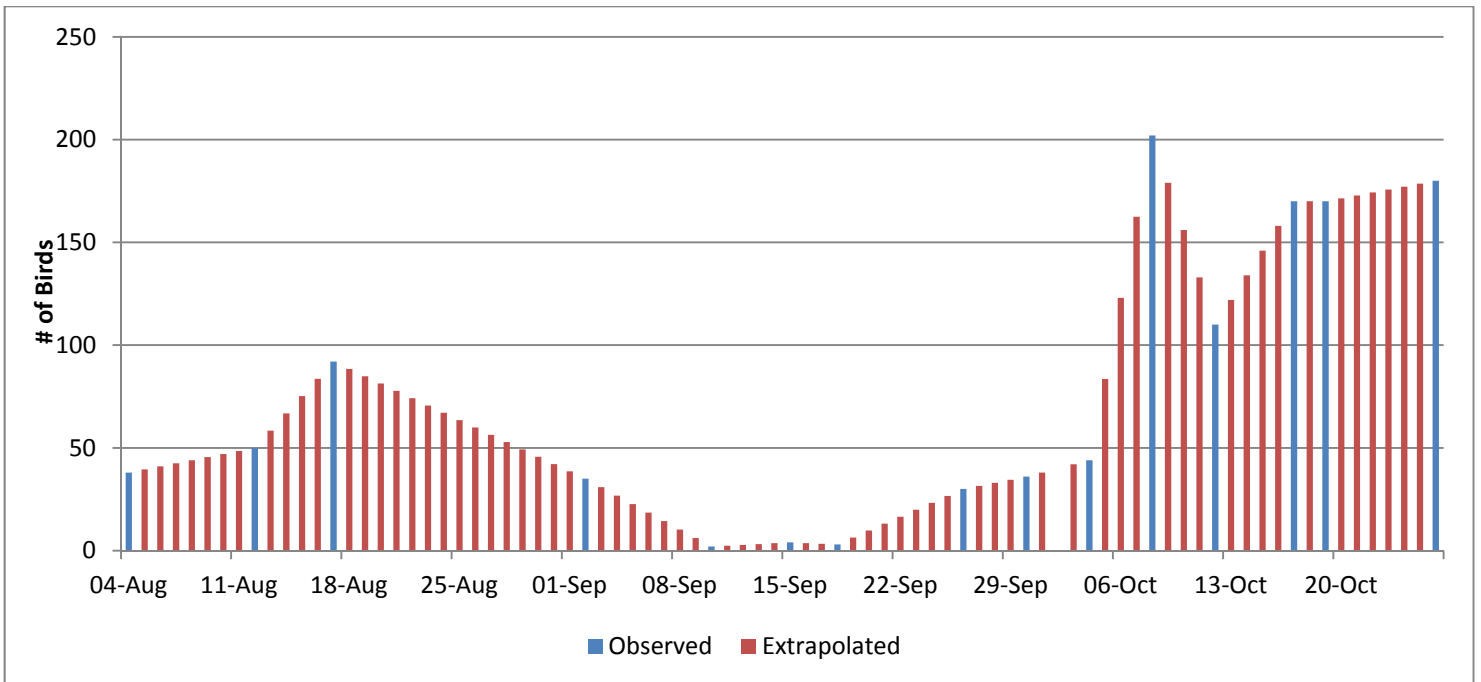


Figure 10. Waterfowl count data extrapolation for Mallard at Johnson's Crossing / Teslin Lake outlet.

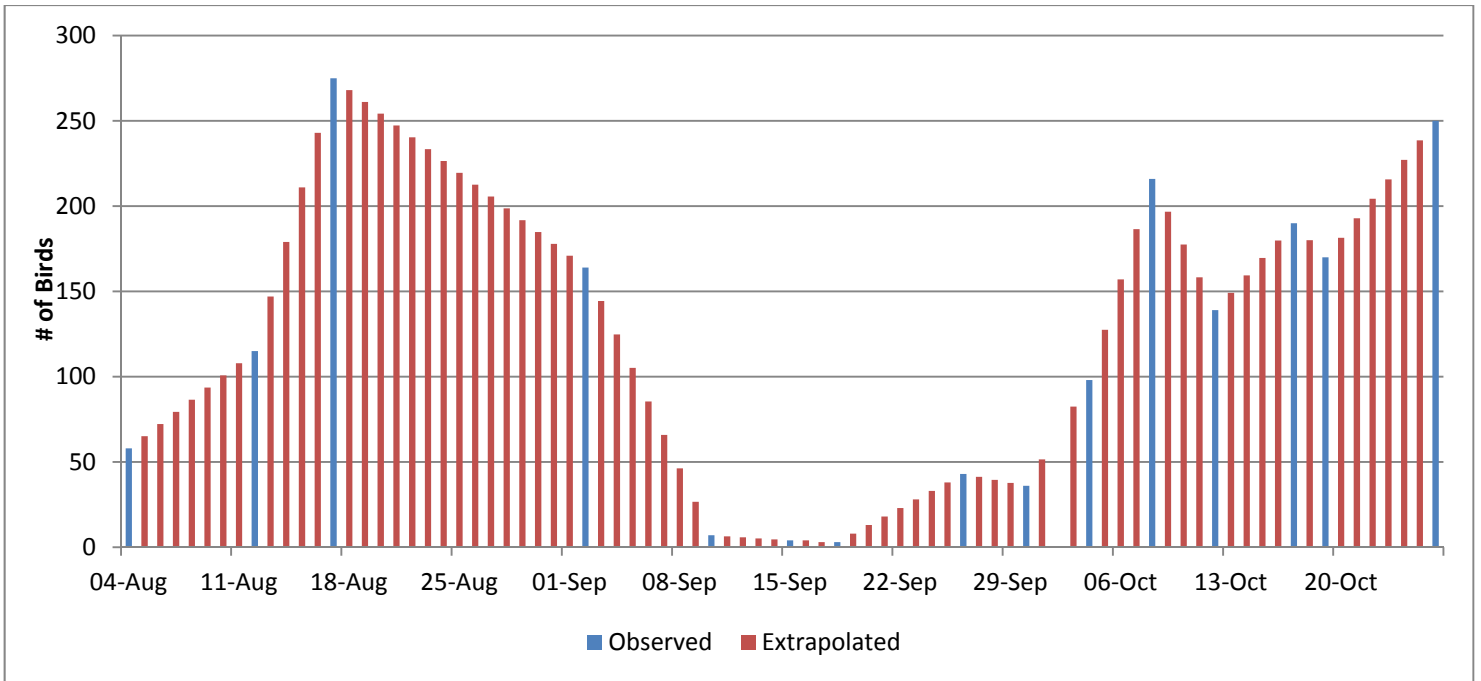


Figure 11. Waterfowl count data extrapolation for all Dabbling Ducks at Johnson’s Crossing / Teslin Lake outlet.

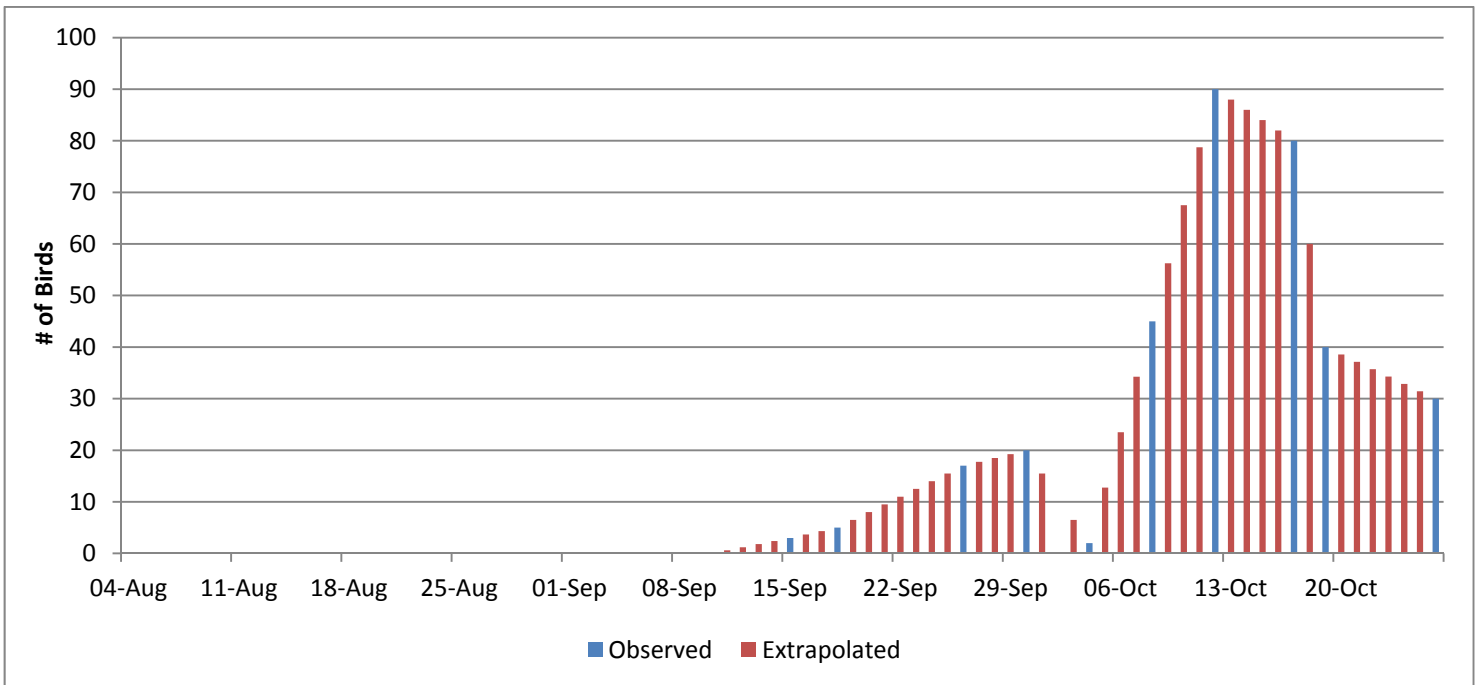


Figure 12. Waterfowl count data extrapolation for Ring-necked Duck at Johnson’s Crossing / Teslin Lake outlet.

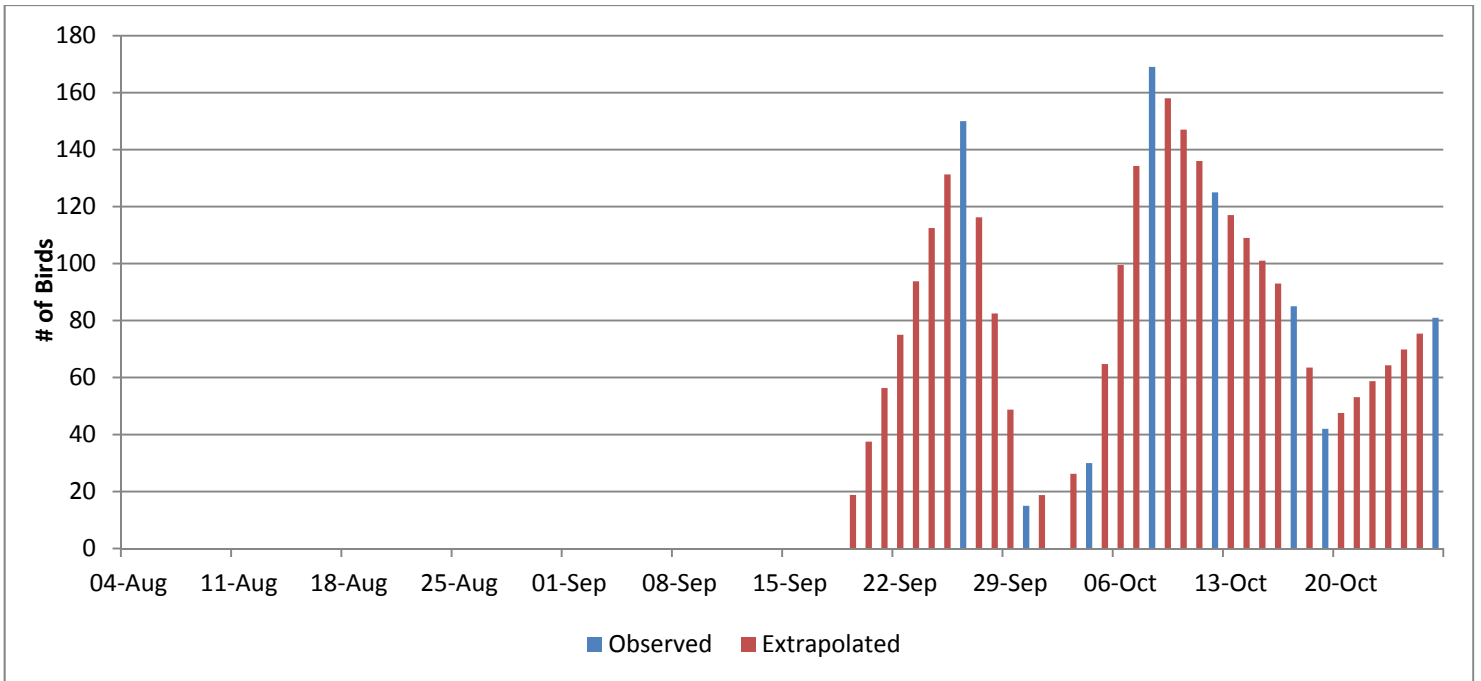


Figure 13. Waterfowl count data extrapolation for Greater Scaup / Lesser Scaup at Johnson’s Crossing / Teslin Lake outlet.

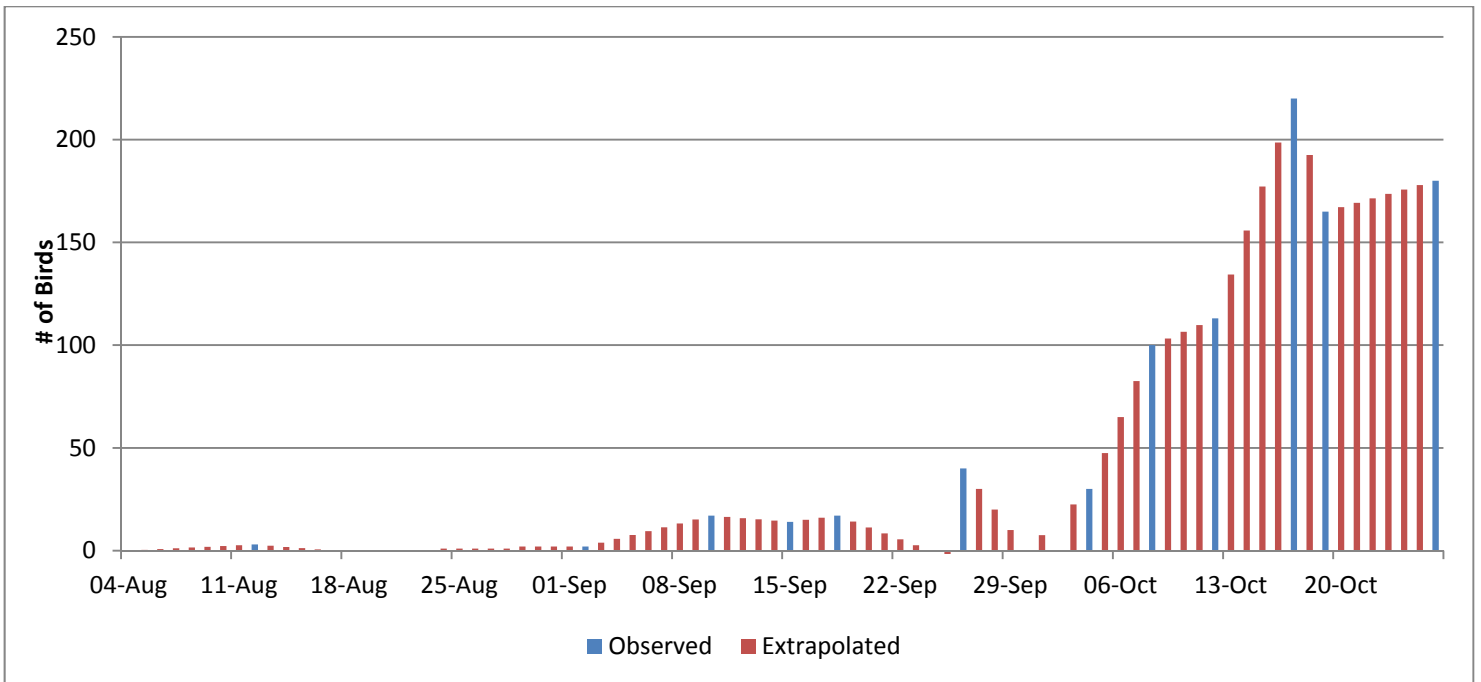


Figure 14. Waterfowl count data extrapolation for Bufflehead at Johnson’s Crossing / Teslin Lake outlet.

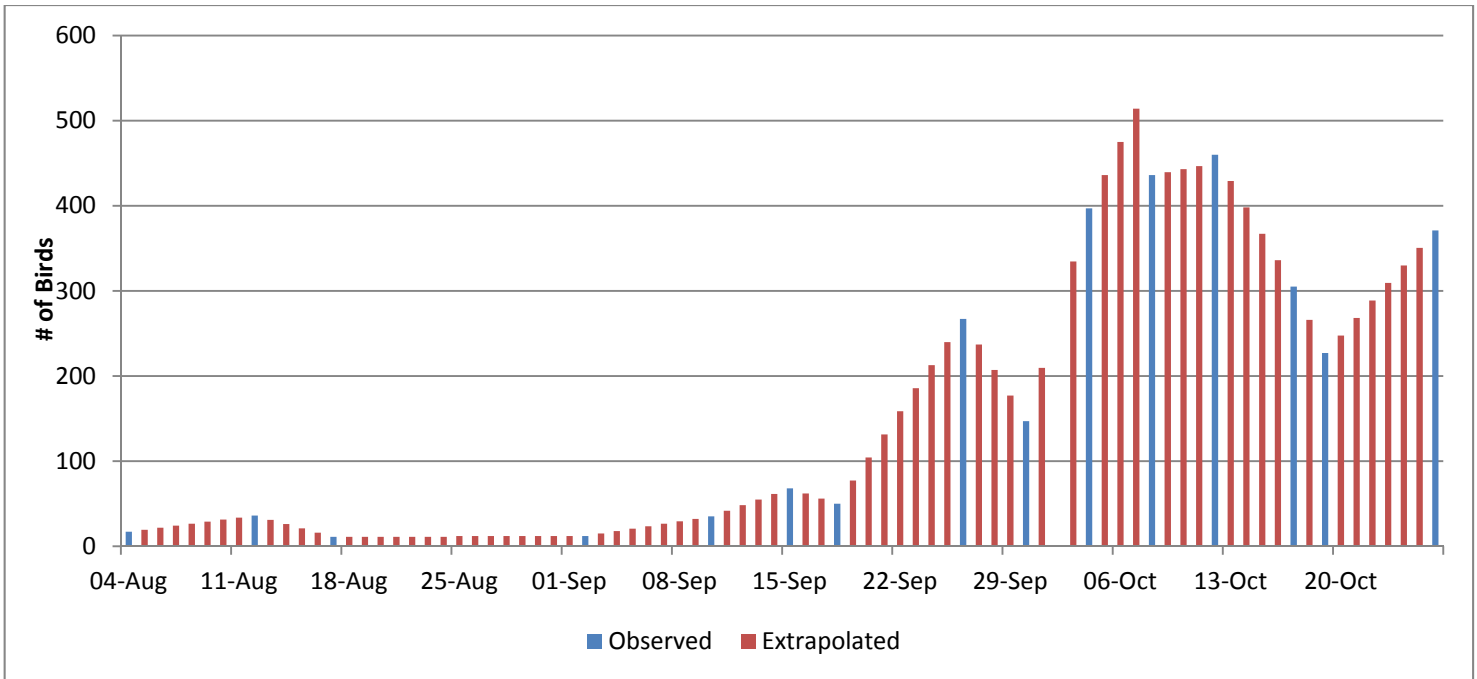


Figure 15. Waterfowl count data extrapolation for Diving Ducks at Johnson’s Crossing / Teslin Lake outlet. Includes scaup, goldeneyes and Ring-necked Duck.

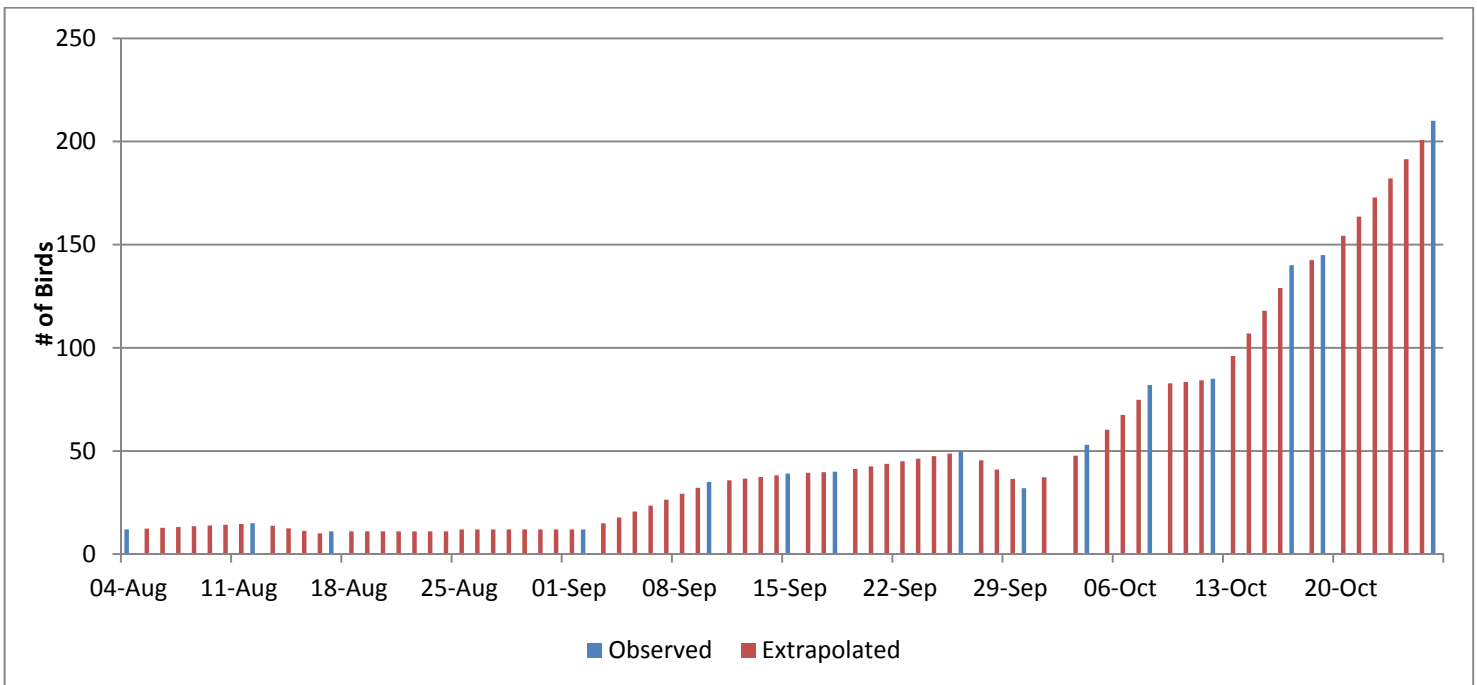


Figure 16. Waterfowl count data extrapolation for Barrow’s Goldeneye / Common Goldeneye at Johnson’s Crossing / Teslin Lake outlet.

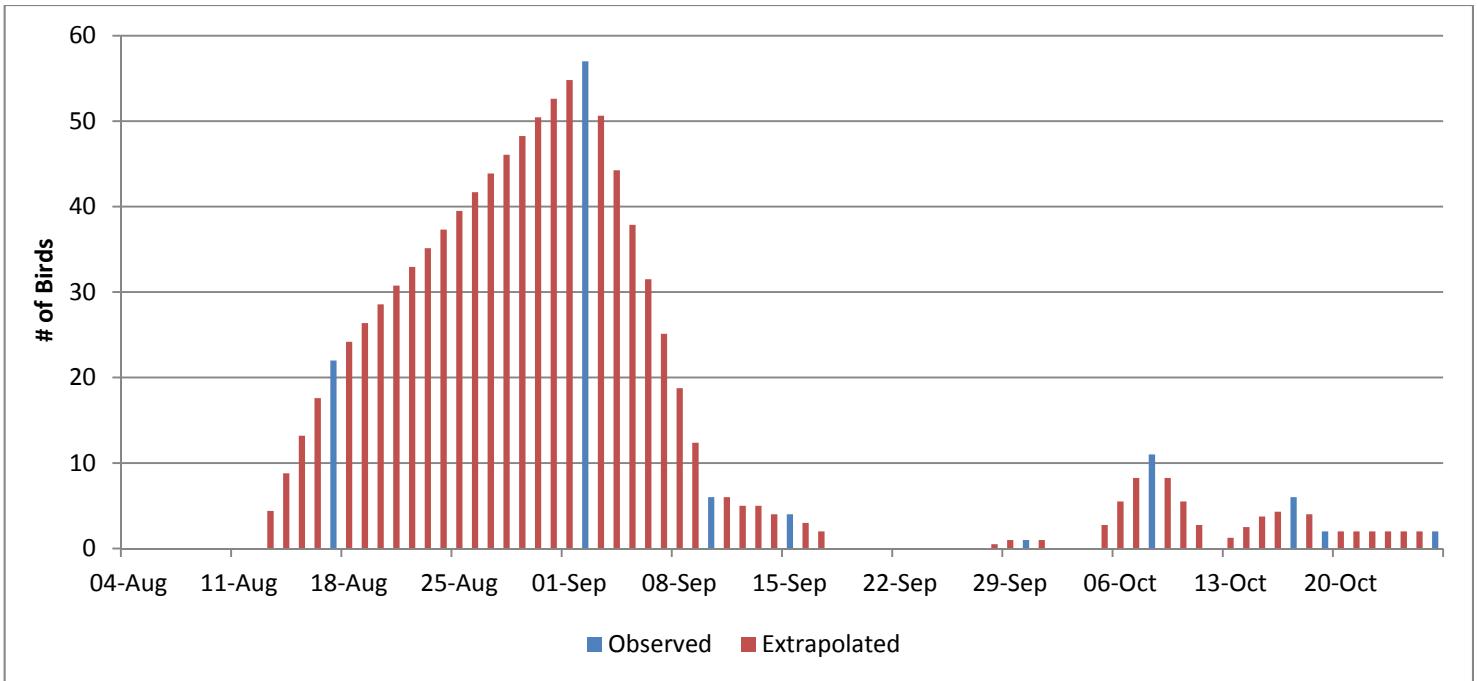


Figure 16. Waterfowl count data extrapolation for Common Merganser / Red-breasted Merganser at Johnson’s Crossing / Teslin Lake outlet.

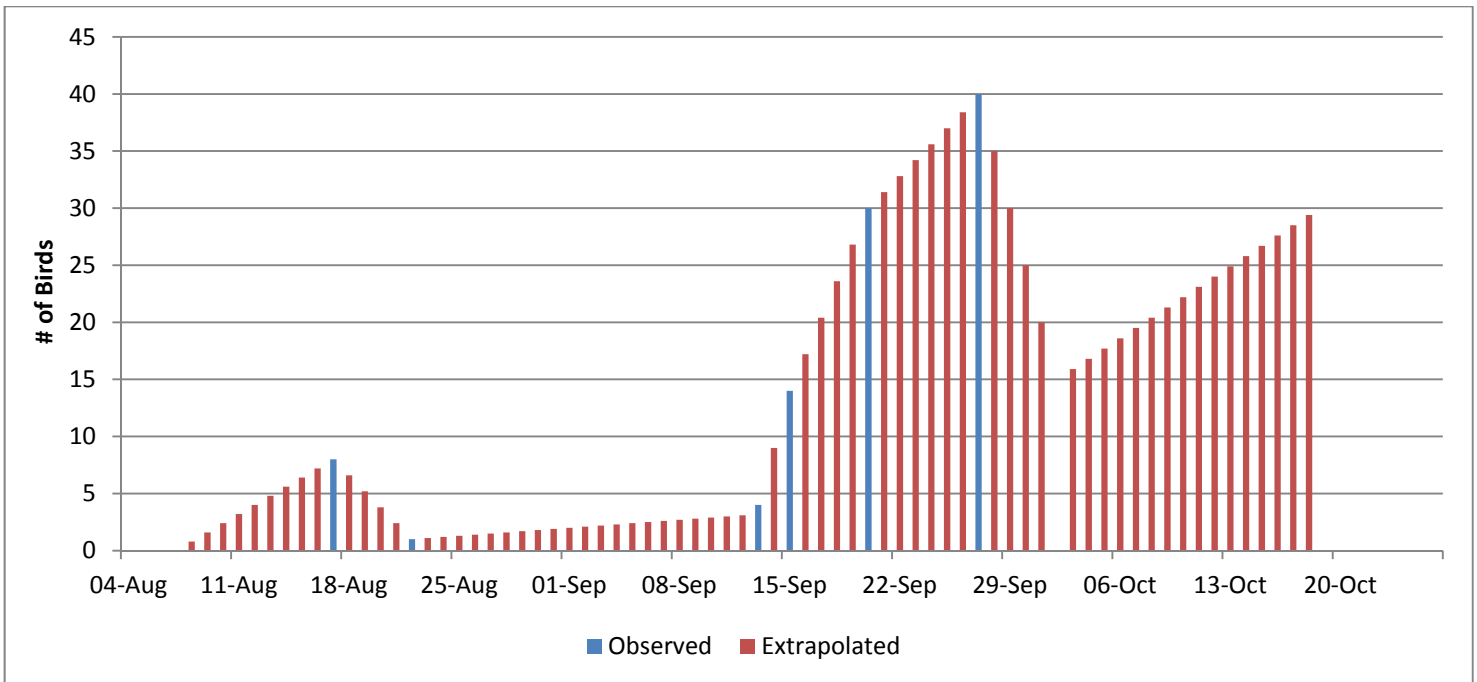


Figure 17. Waterfowl count data extrapolation for Common Loon at Marsh Lake – Judas Creek Marina.

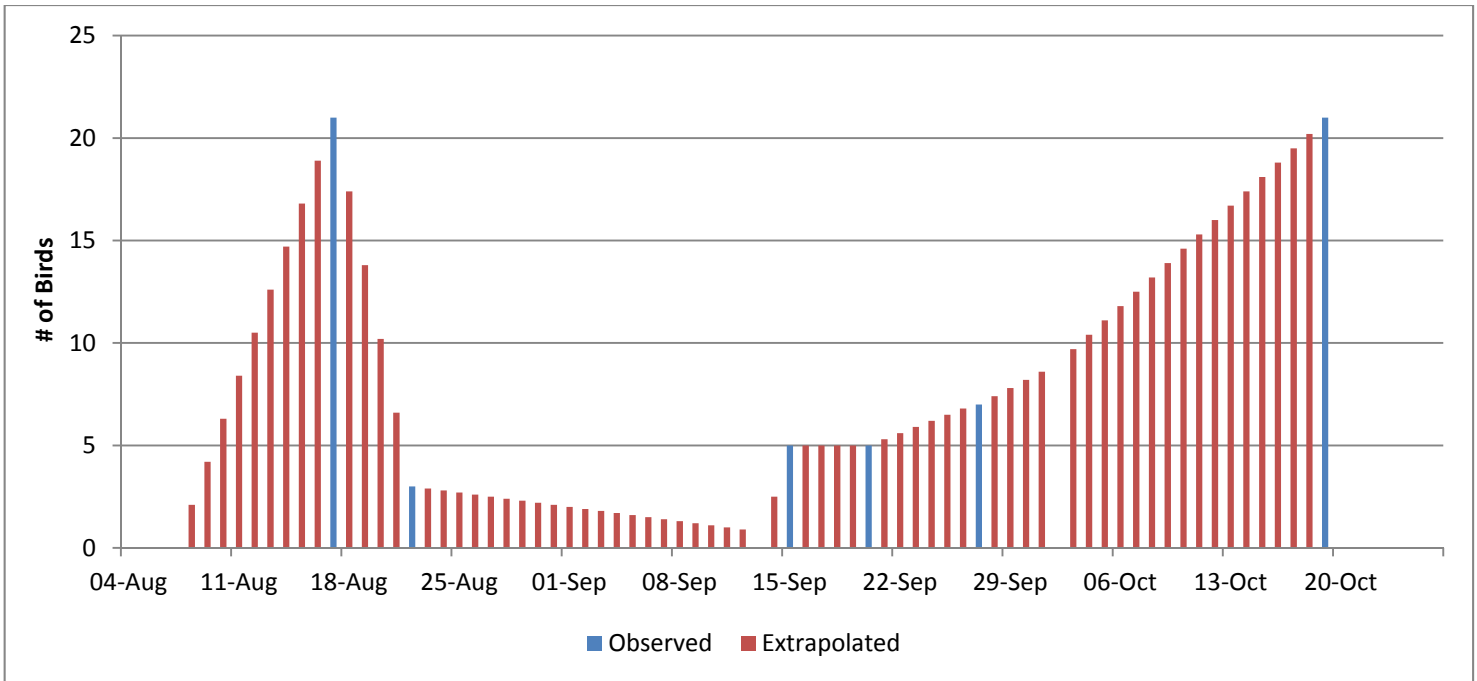


Figure 18. Waterfowl count data extrapolation for Horned Grebe at Marsh Lake – Judas Creek Marina.

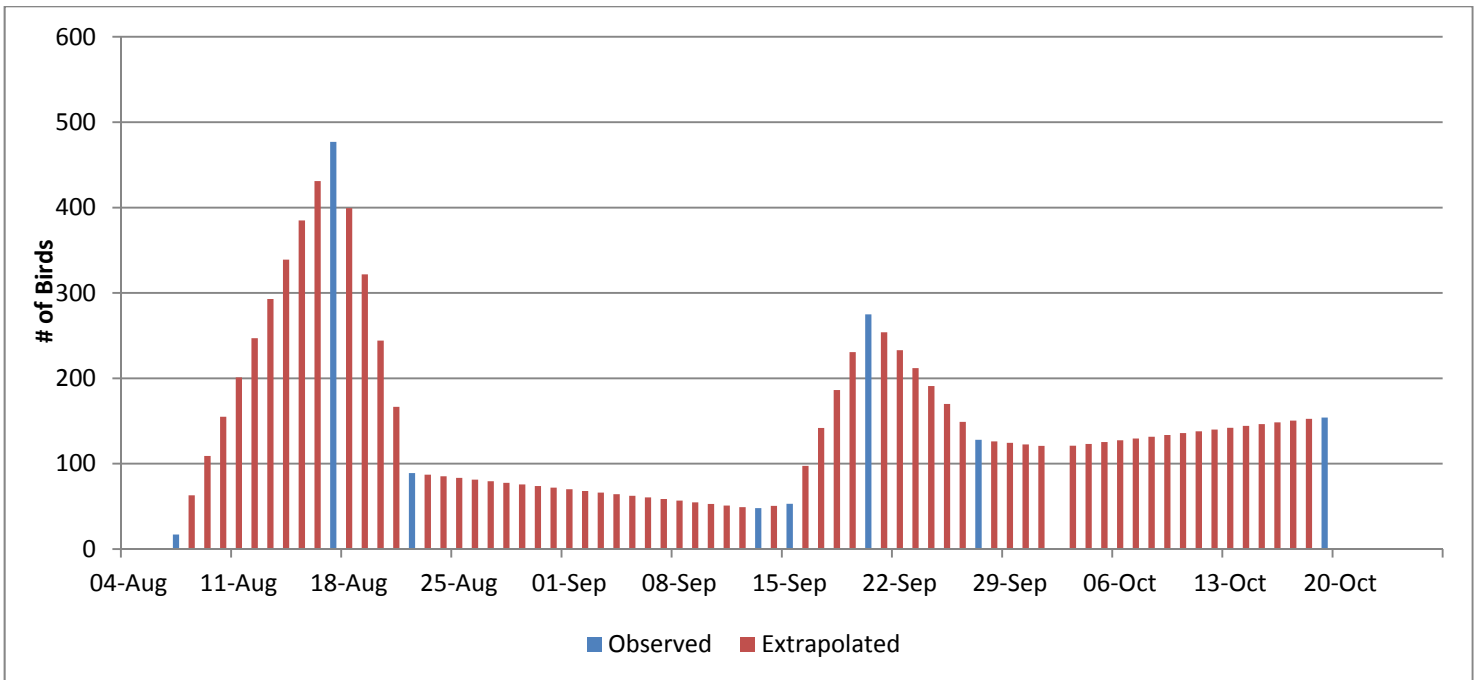


Figure 19. Waterfowl count data extrapolation for Red-necked Grebe at Marsh Lake – Judas Creek Marina.

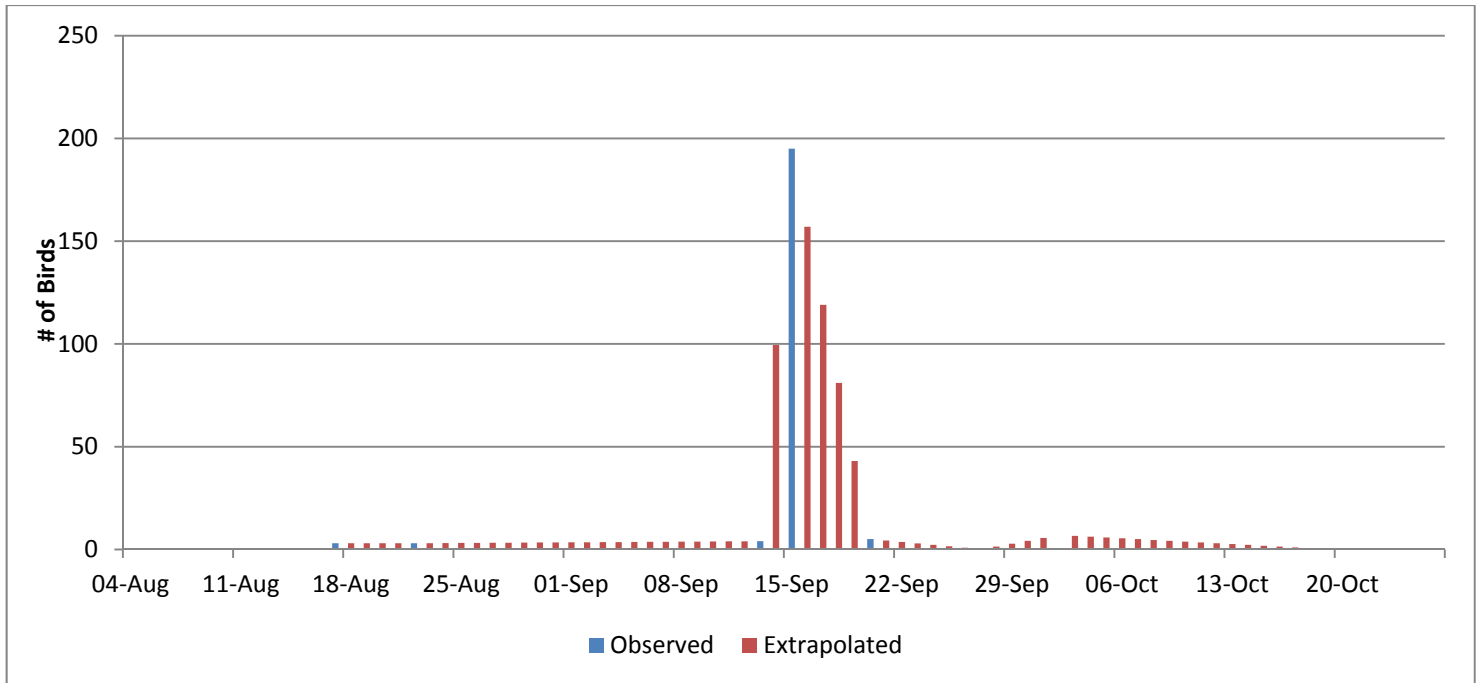


Figure 20. Waterfowl count data extrapolation for Surf Scoter at Marsh Lake – Judas Creek Marina.