

Teslin Lake Bird Observatory Final Report 2013



Ben Schonewille
Society of Yukon Bird Observatories
January 2014

The 2013 operation of the Teslin Lake Bird Observatory was made possible due to support and financial contributions from the following organizations.



Environment
Canada

Environnement
Canada



Yukon Fish and Wildlife
Enhancement Trust



Cover Photo: The observatory's first banded American Three-toed Woodpecker (September 12)
(Photo: Jukka Jantunen).

The Teslin Lake Bird Observatory is a project of the Society of Yukon Bird Observatories (SOYBO; PO Box 30056, Whitehorse, YT, Y1A 5M2). SOYBO was established during 2010 to formalize the operation of the Yukon Bird Observatories. The objectives of SOYBO are: (1) contribute to the conservation of migratory birds in western North America, (2) to make the public aware of the avifauna of the Yukon and educate the public, and, (3) to work with other societies, organizations and individuals with similar objectives. For further information, visit the SOYBO website at www.yukonbirdobservatories.org

EXECUTIVE SUMMARY

The Teslin Lake Bird Observatory completed its sixth consecutive year of fall migration monitoring in 2013. The field station operated for a total of 87 days from July 25 to October 31.

The primary method of monitoring bird migration through the study site is the use of standardized mist netting and banding of captured birds. Mist netting was conducted from July 25 to October 11 and a total of 2,577 birds of 51 species were banded with 7886 net hours (32.68 birds/100 net hours). Alder Flycatcher, Slate-colored Junco and Yellow Warbler were the three most common species banded, accounting for over half of all individuals banded.

Visual migration counts were also conducted to collect monitoring data for bird species not adequately sampled by mist netting. Between August 1 and October 31, 280.9 hours of visual migration observations resulted in the counting of 41,323 birds (147 birds per hour). A primary target of the visual counts are diurnal raptors of which 2,466 individuals from 12 species were recorded, including regional species of interest for monitoring - Swainson's Hawk and American Kestrel.

In addition, lake counts were conducted daily at the station to collect monitoring data for a variety of waterbird species. All regularly occurring species of loons and grebes were counted in relatively high numbers. There were sightings of a number of gull species considered rare or uncommon in the Yukon including Sabine's Gull, Ring-billed, Glaucous Gull and Long-tailed Jaeger.

The data collected at the observatory in 2013 builds upon the database 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 2013 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 challenging.

The following list summarizes the individuals who played a role in the 2013 operation of the Teslin Lake Bird Observatory.

| | |
|------------------|---|
| Jukka Jantunen | Primary Bander In Charge, Report Editing |
| Abril Heredia | Assistant Bander |
| Ted Murphy-Kelly | Station Manager, Secondary Bander In Charge, Report Editing |
| Ben Schonewille | Assistant Station Manager, Data Entry/Analysis/Reporting |
| Graeme Pelchat | Report Editing |

Board members of the Society of Yukon Bird Observatories helped administer the Yukon Bird Observatories. The following volunteers assisted with the operation of the observatory: more than 40 days – Abril Heredia, Sara Coulthard; 10 to 20 days – Jarmo Pirhonen; 5 to 10 days – Julie Bauer, Chris Sukka; 1 to 5 days – Gwen Baluss, Toren van Delft, Shyloh van Delft, Terry Skjonsberg, Nick Guenette, Shanti Morrison, Susan Drury and Ron Guenette.

The 2013 operation of the Teslin Lake Bird Observatory would not have been possible without financial assistance from the following organizations/groups: Environment Canada (Canadian Wildlife Service), Yukon Environment (Environmental Awareness Fund), Yukon Fish & Wildlife Enhancement Trust Fund, Teslin Renewable Resources Council and EDI Environmental Dynamics Inc.

TABLE OF CONTENTS

| | | |
|-------|---|----|
| 1.0 | INTRODUCTION..... | 7 |
| 2.0 | METHODS..... | 8 |
| 2.1 | MIST NETTING..... | 8 |
| 2.2 | VISUAL MIGRATION WATCH..... | 9 |
| 2.3 | LAKE COUNTS..... | 9 |
| 2.4 | INCIDENTAL OBSERVATIONS | 10 |
| 2.5 | STUDY SITE | 10 |
| 3.0 | RESULTS & DISCUSSION | 11 |
| 3.1 | MIGRATION TIMING | 15 |
| 3.1.1 | Generalized Migration Timing | 15 |
| 3.1.2 | Species Specific Migration Timing | 16 |
| 3.2 | BAND REPEATS, RETURNS & RECOVERIES | 18 |
| 3.3 | MOLT SCORING | 20 |
| 3.4 | VISUAL MIGRATION COUNTS..... | 20 |
| 3.4.1 | Waterbirds | 22 |
| 3.4.2 | Waterfowl | 22 |
| 3.4.3 | Raptors..... | 24 |
| 3.4.4 | Shorebirds..... | 25 |
| 3.4.5 | Owls, Woodpeckers and Passerines | 26 |
| 3.5 | LAKE COUNTS..... | 28 |
| 3.6 | INTERESTING & NOTABLE CAPTURES / OBSERVATIONS | 29 |
| 3.6.1 | Chickadee Movements | 33 |
| 3.7 | RUSTY BLACKBIRDS..... | 34 |
| 3.8 | VISITORS AND VOLUNTEERS | 34 |
| 4.0 | CONCLUSION & RECOMMENDATIONS..... | 36 |
| | APPENDIX A –TESLIN LAKE BIRD OBSERVATORY MONITORING PROTOCOL..... | 37 |
| | APPENDIX B – SPECIES CHECKLIST | 38 |
| | APPENDIX C – DAILY SPECIES TOTAL SUMMARY | 39 |
| | APPENDIX D – MIGRATION TIMING (MIST NETTING)..... | 40 |
| | APPENDIX E – MIGRATION TIMING (VISUAL MIGRATION COUNTS) | 41 |
| | APPENDIX F – MIGRATION TIMING (DAILY SPECIES TOTALS)..... | 42 |

LIST OF FIGURES

| | |
|---|----|
| Figure 1. Overview of the Teslin Lake Bird Observatory..... | 9 |
| Figure 2. Summary of birds banded per day during the fall of 2013. | 14 |
| Figure 3. Summary of birds banded during the fall from 2008 to 2013. | 14 |
| Figure 4. Number of birds banded per mist net during the fall of 2013. | 15 |
| Figure 5. Generalized migration timing by species group during 2013 as compared to average timing from 2008 to 2012. .. | 16 |
| Figure 6. Summary of 2013 visual counting effort. | 21 |
| Figure 7. Number of raptors (left) and waterfowl (right) observed per 100 watching hours during 2013. | 21 |
| Figure 8. Yellow-bellied Flycatchers banded per 1,000 net hours from 2008 to 2013..... | 31 |
| Figure 9. Volunteer and visitor hours at the observatory from 2008 to 2013..... | 35 |

LIST OF TABLES

| | |
|---|----|
| Table 1. Summary statistics for the 2013 fall season. | 11 |
| Table 2. Birds banded during the 2013 fall season. | 12 |
| Table 3. Comparison of the top 15 bird species banded in 2013 and compared to 2008 – 2012. | 13 |
| Table 4. Summary of weather conditions during the 2013 fall season. | 13 |
| Table 5. Summary of band repeats during the 2013 fall season. | 18 |
| Table 6. Summary of band returns during the 2013 fall season. | 19 |
| Table 7. Summary of foreign band recoveries at the observatory to date..... | 19 |
| Table 8. Summary of wing molt scores collected from adult birds during the 2013 season. | 20 |
| Table 9. Summary of waterbird visual migrants observed during 2013. | 22 |
| Table 10. Summary of waterfowl visual migrants observed during 2013. | 23 |
| Table 11. Summary of age breakdown for swans observed on the visual migration counts during 2011, 2012 and 2013. | 23 |
| Table 12. Summary of raptor visual migrants observed during 2013..... | 24 |
| Table 13. Summary of color morph data recorded for Rough-legged Hawks observed on visual migration counts..... | 24 |
| Table 14. Summary of color morph data recorded for Red-tailed Hawks observed on visual migration counts | 25 |
| Table 15. Summary of age and sex data collected for raptors observed on visual migration counts from. | 25 |
| Table 16. Summary of shorebird visual migrants observed during 2013. | 26 |
| Table 17. Summary of owls, woodpecker and passerine visual migrants observed during 2013. | 27 |
| Table 18. Summary of waterbirds (left) and waterfowl (right) observed on the lake counts during 2013. | 28 |
| Table 19. Summary of Glaucous Gull observations from 2008 to 2013. | 30 |
| Table 20. Summary of Sabine’s Gull observations from 2008 to 2013. | 30 |
| Table 21. Summary of Parasitic Jaeger observations from 2008 to 2013..... | 30 |
| Table 22. Summary of Yellow-bellied Flycatchers banded from 2008 to 2013. | 31 |
| Table 23. Summary of Dusky Flycatchers banded from 2008 to 2013. | 32 |
| Table 24. Summary of Mountain Chickadees observed and banded from 2008 to 2013. | 32 |
| Table 25. Summary of American Redstarts banded at the observatory from 2008 to 2013. | 33 |
| Table 26. Summary of chickadees banded and observed at the observatory from 2008 to 2013. | 34 |
| Table 27. Hours spend at the observatory by volunteers and paid observers during 2013. | 35 |
| Table 28. Hours spent at the observatory by visitors during 2013. | 35 |

1.0 Introduction

The Teslin Lake Bird Observatory operated only during the fall migration season in 2013. The observatory completed its sixth year of fall 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.
- Collect data to facilitate the long term monitoring (*i.e.* trend analysis) of birds in the southern Yukon.
- Conduct and participate in specific studies such as feather collecting for stable isotope analysis and color banding.
- Provide a setting for the public including school groups to learn about birds and bird migration.
- Provide employment and training opportunities for students and volunteers.
- Provide a unique tourist attraction for the community of Teslin.

The observatory collects information on birds which is shared through an international bird banding database (Canadian Wildlife Service Bird Banding Office and USGS Bird Banding Laboratory), Society of Yukon Bird Observatories annual station reports, and other publications. 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 the Yukon's bird species, many of which are considered uncommon or rare. Over the long term, the data collected at the observatory will facilitate trend analysis for a number of species. Such information will be valuable for conservation and monitoring of bird populations not only in the Yukon, but North America as a whole. In addition to monitoring bird populations, the observatory collects a substantial amount data on each bird banded. Information such as age, sex, measurements (wing, tail, etc.) and molt timing continue to add to the knowledge base of such information across North America.

The observatory plays a role in education as a place where the public, volunteers and students can take part in a unique, community based research project. 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. The highly trained individuals working at the observatory have the ability to identify these species and 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 Manual¹. A brief summary of the field protocol is described in the following sections; however, for a detailed description refer to Appendix A. All monitoring activities at the observatory can be separated into standardized and non-standardized methods. To facilitate long term analysis of the observatory's data, the standardized data is collected in the same format year after year. Non-standardized activities may include species specific mist nets within the count area or the collection of banding/observation data outside of the standard count period. For every species observed, estimated totals are calculated for each day of operation using the following categories:

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

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

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). The only non-standard net used in 2012 was a canopy net (Net C) near the point which was used on a trial basis when weather conditions were suitable (not windy). 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 favourable. If a full set is not possible, then the number of nets operated is reduced rather than reducing the duration of effort.

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



Figure 1. Overview of the Teslin Lake Bird Observatory.

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

2.3 Lake Counts

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

2.4 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 or raptors passing overhead, 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 Yukon Government Campground (Figure 1). The vegetation within the site is a mixture featuring a transition from bare gravel lakeshore to shrubs and larger deciduous trees. Also within the site is a small wetland area connected to Teslin Lake which has seasonally fluctuating water levels. The area is dominated by willow (*Salix* spp.) and alder (*Alnus* spp.) with some mature white spruce (*Picea glauca*), trembling aspen (*Populus tremuloides*) and balsam poplar (*P. balsamifera*) scattered throughout.

3.0 Results & Discussion

A total of 2,577 birds of 51 species were banded during 2013 and 140 species were observed (Table 1, Table 2). The all-time total number of birds banded at Teslin Lake Bird Observatory is now 22,451 birds of 89 species/forms and 190 species/forms have been observed (Appendix B). New species added to the station checklist during 2013 include Ring-billed Gull and Long-tailed Jaeger. Weather conditions largely influence the activities at the observatory. Windy conditions reduce the mist netting effort and overall weather conditions influence the number of birds counted on the visual migration counts. The 2013 season saw abnormally warm temperatures including non-freezing temperatures late into the season (Table 4). This year was also relatively windy, particularly during early September, drastically reducing the number of birds captured during this period.

Each component of the 2013 data is summarized and presented in the following subsections; however, a summary account of the 2013 estimated total data is shown in Appendix C. Unless otherwise stated, the results presented in this report combine and summarize both standard and non-standardized data. Note that the estimated totals are derived on a daily basis by the bander in charge and incorporates all data collection components (mist netting captures and all observations) to estimate the number of birds of each species within or passing through the count area.

Table 1. Summary statistics for the 2013 fall season.

| Week | Date | Days Operated ¹ | Birds Banded | | | | Visual Counts | | Total Species Observed |
|------|-----------------|----------------------------|--------------|---------|-----------|-----------------|-----------------------------------|----------------|------------------------|
| | | | # | Species | Net Hours | #/100 Net Hours | # of Visual Migrants ² | Counting Hours | |
| 1 | 23 – 29 Jul | 5 | 99 | 26 | 562.75 | 17.59 | 46 | 0 | 52 |
| 2 | 30 Jul – 5 Aug | 7 | 120 | 22 | 868.25 | 13.82 | 203 | 4.03 | 55 |
| 3 | 6 – 12 Aug | 7 | 219 | 26 | 912.50 | 24.00 | 626 | 23.67 | 68 |
| 4 | 13 – 19 Aug | 7 | 399 | 28 | 890.50 | 44.81 | 709 | 27.18 | 73 |
| 5 | 20 – 26 Aug | 7 | 553 | 27 | 927.50 | 59.62 | 892 | 15.88 | 72 |
| 6 | 27 Aug – 2 Sep | 7 | 534 | 25 | 771.75 | 69.19 | 2,725 | 18.77 | 78 |
| 7 | 3 – 9 Sep | 7 | 144 | 22 | 758.25 | 18.99 | 3,035 | 20.92 | 73 |
| 8 | 10 – 16 Sep | 6 | 192 | 22 | 777.75 | 24.69 | 2,305 | 22.08 | 69 |
| 9 | 17 – 23 Sep | 7 | 164 | 18 | 632.50 | 25.93 | 19,404 | 39.40 | 70 |
| 10 | 24 – 30 Sep | 7 | 49 | 7 | 371.75 | 13.18 | 3,385 | 32.83 | 63 |
| 11 | 1 – 7 Oct | 7 | 91 | 13 | 299.75 | 30.35 | 6,478 | 6.00 | 66 |
| 12 | 8 – 14 Oct | 7 | 13 | 6 | 112.50 | 11.56 | 2,449 | 26.00 | 58 |
| 13 | 15 – 21 Oct | 5 | 0 | 0 | 0.00 | - | 385 | 10.58 | 33 |
| 14 | 22 – 28 Oct | 0 | 0 | 0 | 0.00 | - | 0 | 0 | 0 |
| 15 | 29 – 31 Oct | 1 | 0 | 0 | 0.00 | - | 101 | 2.83 | 13 |
| ALL | 23 Jul – 31 Oct | 87 | 2,577 | 51 | 7885.75 | 32.68 | 42,798 | 250.17 | 140 |

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

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

Table 2. Birds banded during the 2013 fall season.

| Common Name | Scientific Name | # Banded | # Banded / 1000 Net Hrs |
|--------------------------------|----------------------------------|--------------|-------------------------|
| Sharp-shinned Hawk | <i>Accipiter striatus</i> | 6 | 0.76 |
| Solitary Sandpiper | <i>Tringa solitaria</i> | 2 | 0.25 |
| Spotted Sandpiper | <i>Actitis macularius</i> | 1 | 0.13 |
| Belted Kingfisher | <i>Ceryle alcyon</i> | 2 | 0.25 |
| Yellow-bellied Sapsucker | <i>Sphyrapicus varius</i> | 1 | 0.13 |
| American Three-toed Woodpecker | <i>Picoides dorsalis</i> | 1 | 0.13 |
| Northern Flicker | <i>Colaptes auratus</i> | 3 | 0.38 |
| Western Wood-Pewee | <i>Contopus sordidulus</i> | 4 | 0.51 |
| Yellow-bellied Flycatcher | <i>Empidonax flaviventris</i> | 11 | 1.39 |
| Alder Flycatcher | <i>Empidonax alnorum</i> | 770 | 97.64 |
| Least Flycatcher | <i>Empidonax minimus</i> | 6 | 0.76 |
| Hammond's Flycatcher | <i>Empidonax hammondii</i> | 12 | 1.52 |
| Dusky Flycatcher | <i>Empidonax oberholseri</i> | 3 | 0.38 |
| Northern Shrike | <i>Lanius excubitor</i> | 1 | 0.13 |
| Warbling Vireo | <i>Vireo gilvus</i> | 48 | 6.09 |
| Black-capped Chickadee | <i>Poecile atricapillus</i> | 31 | 3.93 |
| Boreal Chickadee | <i>Poecile hudsonicus</i> | 23 | 2.92 |
| Red-breasted Nuthatch | <i>Sitta canadensis</i> | 6 | 0.76 |
| Golden-crowned Kinglet | <i>Regulus satrapa</i> | 1 | 0.13 |
| Ruby-crowned Kinglet | <i>Regulus calendula</i> | 125 | 15.85 |
| Gray-cheeked Thrush | <i>Catharus minimus</i> | 2 | 0.25 |
| Swainson's Thrush | <i>Catharus ustulatus</i> | 55 | 6.97 |
| Hermit Thrush | <i>Catharus guttatus</i> | 2 | 0.25 |
| American Robin | <i>Turdus migratorius</i> | 4 | 0.51 |
| Varied Thrush | <i>Ixoreus naevius</i> | 5 | 0.63 |
| American Pipit | <i>Anthus rubescens</i> | 2 | 0.25 |
| Cedar Waxwing | <i>Bombycilla cedrorum</i> | 8 | 1.01 |
| Northern Waterthrush | <i>Parquesia noveboracensis</i> | 46 | 5.83 |
| Tennessee Warbler | <i>Oreothlypis peregrina</i> | 1 | 0.13 |
| Orange-crowned Warbler | <i>Oreothlypis celata</i> | 124 | 15.72 |
| Common Yellowthroat | <i>Geothlypis trichas</i> | 65 | 8.24 |
| MacGillivray's Warbler | <i>Geothlypis tolmiei</i> | 1 | 0.13 |
| American Redstart | <i>Setophaga ruticilla</i> | 33 | 4.18 |
| Yellow Warbler | <i>Setophaga petechia</i> | 333 | 42.23 |
| Magnolia Warbler | <i>Setophaga magnolia</i> | 1 | 0.13 |
| Blackpoll Warbler | <i>Setophaga striata</i> | 87 | 11.03 |
| Myrtle Warbler | <i>Setophaga coronata</i> | 163 | 20.67 |
| Townsend's Warbler | <i>Setophaga townsendi</i> | 7 | 0.89 |
| Wilson's Warbler | <i>Cardellina pusilla</i> | 122 | 15.47 |
| American Tree Sparrow | <i>Spizella arborea</i> | 19 | 2.41 |
| Chipping Sparrow | <i>Spizella passerina</i> | 20 | 2.54 |
| Savannah Sparrow | <i>Passerculus sandwichensis</i> | 18 | 2.28 |
| Fox Sparrow | <i>Passerella iliaca</i> | 7 | 0.89 |
| Lincoln's Sparrow | <i>Melospiza lincolnii</i> | 9 | 1.14 |
| White-crowned Sparrow | <i>Zonotrichia leucophrys</i> | 16 | 2.03 |
| Golden-crowned Sparrow | <i>Zonotrichia atricapilla</i> | 1 | 0.13 |
| Slate-colored Junco | <i>Junco hyemalis</i> | 341 | 43.24 |
| Rusty Blackbird | <i>Euphagus carolinus</i> | 14 | 1.78 |
| Purple Finch | <i>Carpodacus purpureus</i> | 1 | 0.13 |
| White-winged Crossbill | <i>Loxia leucoptera</i> | 5 | 0.63 |
| Pine Siskin | <i>Spinus pinus</i> | 8 | 1.01 |
| TOTAL | | 2,577 | 326.79 |

Table 3. The 15 most common bird species banded in 2013, and comparison to 2008–2012 counts (numbers in brackets indicate the annual ranking in birds banded).

| Species | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2008–2012 Average |
|------------------------|------|----------|---------|---------|----------|---------|-------------------|
| Alder Flycatcher | 770 | 827 (1) | 637 (1) | 620 (2) | 631 (2) | 811 (1) | 705 |
| Slate-colored Junco | 341 | 116 (7) | 331 (2) | 420 (4) | 582 (3) | 182 (3) | 326 |
| Yellow Warbler | 333 | 225 (2) | 310 (3) | 471 (3) | 325 (4) | 486 (2) | 363 |
| Myrtle Warbler | 163 | 195 (3) | 142 (5) | 673 (1) | 284 (5) | 49 (9) | 267 |
| Ruby-crowned Kinglet | 125 | 134 (T5) | 86 (8) | 109 (8) | 175 (7) | 29 (12) | 107 |
| Orange-crowned Warbler | 124 | 88 (8) | 57 (14) | 271 (5) | 180 (6) | 101 (6) | 139 |
| Wilson’s Warbler | 122 | 134 (T5) | 133 (6) | 177 (7) | 161 (8) | 113 (5) | 144 |
| Blackpoll Warbler | 87 | 87 (9) | 58 (13) | 194 (6) | 107 (10) | 47 (10) | 99 |
| Common Yellowthroat | 65 | 45 (13) | 72 (12) | 70 (11) | 113 (9) | 66 (7) | 73 |
| Swainson’s Thrush | 55 | 41 (14) | 85 (9) | 53 (13) | 49 (13) | 19 (14) | 49 |
| Warbling Vireo | 48 | 15 (20) | 17 (22) | 19 (21) | 10 (27) | 9 (22) | 14 |
| Northern Waterthrush | 46 | 47 (11) | 42 (15) | 54 (12) | 53 (12) | 46 (11) | 48 |
| American Redstart | 33 | 21 (17) | 39 (16) | 30 (16) | 43 (14) | 10 (20) | 29 |
| Black-capped Chickadee | 31 | 65 (10) | 92 (7) | 22 (18) | 26 (19) | 57 (8) | 52 |
| Boreal Chickadee | 23 | 142 (4) | 233 (4) | - | 831 (1) | 138 (4) | 336 |

Table 4. Summary of weather conditions during the 2013 fall season.

| Weather Parameter | Week | | | | | | | |
|-----------------------------|------|------|------|------|------|------|------|-------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Average Opening Temperature | 10.2 | 10.4 | 9.4 | 8.9 | 8.7 | 6.0 | 9.3 | 4.4 |
| Average Closing Temperature | 21.4 | 22.0 | 21.4 | 19.0 | 15.3 | 16.5 | 16.6 | 15.2 |
| Average Opening Wind | 1.2 | 1.0 | 1.1 | 1.1 | 1.4 | 1.4 | 2.0 | 1.3 |
| Average Closing Wind | 2.6 | 1.8 | 2.3 | 2.1 | 2.6 | 2.7 | 3.5 | 2.9 |
| Days with Rain | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 1 |
| Days with Snow | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Weather Parameter | Week | | | | | | | TOTAL |
| | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
| Average Opening Temperature | 5.6 | 3.1 | 0.6 | 2.0 | -1.2 | - | 3.0 | 6.0 |
| Average Closing Temperature | 10.0 | 9.9 | 7.3 | 5.8 | 5.6 | - | 5.0 | 14.4 |
| Average Opening Wind | 1.1 | 2.0 | 1.3 | 2.4 | 1.8 | - | 3.0 | 1.5 |
| Average Closing Wind | 2.9 | 3.6 | 2.1 | 2.8 | 2.6 | - | 3.0 | 2.7 |
| Days with Rain | 4 | 1 | 2 | 1 | 0 | - | 0 | 14 |
| Days with Snow | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 |

The 2013 fall season included 87 field days from late July until the end of October. Standardized mist netting was conducted from July 25 to September 23 and additional opportunistic banding was conducted until October 11. The peak period for mist netting was during week 6 (August 27 to September 2) when a large movement of warblers and flycatchers resulted in a number of high daily banding totals including the observatory’s second highest ever daily total (217 on August 28; Figure 2). The 2013 banding total was very similar to 2011 and 2012 but well below the long term average of 49.15 birds/100 net hours (Figure 3).

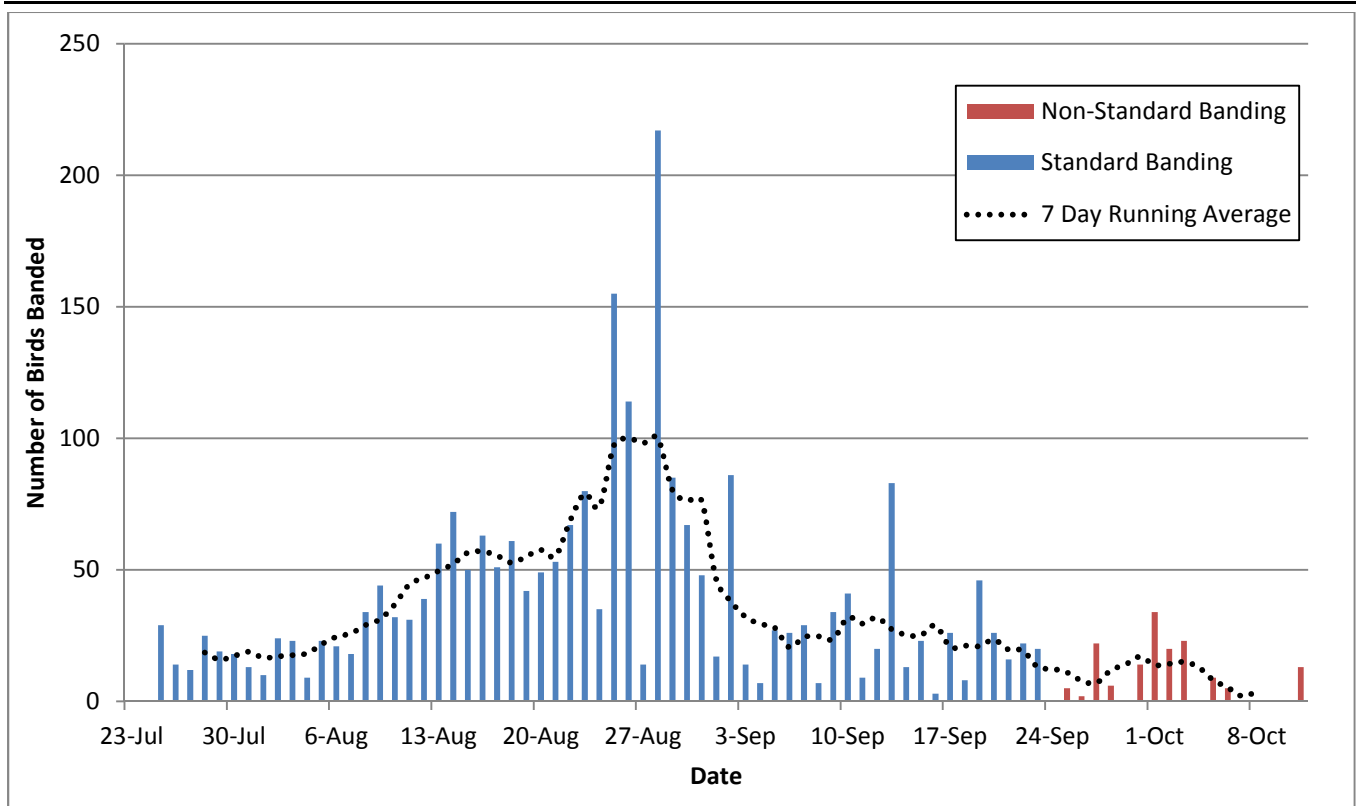


Figure 2. Summary of birds banded per day during the fall of 2013.

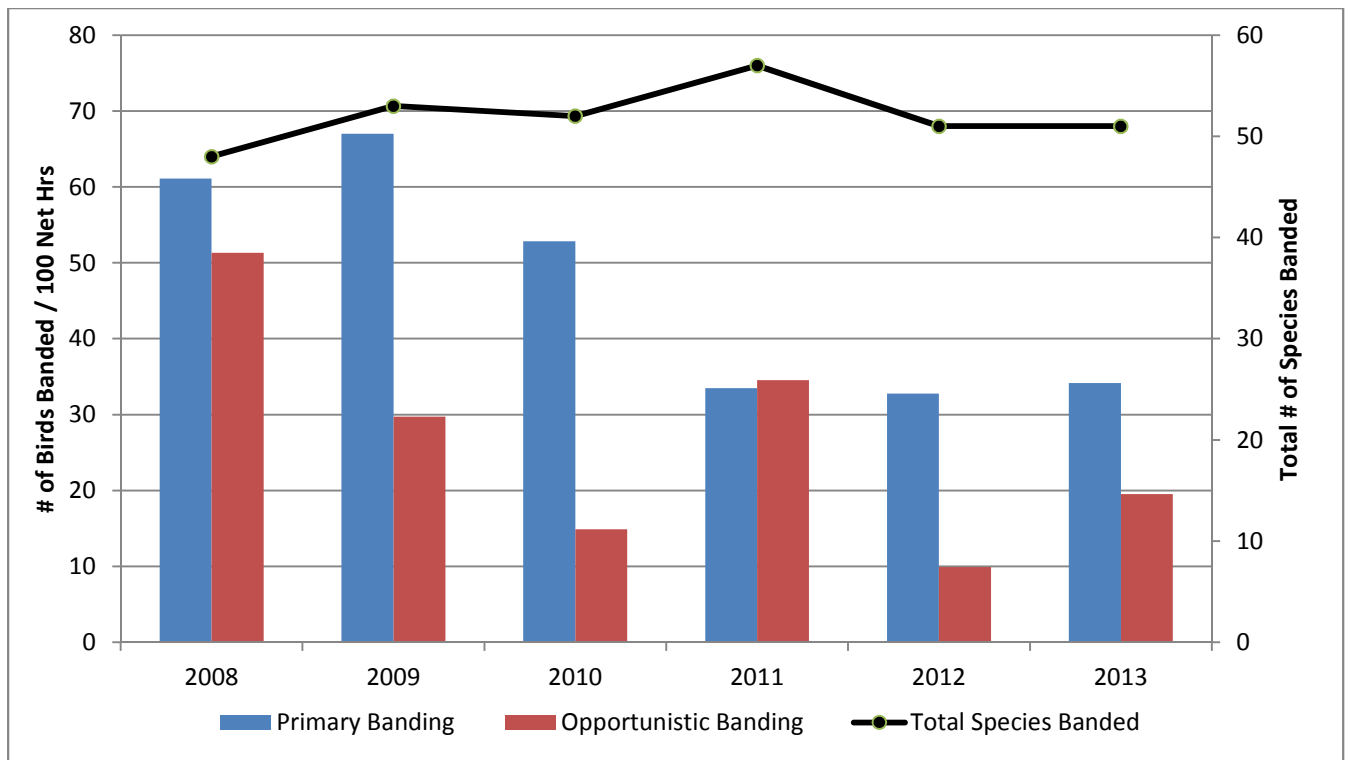


Figure 3. Summary of birds banded during the fall from 2008 to 2013.

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). 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 such as Swainson’s Thrush and Varied Thrush which are not typically caught on the lakeshore. Mist net ‘C’ is a canopy net located near the bird processing area is intended to serve as an operational trial for this type of set up.

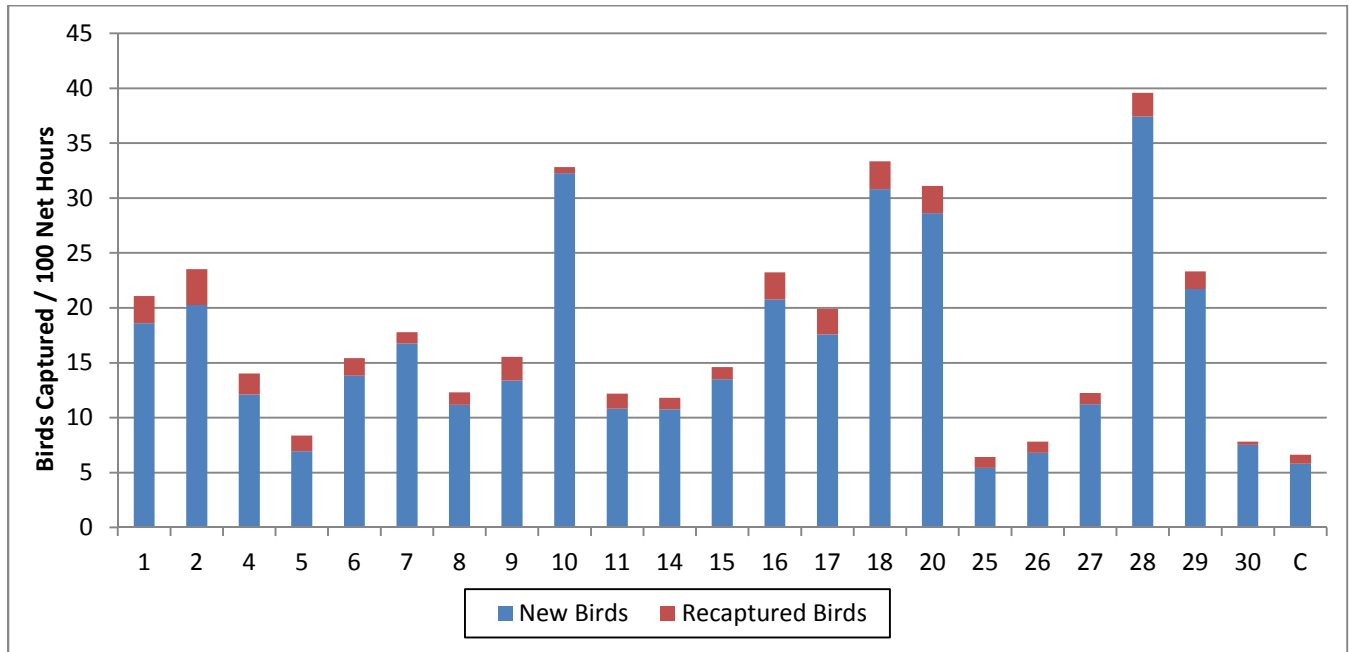


Figure 4. Number of birds banded per mist net during the fall of 2013.

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 and (3.1.2) species-specific migration timing.

3.1.1 Generalized Migration Timing

Generalized migration timing during 2013 as compared to the 2008 to 2012 average for temperate, neotropical and irruptive migrants is presented in Figure 5. During 2013, the peak in fall migration occurred during late August; later than average. The lower captures of neotropical migrants throughout late July and the first half of August were very apparent at the observatory and resulted in a lower overall banding total for the 2013 season compared to previous years. The reason for this difference in timing during 2013 may have been due to the weather which was unseasonably warm during the first few weeks of the season.

Temperate migrants typically migrate later than neotropical migrants and this was once again the case in 2013. Similar to the neotropical migrants, the temperate migrants were captured in lower than average numbers, particularly during the early and mid-portions of the season.

Irruptive migrants banded are primarily limited to chickadees, crossbills and redpolls. The number of irruptive migrants banded during 2013 was substantially lower than previous years and as such it is difficult to compare trends between years.

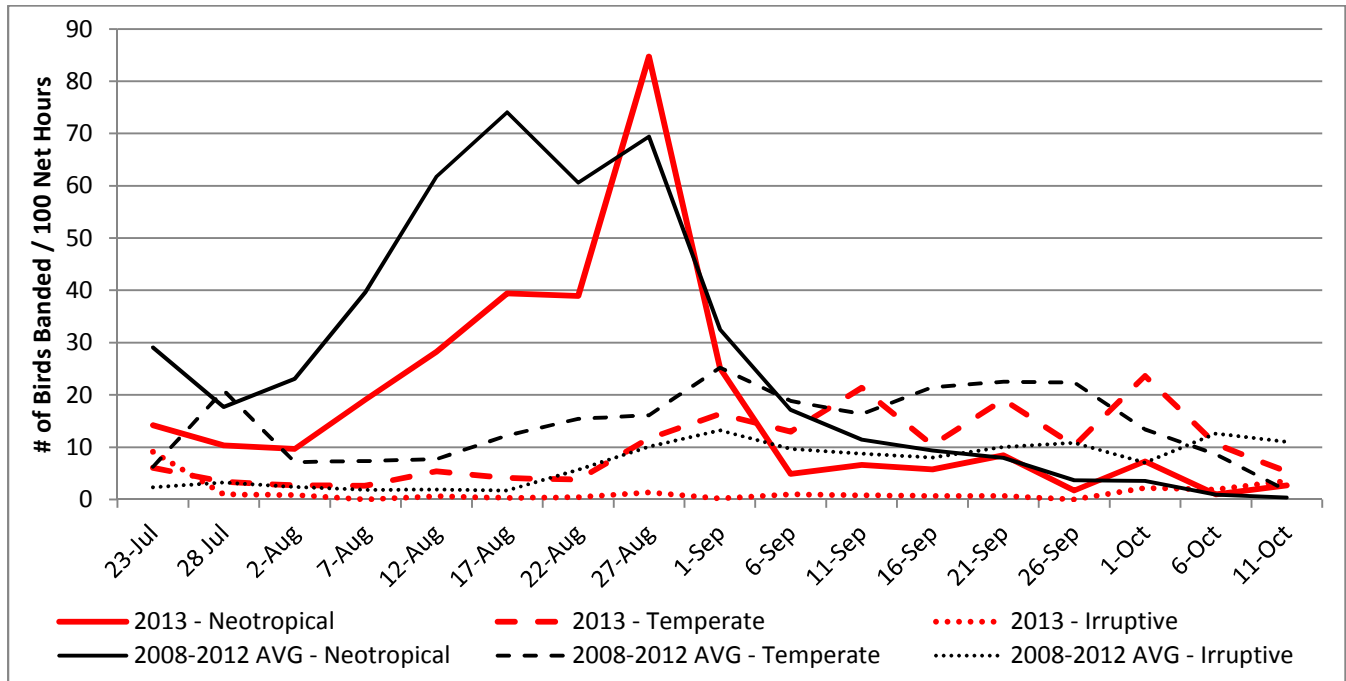


Figure 5. Generalized migration timing by species group during 2013 as compared to the average timing from 2008 to 2012.

3.1.2 Species Specific Migration Timing

Species specific migration timing was assessed for 46 species using three separate methods as outlined below; mist netting, visual migration counts and the daily species totals. All figures shown compare the migration timing during 2013 to the average of 2008-2012 and the data is grouped over 5 day intervals and standardized to the amount of effort (mist netting effort, visual counting effort, etc.) .

Mist netting effort and bird capture data were sufficient to assess migration timing for the following species, which are primarily nocturnal migrants and not suited to visual migration counts. The full set of migration timing figures for the species listed below are shown in Appendix D.

- 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 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. The full set of migration timing figures for the species listed below are shown in Appendix E. When analyzing raptor migration timing data, there are often a number of small peaks due the fact that raptors often migrate in clusters with high numbers of individuals migrating over a short period of time due to favorable weather conditions.

- 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
- American Robin
- Varied Thrush
- American Pipit
- Pine Grosbeak
- Pine Siskin

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 the daily mist netting, visual migration watch counts and other observation data were combined to analyze migration timing and are shown in Appendix F.

- Red-throated Loon
- Pacific Loon
- Common Loon
- Horned Grebe
- Red-necked Grebe
- Lesser Scaup
- Surf Scoter
- Mew Gull
- Herring Gull
- Thayer's Gull
- Arctic Tern
- Spotted Sandpiper
- Warbling Vireo
- Savannah Sparrow

3.2 Band Repeats, Returns & Recoveries

The proportion of band repeats was relatively low (5.2%) during the 2013 season (Table 5), and is consistent with previous years (4.6% in 2012, 4.6% in 2011 and 4.7% in 2010). These results indicate that there continues to be a very high turnover of migrants through the study site, particularly for species banded in high numbers. For example, a total of 770 Alder Flycatchers were banded and only 3 individuals (0.4 %) were recaptured on subsequent days. For the purpose of migration monitoring, this is the preferred scenario as there is a limited amount of double counting the same individuals on consecutive days.

Table 5. Summary of band repeats during the 2013 fall season.

| Species | # of Individuals Recaptured | % of 2011 Original Bandings | Maximum # of Days From Original Banding | Average # of Days From Original Banding |
|------------------------|-----------------------------|-----------------------------|---|---|
| Alder Flycatcher | 3 | 0.4 | 5 | 3.3 |
| Warbling Vireo | 14 | 29.2 | 14 | 4.7 |
| Black-capped Chickadee | 13 | 41.9 | 78 | 21.5 |
| Red-breasted Nuthatch | 1 | 16.7 | 5 | - |
| Ruby-crowned Kinglet | 2 | 1.6 | 4 | 2.0 |
| Swainson's Thrush | 1 | 1.8 | 9 | - |
| American Robin | 1 | 25.0 | 1 | - |
| Cedar Waxwing | 4 | 50.0 | 28 | 11.8 |
| Orange-crowned Warbler | 2 | 1.6 | 5 | 3.0 |
| Yellow Warbler | 33 | 9.9 | 14 | 3.6 |
| Myrtle Warbler | 10 | 6.1 | 22 | 5.6 |
| Blackpoll Warbler | 7 | 8.0 | 5 | 1.9 |
| American Redstart | 10 | 30.3 | 27 | 9.6 |
| Northern Waterthrush | 3 | 6.5 | 8 | 4.7 |
| Common Yellowthroat | 8 | 12.3 | 5 | 1.9 |
| Wilson's Warbler | 3 | 2.4 | 1 | 1.0 |
| American Tree Sparrow | 1 | 5.3 | 1 | - |
| Chipping Sparrow | 1 | 5.0 | 10 | - |
| Slate-colored Junco | 14 | 4.1 | 38 | 7.7 |
| Rusty Blackbird | 1 | 7.1 | 2 | - |
| Pine Siskin | 1 | 12.5 | 4 | - |
| TOTAL | 112 | 4.64 | - | - |

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 2013, the observatory had 5 band returns representing 3 species (Table 6). This is a considerably lower number of band returns as compared to previous years; for example, the 2012 fall season yielded 13 band returns of 7 species. As compared to previous years, species notably absent from the list of band returns included American Redstart, Slate-colored Junco and Black-capped Chickadee. The 2013 band returns likely represent individuals which breed near the observatory as indicated by the recapture dates that are relatively early during the season.

Table 6. Summary of band returns during the 2013 fall season.

| Species | Band Number | Banded | | Recaptured |
|-------------------|-------------|-------------|-----------|-------------|
| | | Date | Age – Sex | Date |
| Warbling Vireo | 2610-93009 | 27 Jul 2011 | AHY – U | 29 Jul 2013 |
| Warbling Vireo | 2610-63667 | 31 Jul 2012 | ASY – F | 26 Jul 2013 |
| Swainson’s Thrush | 2431-79054 | 25 Jul 2011 | AHY – F | 16 Aug 2013 |
| Swainson’s Thrush | 2341-63596 | 30 Jul 2012 | HY – U | 5 Aug 2013 |
| Yellow Warbler | 2610-93120 | 5 Aug 2011 | AHY – M | 25 Jul 2013 |

Foreign band recoveries are a very infrequent event; to date the observatory has had four such recoveries and also recovered one bird from another location (Table 7). In 2013, a Myrtle Warbler banded at the observatory in September 2010 was recaptured at the McIntyre Marsh Bird Banding Station near Whitehorse, approximately 125 km northwest of the observatory.

Table 7. Summary of foreign band recoveries at the observatory to date.

| Species | Banded | | Recovered | |
|--------------------|-------------|------------------|--|------------------|
| | Location | Date | Location | Date |
| Yellow Warbler | Texas, USA | 12 May 2008 | Teslin Lake | 9 September 2009 |
| Alder Flycatcher | Teslin Lake | 25 August 2008 | SW Saskatchewan | 12 June 2009 |
| Sharp-shinned Hawk | Teslin Lake | 14 August 2009 | Boise, Idaho, USA | 9 October 2010 |
| Alder Flycatcher | Teslin Lake | 24 August 2009 | Sapzurro, Choco, Colombia | 29 April 2011 |
| Myrtle Warbler | Teslin Lake | 7 September 2010 | McIntyre Marsh Bird Banding Station – Whitehorse, YT | 25 May 2013 |

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 2013, a total of 70 molt scores were obtained from 87 individuals of 15 species (Table 8).

Table 8. Summary of wing molt scores collected from adult birds during the 2013 season.

| Species | Number of Individuals Scored | Total Number of Molt Scores |
|------------------------|------------------------------|-----------------------------|
| Belted Kingfisher | 1 | 1 |
| Black-capped Chickadee | 11 | 2 |
| Ruby-crowned Kinglet | 1 | 1 |
| Swainson's Thrush | 4 | 4 |
| American Robin | 2 | 2 |
| Orange-crowned Warbler | 5 | 5 |
| Yellow Warbler | 23 | 20 |
| Myrtle Warbler | 18 | 16 |
| Blackpoll Warbler | 5 | 5 |
| American Redstart | 5 | 3 |
| Common Yellowthroat | 4 | 4 |
| Wilson's Warbler | 1 | 1 |
| Slate-colored Junco | 4 | 4 |
| White-winged Crossbill | 1 | 1 |
| Pine Siskin | 2 | 1 |
| TOTAL | 87 | 70 |

3.4 Visual Migration Counts

The visual migration counts provide a method of observing numerous species not typically observed using other methods. The counts are especially useful in observing raptors in migration and also serve as a method for observing waterbirds, waterfowl and some species of passerines. Note that birds seen during the migration counts which are not in active migration flight are not included in this section. During the fall 2013 season, visual migration counts (standard & nonstandard) were conducted for 280.9 hours (Figure 6). The highest number of visual migrants observed was during week 9 (late September) due to a large movement of raptors, waterbirds and passerines. When considering the amount of watching effort, the number of migrants observed during 2013 was the lowest to date. This was primarily due to the lower than typical numbers of waterfowl (Tundra Swan, Trumpeter Swan and Greater White-fronted Goose) observed (Figure 7, right). The number of raptors observed during 2013 was near average when considering the amount of watching effort (Figure 7, left).

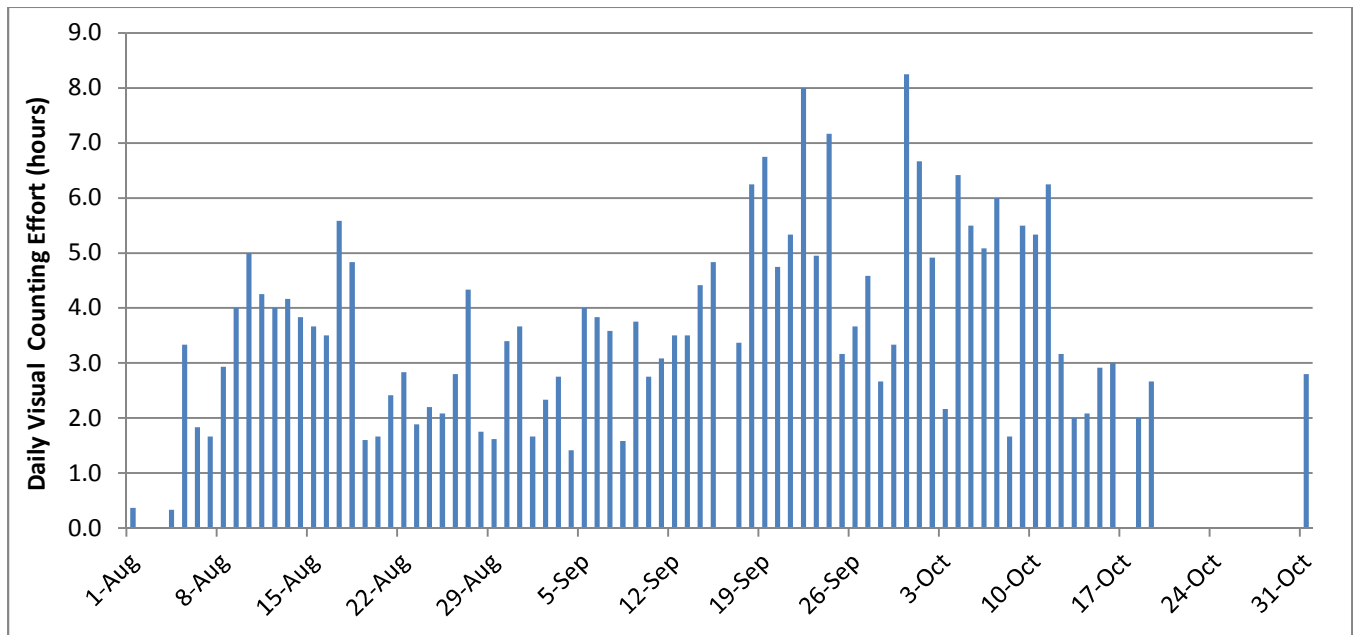


Figure 6. Summary of 2013 visual counting effort.

Table 10. Summary of birds observed on the visual migration counts from 2009 to 2012.

| Group | 2013 | 2012 | 2011 | 2010 | 2009 |
|--------------------------------------|--------|--------|--------|--------|--------|
| Waterbirds ¹ & shorebirds | 2,166 | 1,583 | 1,072 | 3,491 | 4,927 |
| Waterfowl | 7,852 | 35,044 | 31,548 | 22,258 | 8,219 |
| Raptors | 2,466 | 1,977 | 3,680 | 1,710 | 1,612 |
| Passerines | 28,839 | 21,408 | 37,951 | 16,277 | 11,000 |
| TOTAL BIRDS OBSERVED | 41,323 | 60,012 | 74,251 | 43,736 | 25,758 |
| TOTAL BIRDS OBSERVED / HR | 147 | 169 | 218 | 188 | 201 |
| Visual Counting Effort (hrs) | 280.9 | 354.8 | 340.6 | 232.4 | 128.1 |

¹ Waterbirds include loons, grebes, gulls and cranes.

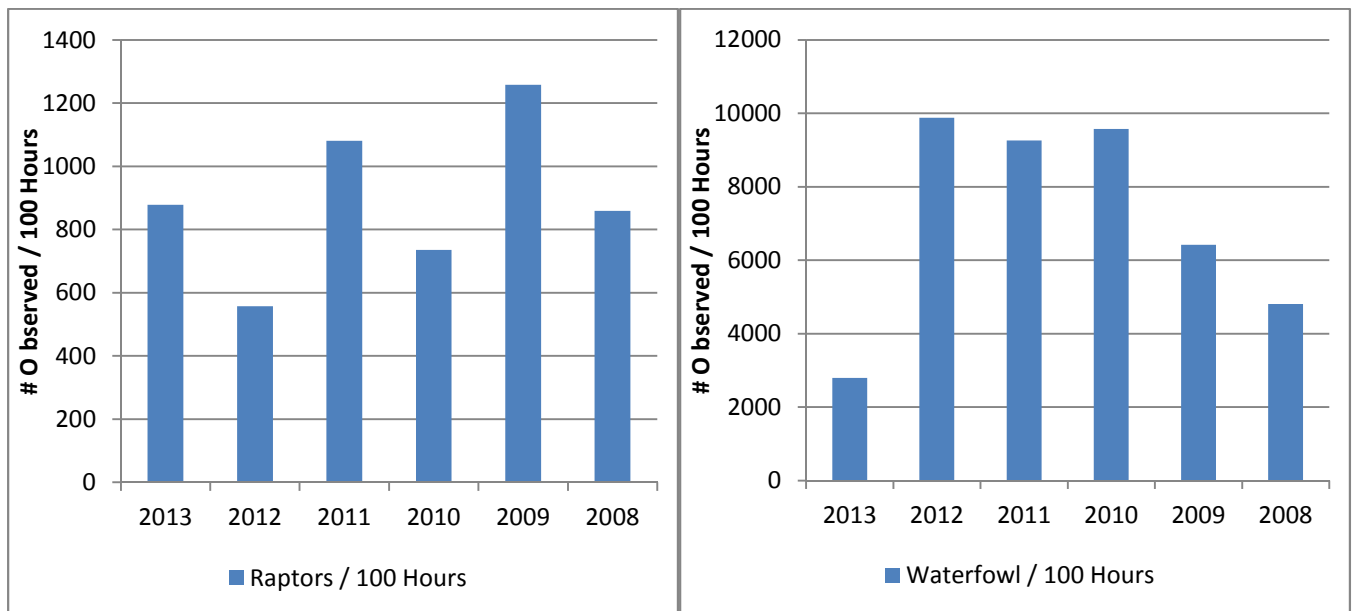


Figure 7. Number of raptors (left) and waterfowl (right) observed per 100 watching hours during 2013.

The following section summarizes the visual count data by species groups. These windows represent passage of 95% of the migrants observed during 2013. For species observed in sufficient numbers, the number of individuals and visual counting effort during the 2013 migration window are shown. Over the long term, the data from the migration windows will be used for long term species trend analysis.

3.4.1 Waterbirds

A total of 2,093 waterbird visual migrants of 11 species were observed during 2013 including 1,367 loons, 51 grebes, 281 cranes and 394 gulls/terns/jaegers (Table 9). The most common waterbird observed was Pacific Loon of which 1,312 were observed including 1,023 on September 23. As a group, waterbirds are better suited to being monitored through the lake counts (Section 3.5) or through the daily estimated totals which combine all monitoring methods (visual migration and lake counts).

Table 9. Summary of waterbird visual migrants observed during 2013.

| Species | Total # Counted | | |
|------------------------------------|------------------|---------------------|-------------|
| | Migration Counts | Incidental Migrants | TOTAL |
| Red-throated Loon | 13 | 5 | 18 |
| Pacific Loon | 1309 | 3 | 1312 |
| Common Loon | 18 | 0 | 18 |
| <i>Common / Yellow-billed Loon</i> | 7 | 0 | 7 |
| <i>Unidentified Loon</i> | 10 | 2 | 12 |
| Horned Grebe | 5 | 0 | 5 |
| Red-necked Grebe | 39 | 7 | 46 |
| Sandhill Crane | 281 | 0 | 281 |
| Mew Gull | 22 | 0 | 22 |
| Thayer's Gull | 140 | 7 | 147 |
| Bonaparte's Gull | 28 | 0 | 28 |
| Arctic Tern | 166 | 14 | 180 |
| Long-tailed Jaeger | 1 | 0 | 1 |
| <i>Unidentified Large Gull</i> | 16 | 0 | 16 |
| TOTAL | 2,055 | 38 | 2093 |

3.4.2 Waterfowl

A total of 8,741 waterfowl visual migrants were observed during 2013 including 2,835 geese, 3,744 swans and 2,162 ducks (Table 10). Although the number of geese and swans observed was lower than in previous years, these highly visible birds are effectively counted by the visual migration counts. Among the geese observed, Greater White-fronted Goose and Canada Goose accounted for the majority of individuals with 48% and 42%, respectively. In terms of swans, Tundra Swans were more common than Trumpeter Swans and accounted for 75% of the swans identified to species. The top 6 duck species observed included the following: Lesser Scaup (22% of all ducks), Mallard (17%), Surf Scoter (11%), Canvasback (10%), Common Merganser (6%) and Northern Pintail (6%). 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 11). The higher proportion of adults observed for both species during 2013 as compared to 2011 and 2012 may be a result of a substantial portion of the migration being missed during 2013.

Table 10. Summary of waterfowl visual migrants observed during 2013.

| Species | Total # Counted | | |
|-----------------------------------|------------------|---------------------|-------------|
| | Migration Counts | Incidental Migrants | TOTAL |
| Greater White-fronted Goose | 930 | 421 | 1351 |
| Snow Goose | 135 | 0 | 135 |
| Canada Goose | 1142 | 56 | 1198 |
| <i>Unidentified Goose</i> | 130 | 21 | 151 |
| Trumpeter Swan | 649 | 56 | 705 |
| Tundra Swan | 2078 | 216 | 2294 |
| <i>Unidentified Swan</i> | 745 | - | 745 |
| American Wigeon | 51 | 21 | 72 |
| Mallard | 350 | 8 | 358 |
| Northern Shoveler | 10 | 13 | 23 |
| Northern Pintail | 124 | 3 | 127 |
| American Green-winged Teal | 19 | 0 | 19 |
| <i>Unidentified Dabbling Duck</i> | 18 | 0 | 18 |
| Canvasback | 210 | 0 | 210 |
| Ring-necked Duck | 15 | 0 | 15 |
| Greater Scaup | 38 | 0 | 38 |
| Lesser Scaup | 467 | 7 | 474 |
| <i>Unidentified Scaup</i> | 122 | 0 | 122 |
| Harlequin Duck | 3 | 0 | 3 |
| Surf Scoter | 212 | 31 | 243 |
| White-winged Scoter | 45 | 0 | 45 |
| Long-tailed Duck | 31 | 0 | 31 |
| Bufflehead | 1 | 0 | 1 |
| Common Goldeneye | 71 | 1 | 72 |
| Barrow's Goldeneye | 8 | 0 | 8 |
| <i>Unidentified Goldeneye</i> | 35 | 0 | 35 |
| Common Merganser | 124 | 7 | 131 |
| Red-breasted Merganser | 27 | 6 | 33 |
| <i>Unidentified Merganser</i> | 4 | 4 | 8 |
| <i>Unidentified Duck</i> | 58 | 18 | 76 |
| TOTAL | 7852 | 889 | 8741 |

Table 11. Summary of age breakdown for swans observed on the visual migration counts during 2011, 2012 and 2013.

| Species | Year | Proportion of Individuals Observed (%) | | |
|----------------|------|--|----------|-------------|
| | | Adult | Juvenile | Unspecified |
| Trumpeter Swan | 2011 | 66 | 14 | 20 |
| | 2012 | 58 | 12 | 29 |
| | 2013 | 95 | 2 | 3 |
| Tundra Swan | 2011 | 30 | 4 | 66 |
| | 2012 | 51 | 9 | 40 |
| | 2013 | 65 | 5 | 29 |

3.4.3 Raptors

As a group, most species of raptors are well monitored by the visual migration counts. In 2013, a total of 2,508 raptors were counted during the visual counts and as incidental “other visual migrants” representing 12 species (Table 12). The most numerous species observed was Sharp-shinned Hawk, followed by Red-tailed Hawk, Northern Harrier, Golden Eagle, American Kestrel and Bald Eagle.

Table 12. Summary of raptor visual migrants observed during 2013.

| Species | Total # Counted | | |
|----------------------------------|------------------|---------------------|-------------|
| | Migration Counts | Incidental Migrants | TOTAL |
| Bald Eagle | 92 | 3 | 95 |
| Northern Harrier | 297 | 10 | 307 |
| Sharp-shinned Hawk | 818 | 12 | 830 |
| Northern Goshawk | 4 | 0 | 4 |
| Swainson’s Hawk | 3 | 0 | 3 |
| Red-tailed Hawk | 431 | 1 | 432 |
| Rough-legged Hawk | 126 | 0 | 126 |
| <i>Unidentified Buteo</i> | 65 | 0 | 65 |
| Golden Eagle | 292 | 1 | 293 |
| American Kestrel | 159 | 7 | 166 |
| Merlin | 57 | 0 | 57 |
| Peregrine Falcon | 46 | 3 | 49 |
| Osprey | 67 | 3 | 70 |
| <i>Unidentified Eagle</i> | 3 | 1 | 4 |
| <i>Unidentified Falcon</i> | 1 | 1 | 2 |
| <i>Unidentified Small Falcon</i> | 1 | 0 | 1 |
| <i>Unidentified Large Raptor</i> | 3 | 0 | 3 |
| <i>Unidentified Small Raptor</i> | 1 | 0 | 1 |
| TOTAL | 2466 | 42 | 2508 |

A breakdown of color morph data collected from 2010 to 2013 is shown in Table 13 and Table 14 for Rough-legged and Red-tailed hawks, respectively. The majority Rough-legged Hawk observed were classified as light morph individuals. By far the most common Red-tailed Hawk was the Harlan’s dark morph, while the Harlan’s light morph was the second most common. The observation of three possible western dark morph and three possible eastern morphs are very significant as there are very few sightings of these forms in the Yukon; many of the Yukon’s records are from the Teslin Lake Bird Observatory.

Table 13. Summary of color morph data recorded for Rough-legged Hawks observed on visual migration counts from 2010 to 2013.

| Year | Dark Morph (%) | Light Morph (%) | Not Determined (%) |
|------|----------------|-----------------|--------------------|
| 2010 | 19.8 | 71.4 | 8.9 |
| 2011 | 12.4 | 79.5 | 8.2 |
| 2012 | 17.1 | 74.0 | 8.9 |
| 2013 | 10.3 | 82.5 | 7.2 |

Table 14. Summary of color morph data recorded for Red-tailed Hawks observed on visual migration counts from 2010 to 2013.

| Year | Harlan's Dark Morph | Harlan's Light Morph | Western Dark Morph | Western Light Morph | "Possible" Eastern | Not Determined |
|------|---------------------|----------------------|--------------------|---------------------|--------------------|----------------|
| 2010 | 83.1 | 3.8 | 0.5 (2 birds) | | - | 12.6 |
| 2011 | 90.5 | 4.4 | 0.1 (1 bird) | 0.1 (1 bird) | 0.2 (2 birds) | 4.7 |
| 2012 | 89.6 | 6.9 | 0.3 (1 bird) | - | 0.6 (2 birds) | 2.6 |
| 2013 | 84.9 | 9.9 | 0.6 (3 birds) | - | 0.6 (3 birds) | 3.7 |

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 18, 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.

Table 15. Summary of age and sex data collected for raptors observed on visual migration counts from 2010 to 2013.

| 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 |
| | 2012 | - | - | 54.3 | 33.7 | 12.0 | - | - | - |
| | 2013 | - | - | 29.0 | 60.0 | 6.5 | 7.5 | - | - |
| Golden Eagle | 2010 | - | - | 56.4 | 10.4 | 6.9 | 9.0 | - | 17.3 |
| | 2011 | - | - | 35.7 | 12.8 | 12.3 | 7.5 | - | 31.7 |
| | 2012 | - | - | 54.5 | 6.7 | 9.0 | 3.0 | - | 26.8 |
| | 2013 | - | - | 43.4 | 18.2 | 3.4 | 3.1 | - | 31.8 |
| Northern Harrier | 2010 | 10.9 | 11.7 | - | - | - | 35.7 | 37.8 | 3.9 |
| | 2011 | 8.4 | 10.1 | - | - | - | 24.9 | 50.7 | 5.9 |
| | 2012 | 13.0 | 12.2 | - | - | - | 24.7 | 43.5 | 6.5 |
| | 2013 | 11.1 | 13.2 | - | - | - | 20.6 | 47.6 | 7.4 |
| Peregrine Falcon | 2010 | - | - | 44.0 | - | 12.0 | 16.0 | - | 28.0 |
| | 2011 | 25.0 | 12.5 | 12.5 | - | - | 6.3 | - | 43.8 |
| | 2012 | 12.5 | 6.3 | 18.9 | - | - | 25.0 | - | 37.5 |
| | 2013 | 32.6 | 19.6 | 6.5 | - | - | 28.3 | - | 13.0 |
| 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 |
| | 2012 | 12.3 | 12.3 | 8.9 | - | - | 14.4 | - | 52.1 |
| | 2013 | 13.5 | 16.7 | 8.0 | - | - | 8.7 | - | 53.2 |
| Red-tailed Hawk ¹ | 2013 | - | - | 79.4 | - | - | 5.1 | - | 15.5 |

¹ Red-tailed Hawks observed were not classified to age category during 2010, 2011 and 2012.

3.4.4 Shorebirds

As a group, shorebirds are not well monitored at the observatory due to the relatively low numbers of individuals observed (Table 16); in 2013, a total of 153 shorebirds of 13 species were observed. The visual migration counts are not a suitable method for collecting data for species trend analysis for

shorebirds; however, this information can easily continue to be collected as incidental observations when counting other species (raptors, waterfowl, etc).

Table 16. Summary of shorebird visual migrants observed during 2013.

| Species | Total # Counted | | |
|-------------------------------|------------------|---------------------|------------|
| | Migration Counts | Incidental Migrants | TOTAL |
| American Golden-Plover | 1 | 0 | 1 |
| Semi-palmated Plover | 9 | 2 | 11 |
| Lesser Yellowlegs | 3 | 7 | 10 |
| Solitary Sandpiper | 1 | 1 | 2 |
| Spotted Sandpiper | 6 | 0 | 6 |
| Upland Sandpiper | 0 | 1 | 1 |
| Least Sandpiper | 21 | 6 | 27 |
| Semi-palmated Sandpiper | 0 | 1 | 1 |
| <i>Unidentified Peep</i> | 10 | 3 | 13 |
| Baird's Sandpiper | 0 | 1 | 1 |
| Pectoral Sandpiper | 24 | 4 | 28 |
| Stilt Sandpiper | 3 | 0 | 3 |
| Wilson's Snipe | 4 | 0 | 4 |
| Red-necked Phalarope | 13 | 1 | 14 |
| <i>Unidentified Shorebird</i> | 13 | 18 | 31 |
| TOTAL | 108 | 45 | 153 |

3.4.5 Owls, Woodpeckers and Passerines

A wide variety of passerines (29,260 individuals of 42 species) were counted during the 2013 visual migration counts (Table 17). A very large proportion of the passerines observed were large thrushes (American Robin, Varied Thrush, unidentified), Rusty Blackbirds, Yellow-rumped Warblers, 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.

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. 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 counts likely provide the most reliable data. These include species such as the swallows, Townsend's Solitaire, American Robin, Varied Thrush, American Pipit, Bohemian Waxwing, Rusty Blackbird, Pine Grosbeak, Common Redpoll, Pine Siskin and White-winged Crossbill.

Table 17. Summary of owls, woodpecker and passerine visual migrants observed during 2013.

| Species | Total # Counted | | |
|---------------------------------------|------------------|---------------------|--------------|
| | Migration Counts | Incidental Migrants | TOTAL |
| Northern Hawk Owl | 1 | 0 | 1 |
| Common Nighthawk | 9 | 0 | 9 |
| Belted Kingfisher | 1 | 1 | 2 |
| American Three-toed Woodpecker | 6 | 0 | 6 |
| Black-backed Woodpecker | 2 | 0 | 2 |
| Northern Flicker | 4 | 0 | 4 |
| <i>Unidentified Woodpecker</i> | 0 | 1 | 1 |
| <i>Unidentified Empidonax sp.</i> | 1 | 0 | 1 |
| Say's Phoebe | 1 | 0 | 1 |
| Warbling Vireo | 2 | 0 | 2 |
| Tree Swallow | 1 | 0 | 1 |
| Bank Swallow | 104 | 0 | 104 |
| Cliff Swallow | 15 | 1 | 16 |
| Barn Swallow | 6 | 0 | 6 |
| <i>Unidentified Swallow</i> | 134 | 0 | 134 |
| Boreal Chickadee | 5 | 0 | 5 |
| Red-breasted Nuthatch | 1 | 1 | 2 |
| Mountain Bluebird | 18 | 0 | 18 |
| Townsend's Solitaire | 61 | 2 | 63 |
| American Robin | 5863 | 0 | 5863 |
| Varied Thrush | 1225 | 0 | 1225 |
| <i>American Robin / Varied Thrush</i> | 7774 | 0 | 7774 |
| American Pipit | 416 | 37 | 453 |
| Bohemian Waxwing | 539 | 10 | 549 |
| <i>Bohemian / Cedar Waxwing</i> | 75 | 6 | 81 |
| Lapland Longspur | 11 | 17 | 28 |
| Smith's Longspur | 0 | 1 | 1 |
| Snow Bunting | 3 | 0 | 3 |
| Orange-crowned Warbler | 6 | 0 | 6 |
| Yellow Warbler | 17 | 23 | 40 |
| Yellow-rumped Warbler | 672 | 67 | 739 |
| Townsend's Warbler | 2 | 0 | 2 |
| Blackpoll Warbler | 24 | 31 | 55 |
| American Redstart | 1 | 0 | 1 |
| Wilson's Warbler | 2 | 0 | 2 |
| <i>Unidentified Warbler</i> | 60 | 13 | 73 |
| Chipping Sparrow | 5 | 10 | 15 |
| Savannah Sparrow | 4 | 4 | 8 |
| Dark-eyed Junco | 9 | 0 | 9 |
| <i>Unidentified Sparrow</i> | 7 | 0 | 7 |
| Red-winged Blackbird | 0 | 1 | 1 |
| Rusty Blackbird | 1049 | 58 | 1107 |
| Pine Grosbeak | 80 | 0 | 80 |
| Purple Finch | 1 | 4 | 5 |
| Red Crossbill | 7 | 27 | 34 |
| White-winged Crossbill | 421 | 37 | 459 |
| <i>Red / White-winged Crossbill</i> | 191 | 0 | 191 |
| Common Redpoll | 103 | 2 | 105 |
| Pine Siskin | 339 | 57 | 396 |
| <i>Common Redpoll / Pine Siskin</i> | 1389 | 12 | 1401 |
| <i>Unidentified Finch</i> | 19 | 0 | 19 |
| <i>Unidentified Small Passerine</i> | 8114 | 36 | 8150 |
| TOTAL | 28800 | 459 | 29260 |

3.5 Lake Counts

The lake counts provide monitoring data for various species of loons, grebes, waterfowl and gulls/terns/ jaegers. 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 1,090 bird days² counted for this species (Table 18).

Geese and swans were observed in very low numbers during the lake counts; these species are typically observed flying over the site only (i.e. are visual migrants). However, for some duck species (scoters and mergansers), the lake counts recorded data to supplement the visual migration counts (Table 18). Only small numbers of dabbling and diving ducks were seen mostly due to scarcity of suitable stopover habitat near the observatory.

As a group, gulls, terns and jaegers are well monitored through the use of the lake counts; species of this group are the most commonly recorded birds using this method. Herring Gull in particular was observed in high numbers during 2013 with over 2,600 bird days counted (Table 18).

Table 18. Summary of waterbirds (left) and waterfowl (right) observed on the lake counts during 2013.

| Species | Total # of Bird Days | Species | Total # of Bird Days |
|--------------------------------|----------------------|-------------------------------|----------------------|
| Red-throated Loon | 139 | Canada Goose | 54 |
| Pacific Loon | 77 | Trumpeter Swan | 4 |
| Common Loon | 195 | American Wigeon | 11 |
| Horned Grebe | 65 | Mallard | 45 |
| Red-necked Grebe | 1090 | Northern Shoveler | 1 |
| Mew Gull | 407 | American Green-winged Teal | 1 |
| Ring-billed Gull | 6 | Lesser Scaup | 37 |
| Herring Gull | 2608 | Harlequin Duck | 1 |
| Thayer's Gull | 127 | Surf Scoter | 50 |
| Glaucous Gull | 13 | White-winged Scoter | 3 |
| Bonaparte's Gull | 38 | Long-tailed Duck | 13 |
| Sabine's Gull | 14 | Common Goldeneye | 1 |
| Arctic Tern | 369 | <i>Unidentified Goldeneye</i> | 1 |
| Parasitic Jaeger | 53 | Common Merganser | 16 |
| Long-tailed Jaeger | 1 | Red-breasted Merganser | 223 |
| <i>Unidentified Large Gull</i> | 1 | <i>Unidentified Merganser</i> | 21 |
| <i>Unidentified Gull</i> | 6 | <i>Unidentified Duck</i> | 53 |
| TOTAL | 5209 | TOTAL | 535 |

² Bird days refer to a cumulative count of the number of birds observed on all days. For example, 2 birds observed on day 1 and 5 birds observed on day 2 would equal a total of 7 bird days.

3.6 Interesting & Notable Captures / Observations

The vast majority of birds banded and observed at Teslin Lake in 2013 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, population status and migration timing. These common species will be the primary focus of the long term species trend analysis to be conducted following additional years of data collection. In addition to common species, the observatory continues to add to the knowledge base for rare and uncommon bird species in the Yukon. 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 2013 fall season.

Swainson's Hawk

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 the start of visual migration counts, the species has been documented annually at the observatory in low numbers. In 2013, a total of 3 individuals were observed on 2 days; 2 on August 27 and 1 on September 2. The number of individuals observed in previous years has included; 12 – 2012, 23 – 2011, 10 – 2010, 17 – 2009 and 3 – 2008. This species appears to be a relatively early migrant as only two sightings have been made after September 5.

Stilt Sandpiper

Encountered at the observatory for the first time in 2013, three Stilt Sandpipers were observed in migration flight on August 14. This species is not a common migrant in the southern Yukon; however, it is considered rare in fall. There are a number of records of up to 50 or 60 individuals at well-known shorebird stopover sites such as the Whitehorse sewage lagoon or Nisutlin River delta (Eckert pers. comm.³).

Ring-billed Gull

A new species for the observatory, a juvenile Ring-billed Gull (presumably the same individual) was observed on 6 days from September 3 to 9. This species is rare but regular throughout the Yukon and is likely an infrequent breeder in the territory (Eckert pers. comm.).

Glaucous Gull

An arctic nesting gull species, Glaucous Gull has also been observed at the site annually since the fall of 2008 with a total of 50 records to date (Table 19).

³ C.D. Eckert. 2013. Yukon Government, Conservation Biologist and regional bird expert.

Table 19. Summary of Glaucous Gull observations from 2008 to 2013.

| Year | Number of Days Observed | Total Bird Days | First Date Observed | Last Date Observed |
|------|-------------------------|-----------------|---------------------|--------------------|
| 2013 | 13 | 2 | August 27 | September 19 |
| 2012 | 29 | 29 | August 18 | October 26 |
| 2011 | 13 | 13 | September 16 | October 24 |
| 2010 | 2 | 2 | October 4 | October 18 |
| 2009 | 2 | 2 | August 1 | August 29 |
| 2008 | 2 | 2 | August 27 | September 19 |
| ALL | 50 | 50 | August 1 | October 26 |

Sabine's Gull

Sabine's Gull is a rare fall migrant in the southern Yukon, although it now appears to occur annually at the observatory in small numbers. To date, there are 34 records of this species at the observatory with a high count of 14 bird days during 2013 (Table 20).

Table 20. Summary of Sabine's Gull observations from 2008 to 2013.

| Year | Number of Days Observed | Total Bird Days | First Date Observed | Last Date Observed |
|------|-------------------------|-----------------|---------------------|--------------------|
| 2013 | 11 | 14 | August 26 | September 5 |
| 2012 | 3 | 3 | September 14 | September 27 |
| 2011 | 8 | 8 | September 24 | October 24 |
| 2010 | 2 | 2 | September 30 | October 11 |
| 2009 | 2 | 4 | August 27 | August 29 |
| 2008 | 2 | 3 | September 2 | September 4 |
| ALL | 28 | 34 | August 26 | October 24 |

Parasitic Jaeger

Prior to the initiation of fall migration monitoring at Teslin Lake in 2008, fall migration records of this species in the southern Yukon were limited to a few incidental sightings primarily from large lakes. It has become apparent that this species is a regular fall migrant on Teslin Lake; however, the number of individuals observed is variable between years. The number of individuals observed during 2013 was above average but below the high of 72 bird days in 2008 (Table 21). 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 21. Summary of Parasitic Jaeger observations from 2008 to 2013.

| Year | Number of Days Observed | Total Bird Days | First Date Observed | Last Date Observed |
|------|-------------------------|-----------------|---------------------|--------------------|
| 2013 | 25 | 53 | August 24 | September 23 |
| 2012 | 21 | 35 | August 8 | October 1 |
| 2011 | 9 | 12 | September 2 | October 11 |
| 2010 | 20 | 37 | September 1 | October 15 |
| 2009 | 11 | 16 | August 24 | September 25 |
| 2008 | 28 | 72 | August 7 | September 24 |
| ALL | 114 | 225 | August 8 | October 15 |

Long-tailed Jaeger

Observed for the first time in 2013, a single adult Long-tailed Jaeger was observed on September 11 and 12. This species is considered a casual fall migrant in the southern Yukon (Eckert pers. comm.).

Yellow-bellied Flycatcher

Yellow-bellied Flycatcher is likely the least understood *Empidonax* flycatcher in the Yukon in terms of distribution and abundance. Partially due to identification difficulties with other closely related species, there are relatively few records of this species during migration aside from the Teslin Lake and Albert Creek bird observatories where nearly all of the records are of birds captured in the mist nets. This species is a late spring and an early fall migrant; the latest record to date is September 4 with a median date of August 19 (Table 22). The numbers of Yellow-bellied Flycatchers banded to date have been relatively stable since 2008 (Figure 8). Slightly lower net hours during 2008 may explain the higher number banded during this year when considering the birds per 1,000 net hours during the core migration window.

Table 22. Summary of Yellow-bellied Flycatchers banded from 2008 to 2013.

| Year | Number Banded | | Earliest Date | Latest Date |
|-------|---------------|-------|---------------|-------------|
| | Juvenile | Adult | | |
| 2008 | 9 | 1 | August 11 | August 22 |
| 2009 | 8 | 0 | August 4 | August 23 |
| 2010 | 11 | 0 | July 29 | August 25 |
| 2011 | 7 | 0 | August 12 | September 4 |
| 2012 | 8 | 1 | August 2 | August 23 |
| 2013 | 11 | 0 | August 11 | August 26 |
| TOTAL | 46 | 2 | July 29 | September 4 |

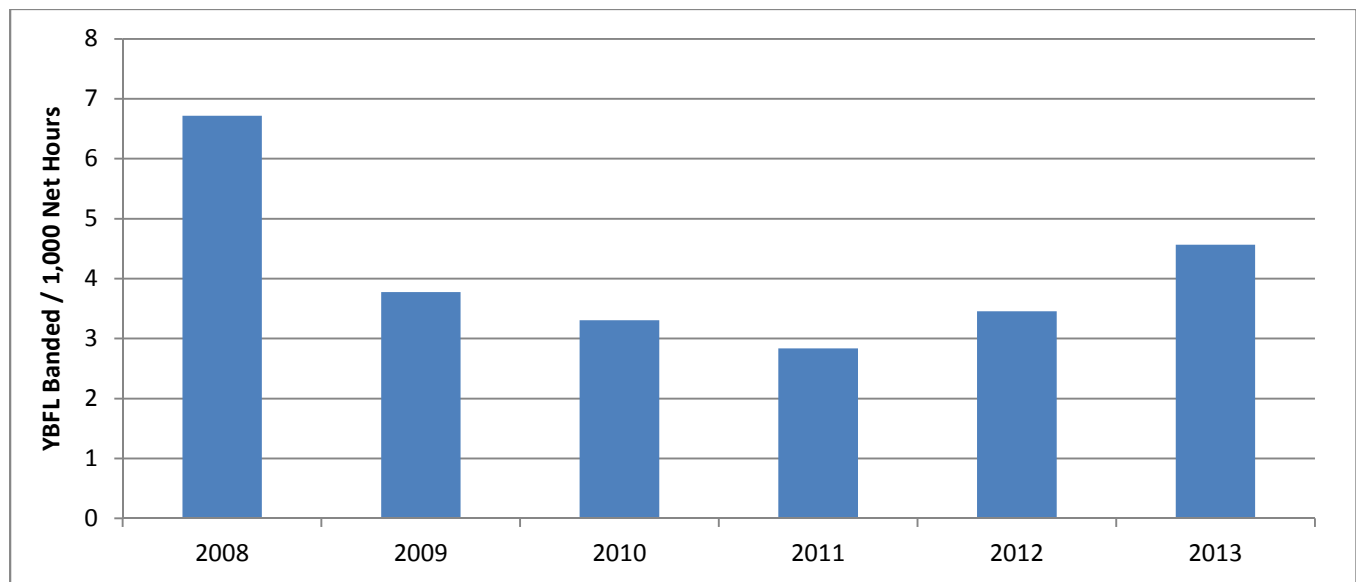


Figure 8. Yellow-bellied Flycatchers banded per 1,000 net hours from 2008 to 2013 during the core migration timing window of August 8 to 24.

Dusky Flycatcher

Dusky Flycatcher is a high elevation breeder in the southern Yukon where it is at the northern extent of its breeding range. Lowland records of this species in migration are sparse and the observatory captures this species irregularly, but annually, in fall (Table 23). During 2013, a total of 3 juveniles were banded bringing the all-time banding total to 22 individuals in fall; nearly all of which have been juveniles.

Table 23. Summary of Dusky Flycatchers banded from 2008 to 2013.

| Year | Number Banded | | Earliest Date | Latest Date |
|-------|---------------|-------|---------------|--------------|
| | Juvenile | Adult | | |
| 2008 | 1 | 0 | September 13 | - |
| 2009 | 6 | 0 | August 8 | August 25 |
| 2010 | 3 | 0 | August 11 | September 5 |
| 2011 | 4 | 2 | August 1 | August 17 |
| 2012 | 3 | 0 | August 8 | September 30 |
| 2013 | 3 | 0 | August 23 | September 12 |
| TOTAL | 20 | 2 | August 1 | September 30 |

Mountain Chickadee

The least common species of the regularly occurring chickadee species 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 and 2013. Along with Boreal Chickadee, it is evident that both of this species regularly stages fall irruptions and, interestingly, they appear to coincide with other chickadee species. A breakdown of Mountain Chickadees banded and observed since 2008 is shown in Table 24. In 2013, observations were limited to a single individual observed on August 31.

Table 24. Summary of Mountain Chickadees observed and banded from 2008 to 2013.

| Year | # of Days Observed | # of Bird Days | # Banded | | Early Date | Late Date | High Count | Median Date |
|-------|--------------------|----------------|----------|-------|------------|-----------|----------------|-------------|
| | | | Juvenile | Adult | | | | |
| 2008 | 8 | 20 | 15 | - | 3 Sep | 26 Sep | 6 – 24/25 Sep | 24 Sep |
| 2009 | 8 | 24 | 11 | - | 5 Sep | 27 Sep | 10 – 19 Sep | 19 Sep |
| 2010 | - | - | - | - | - | - | - | - |
| 2011 | 3 | 3 | 2 | - | 12 Sep | 3 Oct | 1 – all days | - |
| 2012 | 4 | 5 | 1 | - | 18 Sep | 7 Oct | - | - |
| 2013 | 1 | 1 | - | - | 31 Aug | - | - | - |
| TOTAL | 19 | 47 | 29 | - | 3 Sep | 26 Sep | 10 – 19 Sep 09 | - |

Smith's Longspur

This species nests in tundra habitats and is relatively rare in the southern Yukon during spring and fall migration. During 2013, a single individual was observed flying over the site on August 8. There is one previous record of this species (August 27, 2009) when a single bird was observed. This species is a casual fall migrant in the southern Yukon (Eckert pers. comm.).

American Redstart

In the Yukon, American Redstart is most common in the southeast portion of the territory; however, it occurs annually in lower numbers further west near Teslin, Whitehorse and Haines Junction. Following the establishment of the fall migration monitoring at the observatory in 2008, it became apparent that this species is much more common in the region than initially thought. To date, 178 individuals have been banded at the station in fall, of which 132 were juveniles (Table 25). This species is most frequently observed during late July and August although there are a few records in mid to late September (latest September 26, 2011). In 2013, the species was observed on 30 days (62 bird days) from July 25 to September 11 and a total of 33 individuals (28 juvenile, 5 adult) were banded.

Table 25. Summary of American Redstarts banded at the observatory from 2008 to 2013.

| 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 |
| 2012 | 28 | 66 | 12 | 10 | 22 Jul | 16 Sep | 8 – 5 Aug | 30 Jul |
| 2013 | 30 | 62 | 28 | 5 | 25 Jul | 11 Sep | 4 – 25/29 Jul | 10 Aug |
| TOTAL | 127 | 364 | 132 | 46 | 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.

Magnolia Warbler

In the Yukon, Magnolia Warbler is a species typically restricted to the southeast portion of the Yukon; there are a small number of documented records in the Teslin area. It has been banded at the observatory on three previous occasions; August 19, 2008 (juvenile), August 15, 2012 (juvenile) and June 11, 2005. In 2013, a juvenile was banded on August 30.

MacGillivray's Warbler

MacGillivray's Warbler is one of the Yukon's rarest regular breeding warbler species. It is known from a small number of areas along the territory's southern margin, including several around Teslin. This species has been banded annually (except 2011) since the station became operational during the fall in 2008. Most frequently encountered during the first half of August, the latest record to date is September 6 (2008; adult male banded). In 2013, a juvenile was banded on August 8.

3.6.1 Chickadee Movements

Chickadees are considered year-round residents, but the observatory has documented chickadee irruptions in four of the last six years with variation in the magnitude of irruptions between years (Table 26). The high number of individuals banded and observed in some years indicates that a substantial number of birds are involved in these irruptions. The relative proportion of the species encountered is likely an indication of the relative abundance in the southern Yukon; however, it is

possible that certain species may be more likely to stage fall irruptions. Of particular interest, nearly all chickadees banded are hatch year individuals. Also note that Black-capped Chickadee is the only chickadee species which breeds within the study site and therefore a number of the individuals banded are probable local residents/offspring.

Table 26. Summary of chickadees banded and observed at the observatory from 2008 to 2013.

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

3.7 Rusty Blackbirds

In conjunction with the other Yukon Bird Observatories field stations, all Rusty Blackbirds captured were fitted with a color band (light blue) in addition to the regular numbered leg band. As each observatory uses a different color, the color bands help to identify the origin of a re-sighted individual without the need to recapture it. Additionally, from 2008 to 2010 a feather was collected from each Rusty Blackbird captured. Feather samples were analyzed for stable isotopes in an effort to make linkages between breeding and wintering grounds of this species. During the fall of 2013, 18 individuals were banded (15 hatch year, 3 after hatch year).

3.8 Visitors and Volunteers

Once again the observatory hosted numerous visitors and volunteers. On most days of operation, adequate personnel were available onsite to assist with the banding operation. This was largely due to the commitment of long-term volunteers who provide valuable assistance at the observatory. During 2013, the observatory once again hosted long-term volunteer Abril Heredia from early August to late September. A new long-term volunteer, Sarah Coulthard also assisted at the observatory from early August until early October. Qualified volunteers such as Abril and Sarah are necessary to allow for the observatory to be successful over the long term. During 2013, the observatory recorded a total of 1,649 hours of observer effort (paid and volunteer) by 15 individuals. A total of 74 individuals visited the observatory and tallied a total of 192 visitor hours. Visitors were defined as those people who visited the observatory (often for a short time) and did not take part in activities at the observatory. Volunteers were those people which took part in the operation of the observatory (often extensively) without being financially compensated. Paid hours were spent by individuals being paid to be at the

observatory. This category includes the Bander In Charge (Jukka Jantunen). Note that the values shown for “paid hours” only include those spent at the observatory and do not include the extensive amount of travel to and from the site, data entry, data analysis, report writing and other communication of the observatory’s results.

Table 27. Hours spent at the observatory by volunteers and paid observers during 2013.

| Paid | | Volunteer | |
|------------------|-------|------------------|-------|
| # of Individuals | Hours | # of Individuals | Hours |
| 1 | 608 | 14 | 1,041 |

Table 28. Hours spent at the observatory by visitors during 2013.

| Locals | | Yukon | | Canada | | USA | | Other International | |
|--------|-------|-------|-------|--------|-------|-----|-------|---------------------|-------|
| # | Hours | # | Hours | # | Hours | # | Hours | # | Hours |
| 6 | 2 | 30 | 142 | 26 | 17 | 11 | 16 | 1 | 15 |

In comparison to previous years, the total number of volunteer hours was the highest to date (Figure 9). This is due primarily to two long term volunteers at the observatory for much of the season. The visitor hours also near the highest recorded to date.

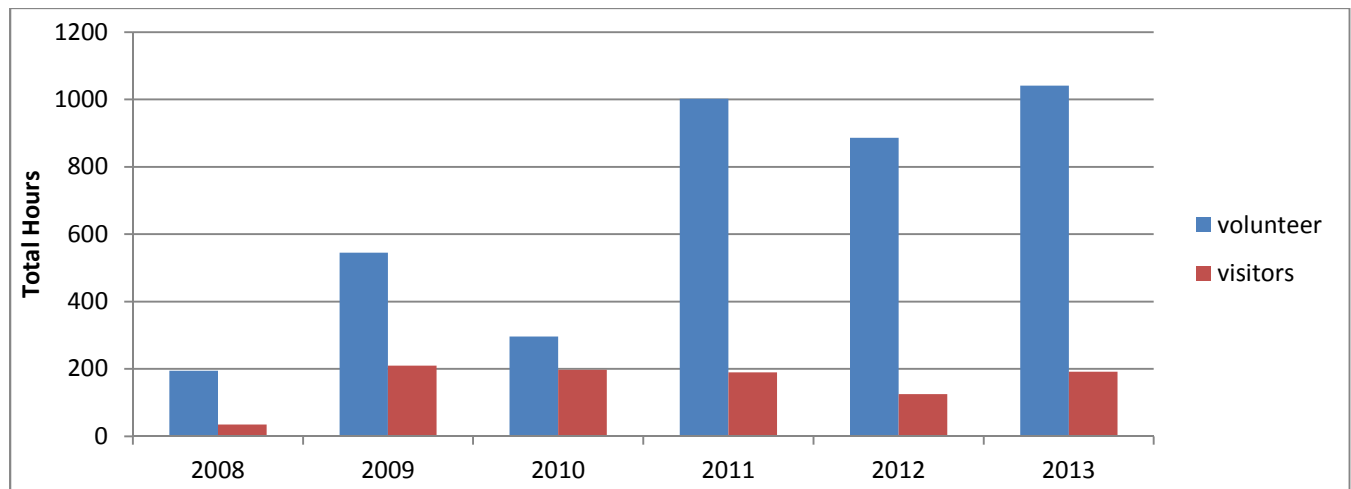


Figure 9. Volunteer and visitor hours at the observatory from 2008 to 2013.

4.0 Conclusion & Recommendations

The results from the operation of the Teslin Lake Bird Observatory in 2013 have continued to add to the knowledge of numerous aspects of bird biology in the Yukon, including: species distribution, migration timing and productivity. The location of the study site has proven to be effective for monitoring songbird migration. The primary reason for this is the close proximity of the site to Teslin Lake. As the lake is a very large body of water which runs in a north/south direction, it acts as a funnel for migrants. Additionally, most migrating birds are hesitant to cross the lake and many birds concentrate along the lakeshore and pass directly through and over the study site. On numerous occasions, flocks of migrating birds have been observed moving along the lakeshore and thus have yielded some very impressive banding and observation totals at the observatory. Following six years of fall migration monitoring at the observatory, the ability to monitor songbirds has been well demonstrated by the large numbers of migrants observed and banded on an annual basis. The results gathered this season also confirm the previous assumption that few birds stopover at the study site for extended periods of time. The majority of birds simply pass through the site while in migration and this is supported by the low proportion of band repeats within each season. 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 increase the number of bird species which may be monitored at the observatory and are now a key component of the observatory's activities. Together they serve to collect monitoring data for species not banded (or banded only in low numbers) including: waterfowl, loons/grebes, gulls/terns, raptors and some species of passerines, particularly American Robin, Varied Thrush, American Pipit, Rusty Blackbird, Common Redpoll and Pine Siskin. The raptors are a primary focus of these counts as these species are readily observed and identified from a distance. The ability to collect data on ages and color morphs of these species make this data even more valuable.

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

The observatory continues to be successful in attracting members of the public to the observatory to learn about birds and bird migration. During 2011, a Y2C2 (Yukon Youth Conservation Corps) team visited the observatory along with numerous other public visitors. 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 Monitoring Protocol

Teslin Lake Bird Observatory (TLBO) Field Protocol



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

Table of Contents

| | | |
|-------|------------------------------------|----|
| 1.0 | Introduction | 4 |
| 2.0 | Objectives..... | 4 |
| 3.0 | Migration Monitoring Methods | 6 |
| 3.1 | Count Area | 6 |
| 3.2 | Count Period | 7 |
| 3.2.1 | Seasonal Count Timing..... | 8 |
| 3.4 | Mist Netting | 9 |
| 3.4.1 | Operating Guidelines | 9 |
| 3.4.2 | Banding | 13 |
| 3.5 | Visible Migration Count | 13 |
| 3.5.1 | Watch Location | 15 |
| 3.6 | Other Observations..... | 15 |
| 3.7 | Estimated Totals (ETs)..... | 15 |
| 3.8 | Overall Coverage Codes | 16 |
| 3.9 | Additional Observations..... | 17 |
| 4.0 | Data Entry | 17 |
| 5.0 | Personnel | 17 |
| 6.0 | Vegetation Management | 18 |
| 7.0 | Literature Cited | 18 |

#

#

#

#

#

List of Figures

Figure 1. Map of the Yukon, showing the location of TLBO. 6
Figure 2. Map of Teslin Lake Bird Observatory count area (marked by purple line)..... 7
Figure 3. TLBO mist net array..... 11

List of Tables

Table 1. Priority landbird species for monitoring at Teslin Lake Bird Observatory. 5
Table 2. TLBO mist net specifications. 10
Table 3. Observer skill levels. 16
Table 4. Criteria for assigning daily coverage codes. 16

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

- Badzinski, D.S. and C. M. Francis. 2000.** An evaluation of species coverage by the Canadian Migration Monitoring Network. Prepared by Bird Studies Canada.
- Gahbauer, M.A. and M.-A. R. Hudson. 2004 (revised 2007).** McGill Bird Observatory Field Protocol for Migration Monitoring Program.
- Gustafson, M. E., J. Hildenbrand and L. Metras. 1997.** The North American Bird Banding Manual (Electronic Version). Version 1.0
- Milko, R., L. Dickson, R. Elliot and G. Donaldson. 2003.** Wings over water: Canada’s waterbird conservation plan. Prepared by Environment Canada (Canadian Wildlife Service).
- Pyle, P. 1997.** Identification Guide to North American Birds – Part 1 (*Columbidae to Ploceidae*). Slate Creek Press, Bolinas, California.
- Wojnowski, J.K., G.C. Gibson, A.E. Heagy, B.J. Rodrigues and D.J.T. Hussell. 2000.** Field Protocol for Migration Monitoring at Thunder Cape Bird Observatory. Prepared for Ontario Ministry of Natural Resources.

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

Table of Contents

| | | |
|-----|----------------------|---|
| 1.0 | Introduction | 3 |
| 2.0 | Data Collection..... | 3 |
| 3.1 | Daily Log Sheet..... | 3 |
| 3.2 | Banding Sheet | 5 |
| 3.3 | Recapture Sheet..... | 8 |
| 3.4 | Molt Sheet..... | 8 |

#

#

#

#

#

#

#

#

#

#

#

#

#

#

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 | |
|------|--|

| | |
|---------------------|--|
| DAILY COVERAGE CODE | |
|---------------------|--|

| 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 | |
| Total Birds Recaptured | |
| Total Species Detected | |

| |
|-----------------------------|
| Rare Birds Banded/Observed: |
|-----------------------------|

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

| Species | STANDARD COUNT PERIOD | | | | | | | NON STANDARD COUNT | | | | TOTAL |
|--------------------------------|-----------------------|-------|--------|-----|------|---------|----|--------------------|---------|-------|-------|-------|
| | Band | Recap | Census | VIS | Obs. | Oth VIS | ET | Band + | Recap + | Vis + | Obs + | DST |
| Greater Yellowlegs | | | | | | | | | | | | |
| Lesser Yellowlegs | | | | | | | | | | | | |
| Solitary Sandpiper | | | | | | | | | | | | |
| Spotted Sandpiper | | | | | | | | | | | | |
| Sanderling | | | | | | | | | | | | |
| Semipalmated Sandpiper | | | | | | | | | | | | |
| Least Sandpiper | | | | | | | | | | | | |
| Baird's Sandpiper | | | | | | | | | | | | |
| Pectoral Sandpiper | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Wilson's Snipe | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Bonaparte's Gull | | | | | | | | | | | | |
| Mew Gull | | | | | | | | | | | | |
| Herring Gull | | | | | | | | | | | | |
| Thayer's Gull | | | | | | | | | | | | |
| Arctic Tern | | | | | | | | | | | | |
| Parasitic Jaeger | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Great Horned Owl | | | | | | | | | | | | |
| Northern Hawk Owl | | | | | | | | | | | | |
| Boreal Owl | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Common Nighthawk | | | | | | | | | | | | |
| Belted Kingfisher | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Yellow-bellied Sapsucker | | | | | | | | | | | | |
| Downy Woodpecker | | | | | | | | | | | | |
| Hairy Woodpecker | | | | | | | | | | | | |
| American Three-toed Woodpecker | | | | | | | | | | | | |
| Black-backed Woodpecker | | | | | | | | | | | | |
| Northern Flicker | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Olive-sided Flycatcher | | | | | | | | | | | | |
| Western Wood-Pewee | | | | | | | | | | | | |
| Yellow-bellied Flycatcher | | | | | | | | | | | | |
| Alder Flycatcher | | | | | | | | | | | | |
| Least Flycatcher | | | | | | | | | | | | |
| Hammond's Flycatcher | | | | | | | | | | | | |
| Dusky Flycatcher | | | | | | | | | | | | |
| Say's Phoebe | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Northern Shrike | | | | | | | | | | | | |
| Warbling Vireo | | | | | | | | | | | | |
| Gray Jay | | | | | | | | | | | | |
| Black-billed Magpie | | | | | | | | | | | | |
| Common Raven | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Tree Swallow | | | | | | | | | | | | |
| Violet-green Swallow | | | | | | | | | | | | |
| Bank Swallow | | | | | | | | | | | | |
| Barn Swallow | | | | | | | | | | | | |
| Cliff Swallow | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Black-capped Chickadee | | | | | | | | | | | | |
| Mountain Chickadee | | | | | | | | | | | | |
| Boreal Chickadee | | | | | | | | | | | | |
| Red-breasted Nuthatch | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| SUB-TOTAL | | | | | | | | | | | | |

| | |
|-------------|--|
| Date | |
|-------------|--|

Appendix B – Species Checklist

Table 2. Birds banded and observed (✓) at Teslin Lake Bird Observatory from 2008 to 2012. Note that observations were not collected during the fall of 2005, 2006 and 2007; observatory was located at a different location on Nisutlin Bay during 2005.

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

| SPECIES | 2005 | | 2006 | | 2007 | | 2008 | | 2009 | 2010 | 2011 | 2012 | 2013 | SPRING TOTAL | FALL TOTAL | ALL TIME TOTAL |
|------------------------|--------|------|--------|------|--------|------|--------|------|------|------|------|------|------|-----------------|---------------|-------------------|
| | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Fall | Fall | Fall | Fall | | | | |
| Bufflehead | ✓ | | | | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Common Goldeneye | ✓ | | ✓ | | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Barrow's Goldeneye | | | | | | | ✓ | | ✓ | ✓ | ✓ | | ✓ | - | - | - |
| Hooded Merganser | | | | | | | | | ✓ | ✓ | | ✓ | | - | - | - |
| Common Merganser | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Red-breasted Merganser | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Bald Eagle | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Northern Harrier | ✓ | | ✓ | | ✓ | | 1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 1 | - | 1 |
| Sharp Shinned hawk | ✓ | | ✓ | | 2 | | 1 | 10 | 23 | 14 | 7 | 13 | 6 | 3 | 73 | 76 |
| Northern Goshawk | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Swainson's Hawk | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Red-tailed Hawk | | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Rough-legged Hawk | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Golden Eagle | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| American Kestrel | ✓ | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Merlin | | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | 2 | 1 | ✓ | - | 3 | 3 |
| Gyrfalcon | | | | | | | | | ✓ | ✓ | | ✓ | | - | - | - |
| Peregrine Falcon | | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Osprey | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Ruffed Grouse | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Spruce Grouse | ✓ | | | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Sandhill Crane | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Black-bellied Plover | | | | | | | | | | | ✓ | | | - | - | - |
| American Golden-Plover | | | | | | | ✓ | | | ✓ | ✓ | | ✓ | - | - | - |
| Semipalmated Plover | ✓ | | | | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Killdeer | ✓ | | ✓ | | ✓ | | ✓ | | | ✓ | ✓ | | | - | - | - |
| Greater Yellowlegs | | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | - | - | - |
| Lesser Yellowlegs | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Solitary Sandpiper | ✓ | | ✓ | 2 | ✓ | | ✓ | 2 | 5 | 1 | 3 | 3 | 2✓ | - | 18 | 18 |
| Wandering Tattler | | | | | | | | | | ✓ | | | | - | - | - |
| Spotted Sandpiper | 1 | | 2 | | 1 | | 1 | ✓ | ✓ | 1 | 2 | ✓ | 1✓ | 5 | 4 | 9 |
| Upland Sandpiper | | | | | | | | | | | | | ✓ | - | - | - |
| Black Turnstone | | | | | | | | | | | | ✓ | | - | - | - |
| Sanderling | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | | - | - | - |

| SPECIES | 2005 | | 2006 | | 2007 | | 2008 | | 2009 | 2010 | 2011 | 2012 | 2013 | SPRING TOTAL | FALL TOTAL | ALL TIME TOTAL |
|--------------------------|--------|------|--------|------|--------|------|--------|------|------|------|------|------|------|-----------------|---------------|-------------------|
| | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Fall | Fall | Fall | Fall | | | | |
| Semipalmated Sandpiper | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Western Sandpiper | | | | | | | | | | | ✓ | | - | - | - | |
| Least Sandpiper | | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Baird's Sandpiper | | | | | | | ✓ | ✓ | ✓ | | ✓ | | - | - | - | |
| Pectoral Sandpiper | | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Stilt Sandpiper | | | | | | | | | | | | ✓ | - | - | - | |
| Short-billed Dowitcher | | | | | | | ✓ | | | | | | - | - | - | |
| Long-billed Dowitcher | | | | | | | | ✓ | ✓ | ✓ | ✓ | | - | - | - | |
| Wilson's Snipe | ✓ | | ✓ | | ✓ | | 1 | 1 | 1 | ✓ | ✓ | ✓ | 1 | 2 | 3 | |
| Red-necked Phalarope | | | | | | | | | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Little Gull | | | | | | | | | | ✓ | ✓ | | - | - | - | |
| Mew Gull | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| California Gull | | | | | | | | | | ✓ | | ✓ | - | - | - | |
| Herring Gull | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Thayer's Gull | | | | | | | | | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Glaucous-winged Gull | | | | | | | | | | ✓ | ✓ | | - | - | - | |
| Glaucous Gull | | | | | | | | | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Bonaparte's Gull | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Sabine's Gull | | | | | | | | | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Black-legged Kittiwake | | | | | | | | | | ✓ | | | - | - | - | |
| Arctic Tern | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Parasitic Jaeger | | | | | | | | | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Long-tailed Jaeger | | | | | | | | | | | | ✓ | - | - | - | |
| Great Horned Owl | | | | | | | | | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Northern Hawk Owl | | | | | | | | | | ✓ | ✓ | ✓ | - | - | - | |
| Short-eared Owl | | | ✓ | | | | | | | | ✓ | ✓ | - | - | - | |
| Boreal Owl | | | | | | | | | | | 4 | | - | 4 | 4 | |
| Common Nighthawk | | | | | | | | | ✓ | ✓ | ✓ | ✓ | - | - | - | |
| Pacific Swift | | | | | | | | | | | ✓ | | - | - | - | |
| Rufous Hummingbird | | | | | ✓ | | | | | | | | - | - | - | |
| Belted Kingfisher | ✓ | | ✓ | 8 | ✓ | | ✓ | 8 | 6 | 5 | 6 | 6 | 2 | 41 | 41 | |
| Yellow-bellied Sapsucker | 2 | | 2 | | 2 | | 1 | | ✓ | | 3 | 1 | 1 | 7 | 5 | 12 |
| Downy Woodpecker | ✓ | | ✓ | | | | | | 2 | 1 | 3 | 7 | - | 13 | 13 | |
| Hairy Woodpecker | 2 | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 2 | - | 2 | |

| SPECIES | 2005 | | 2006 | | 2007 | | 2008 | | 2009 | 2010 | 2011 | 2012 | 2013 | SPRING | FALL | ALL TIME |
|---------------------------|--------|------|--------|------|--------|------|--------|------|------|------|------|------|------|--------|-------|----------|
| | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Fall | Fall | Fall | Fall | Fall | TOTAL | TOTAL | TOTAL |
| Three-toed Woodpecker | ✓ | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | 1 | - | 1 | 1 |
| Black-backed Woodpecker | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Northern Flicker | 1 | | ✓ | | 1 | | ✓ | ✓ | ✓ | 1 | 1 | ✓ | 3 | 2 | 7 | 9 |
| Pileated Woodpecker | ✓ | | | | | | | | | | | | | - | - | - |
| Olive-sided Flycatcher | ✓ | | 11 | | ✓ | | 6 | | ✓ | ✓ | 1 | ✓ | ✓ | 17 | 1 | 18 |
| Western Wood-pewee | 3 | | 2 | | 2 | | ✓ | 3 | 6 | 5 | 10 | 3 | 4 | 7 | 31 | 38 |
| Yellow-bellied Flycatcher | 2 | 2 | 1 | | 1 | | | 9 | 8 | 11 | 7 | 9 | 11 | 4 | 57 | 61 |
| Alder Flycatcher | 17 | 9 | 41 | 18 | 10 | 5 | 9 | 811 | 631 | 620 | 637 | 827 | 770 | 77 | 4328 | 4405 |
| Least Flycatcher | 3 | | 4 | | 3 | | 2 | 2 | 1 | 3 | 10 | 3 | 6 | 12 | 25 | 37 |
| Hammond's Flycatcher | 7 | | 5 | | 11 | | 18 | 6 | 12 | 17 | 28 | 7 | 12 | 41 | 82 | 123 |
| Dusky Flycatcher | 2 | | | | 2 | | | 1 | 6 | 3 | 6 | 3 | 3 | 4 | 22 | 26 |
| Pacific-slope Flycatcher | | | | | | | | | | | | 1 | | - | 1 | 1 |
| Eastern Phoebe | | | 1 | | | | | | | | | | | 1 | - | 1 |
| Say's Phoebe | | | 2 | | 2 | | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ | 5 | 3 | 8 |
| Northern Shrike | ✓ | | | | | | | | ✓ | 1 | 1 | 1 | 1 | - | 4 | 4 |
| Warbling Vireo | 13 | | 1 | 4 | ✓ | | 1 | 9 | 10 | 19 | 17 | 15 | 48 | 15 | 122 | 137 |
| Gray Jay | 5 | | ✓ | | 1 | | ✓ | | 5 | 4 | ✓ | ✓ | ✓ | 6 | 9 | 15 |
| Steller's Jay | | | | | | | | | | | ✓ | | | - | - | - |
| Black-billed Magpie | | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Common Raven | ✓ | | ✓ | | ✓ | | ✓ | ✓ | 1 | 1 | ✓ | ✓ | ✓ | - | 2 | 2 |
| Horned Lark | | | 3 | | ✓ | | ✓ | | ✓ | ✓ | | | | 3 | - | 3 |
| Tree Swallow | 5 | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 5 | - | 5 |
| Violet-green Swallow | ✓ | | ✓ | | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ | | - | - | - |
| Bank Swallow | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Cliff Swallow | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Barn Swallow | ✓ | | ✓ | | ✓ | | | ✓ | 1 | ✓ | ✓ | ✓ | ✓ | - | 1 | 1 |
| Black-capped Chickadee | ✓ | 4 | 4 | 3 | 2 | | 2 | 57 | 26 | 22 | 92 | 65 | 31 | 8 | 300 | 308 |
| Mountain Chickadee | | | | | | | 2 | 15 | 11 | | 2 | 1 | ✓ | 2 | 29 | 31 |
| Chestnut-backed Chickadee | | | | | | | | 1 | | | ✓ | | | - | 1 | 1 |
| Boreal Chickadee | 2 | | 3 | | 2 | | 8 | 138 | 831 | ✓ | 233 | 142 | 23 | 15 | 1367 | 1382 |
| Hybrid Chickadee | | | 1 | | | | | 1 | | | | | | 1 | 1 | 2 |
| Red-breasted Nuthatch | ✓ | | | | ✓ | | 1 | 3 | 2 | 2 | 5 | 12 | 6 | 1 | 30 | 31 |
| Brown Creeper | | | | | | | | | | | ✓ | | | - | - | - |
| Winter Wren | 1 | | | | | | | | | | ✓ | | | 1 | - | 1 |

| SPECIES | 2005 | | 2006 | | 2007 | | 2008 | | 2009 | 2010 | 2011 | 2012 | 2013 | SPRING TOTAL | FALL TOTAL | ALL TIME TOTAL |
|------------------------|--------|------|--------|------|--------|------|--------|------|------|------|------|------|------|-----------------|---------------|-------------------|
| | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Fall | Fall | Fall | Fall | | | | |
| Golden-crowned Kinglet | | 1 | | | | | ✓ | | 10 | 2 | 1 | 3 | 1 | - | 18 | 18 |
| Ruby-crowned Kinglet | 25 | 7 | 51 | 3 | 27 | | 72 | 29 | 175 | 109 | 86 | 134 | 125 | 175 | 668 | 843 |
| Mountain Bluebird | ✓ | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Townsend's Solitaire | | | | | | | | ✓ | 1 | ✓ | 1 | 1 | ✓ | - | 3 | 3 |
| Gray-cheeked Thrush | 4 | 2 | 2 | | 5 | | 1 | 1 | 2 | 8 | 2 | 4 | 2 | 12 | 21 | 33 |
| Swainson's Thrush | 99 | 7 | 39 | 10 | 48 | | 21 | 19 | 49 | 53 | 85 | 41 | 55 | 207 | 319 | 526 |
| Hermit Thrush | 1 | | 1 | | ✓ | | 1 | 1 | 7 | 12 | 12 | 3 | 2 | 3 | 35 | 40 |
| American Robin | 27 | 1 | 36 | 5 | 17 | | 4 | ✓ | 27 | 9 | 11 | ✓ | 4 | 84 | 57 | 141 |
| Varied Thrush | ✓ | | 1 | | 2 | | ✓ | 3 | 12 | 5 | 2 | 2 | 5 | 3 | 29 | 32 |
| European Starling | | | | | | | ✓ | | | | | | | - | - | - |
| American Pipit | ✓ | | 2 | | ✓ | | 1 | 1 | 3 | ✓ | 2 | ✓ | 2 | 3 | 8 | 11 |
| Bohemian Waxwing | ✓ | | 40 | | ✓ | | 23 | ✓ | ✓ | ✓ | 1 | ✓ | ✓ | 63 | 1 | 64 |
| Cedar Waxwing | | | | | | | | | ✓ | 2 | | | 8 | - | 10 | 10 |
| Lapland Longspur | ✓ | | ✓ | | ✓ | | 5 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 5 | - | 5 |
| Smith's Longspur | | | | | | | | | ✓ | | | | ✓ | - | - | - |
| Snow Bunting | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | - | - | - |
| Northern Waterthrush | 4 | 1 | 14 | 10 | 11 | | 4 | 46 | 53 | 54 | 42 | 47 | 46 | 33 | 299 | 332 |
| Tennessee Warbler | 4 | | 4 | | 6 | | 2 | | 9 | 40 | 4 | 1 | 1 | 16 | 55 | 71 |
| Orange-crowned Warbler | 16 | 6 | 26 | 1 | 47 | | 61 | 101 | 180 | 271 | 57 | 88 | 124 | 150 | 828 | 978 |
| Nashville Warbler | | | | | | | | 1 | | | | 1 | | - | 2 | 2 |
| MacGillvary's Warbler | 1 | | 1 | | | | | 1 | 3 | 2 | | 1 | 1 | 2 | 8 | 10 |
| Common Yellowthroat | 1 | | 17 | 4 | 11 | 6 | 21 | 66 | 113 | 70 | 72 | 45 | 65 | 50 | 441 | 491 |
| American Redstart | | | 6 | 4 | 1 | | | 10 | 43 | 30 | 39 | 21 | 33 | 7 | 180 | 187 |
| Cape May Warbler | | | | | | | 1 | | | | | 1 | | 1 | 1 | 2 |
| Magnolia Warbler | 1 | | | | | | | 1 | | | ✓ | 1 | 1 | 1 | 3 | 4 |
| Yellow Warbler | 10 | 6 | 50 | 19 | 37 | 3 | 31 | 486 | 325 | 471 | 310 | 225 | 333 | 128 | 2178 | 2306 |
| Blackpoll Warbler | 3 | 2 | 21 | 4 | 10 | | 5 | 47 | 107 | 194 | 58 | 87 | 87 | 39 | 586 | 635 |
| Myrtle Warbler | 60 | 3 | 63 | 5 | 29 | | 78 | 49 | 284 | 673 | 142 | 195 | 163 | 230 | 1514 | 1581 |
| Audubon's Warbler | | | | | | | | | | ✓ | 1 | | | - | 1 | 1 |
| Yellow-rumped Warbler | | | | | | | 1 | 1 | | | | | | 1 | 1 | 2 |
| Townsend's Warbler | | | ✓ | | | | 1 | ✓ | 8 | 10 | 6 | 6 | 7 | 1 | 37 | 38 |
| Wilson's Warbler | 116 | 8 | 54 | 5 | 63 | | 151 | 113 | 161 | 177 | 133 | 134 | 122 | 384 | 853 | 1237 |
| American-tree Sparrow | 220 | | 13 | 1 | 72 | | 41 | 19 | 54 | 21 | 77 | 17 | 19 | 346 | 208 | 554 |
| Chipping Sparrow | 28 | | 4 | 1 | 6 | | 3 | 6 | 24 | 18 | 28 | 17 | 20 | 41 | 114 | 155 |

| SPECIES | 2005 | | 2006 | | 2007 | | 2008 | | 2009 | 2010 | 2011 | 2012 | 2013 | SPRING | FALL | ALL TIME |
|-----------------------------|-------------|-----------|------------|------------|-------------|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|--------------|---------------|
| | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Fall | Fall | Fall | Fall | Fall | TOTAL | TOTAL | TOTAL |
| Brewer's Sparrow | | | | 1 | | | | | 1 | | 2 | | | - | 4 | 4 |
| Savannah Sparrow | 11 | 2 | 2 | 2 | 24 | | 10 | 14 | 18 | 18 | 23 | 25 | 18 | 47 | 120 | 167 |
| Fox Sparrow | 106 | | 3 | | 17 | | 26 | 11 | 28 | 28 | 17 | 6 | 7 | 152 | 97 | 249 |
| Song Sparrow | | | | | | | | | | 1 | | | | - | 1 | 1 |
| Lincoln's Sparrow | 9 | 1 | 6 | | 39 | | 21 | 5 | 16 | 15 | 27 | 9 | 9 | 75 | 82 | 157 |
| Swamp Sparrow | | | | | | | | | | 1 | | | | - | 1 | 1 |
| White-throated Sparrow | | | ✓ | | 1 | | | | | | | | | 1 | - | 1 |
| White-crowned Sparrow | 86 | 3 | 13 | | 579 | | 311 | 1 | 33 | 36 | 34 | 22 | 16 | 989 | 145 | 1134 |
| Golden-crowned Sparrow | 1 | | | | 16 | | 9 | | | | | | 1 | 26 | 1 | 26 |
| Slate-colored Junco | 165 | 12 | 139 | 5 | 135 | | 224 | 182 | 582 | 420 | 331 | 116 | 341 | 663 | 1989 | 2652 |
| Dark-eyed Junco | | | | | 9 | | 31 | 11 | ✓ | ✓ | ✓ | ✓ | | 40 | 11 | 51 |
| Western Tanager | | | 1 | | | | | | 1 | | ✓ | ✓ | | 1 | 1 | 2 |
| Red-winged Blackbird | ✓ | | 1 | | 1 | | ✓ | | ✓ | | ✓ | ✓ | ✓ | 2 | - | 2 |
| Rusty Blackbird | 19 | | 3 | | 2 | 1 | ✓ | 11 | 30 | 20 | 16 | 9 | 14 | 24 | 101 | 125 |
| Brown-headed Cowbird | 1 | | ✓ | | ✓ | | ✓ | | | ✓ | 1 | | ✓ | 1 | 1 | 2 |
| Pine Grosbeak | | | 2 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 2 | - | 2 |
| Purple Finch | 27 | | 3 | | 6 | | 1 | ✓ | ✓ | 10 | 1 | 2 | 1 | 37 | 14 | 51 |
| Red Crossbill | 3 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 3 | - | 3 |
| White-winged Crossbill | | | 5 | | | | | 2 | 2 | 100 | 1 | 2 | 5 | 5 | 112 | 117 |
| Common Redpoll | ✓ | | 107 | | 1 | | 22 | ✓ | 6 | 1 | 75 | 47 | ✓ | 130 | 129 | 259 |
| Hoary Redpoll | | | | | 3 | | | | | | 2 | | | 3 | 2 | 5 |
| Pine Siskin | 28 | | 1 | | | | ✓ | 1 | 1 | 91 | 10 | 3 | 8 | 29 | 114 | 143 |
| TOTAL SPECIES BANDED | 43 | 18 | 48 | 21 | 43 | 4 | 45 | 48 | 53 | 52 | 57 | 51 | 51 | 70 | 76 | 89 |
| TOTAL BIRDS BANDED | 1142 | 77 | 814 | 115 | 1267 | 15 | 1238 | 2319 | 3956 | 3706 | 2793 | 2429 | 2,577 | 4461 | 15413 | 22,451 |

Appendix C – Daily Species Total Summary

| Species | ALL OBS | | First Date | Last Date | HIGH COUNT | | Median Date | All Visual Migrants | Total Observed on Lake Counts |
|------------------------------------|-----------|-----------|------------|-----------|------------|-----------------|-------------|---------------------|-------------------------------|
| | # of Days | Bird Days | | | # | Date | | | |
| Red-throated Loon | 40 | 157 | 25-Jul | 1-Oct | 29 | 11-Sep | 11-Sep | 18 | 139 |
| Pacific Loon | 40 | 1389 | 31-Jul | 5-Oct | 1025 | 23-Sep | 23-Sep | 1312 | 77 |
| Common Loon | 65 | 213 | 25-Jul | 31-Oct | 14 | 21-Sep | 2-Sep | 18 | 195 |
| <i>Common / Yellow-billed Loon</i> | 5 | 7 | 26-Sep | 12-Oct | 2 | 26 Sep / 12 Oct | - | 7 | |
| <i>Unidentified Loon</i> | 7 | 12 | 26-Aug | 16-Oct | 3 | 7-Oct | - | 12 | |
| Horned Grebe | 28 | 70 | 11-Aug | 11-Oct | 14 | 14-Sep | 14-Sep | 5 | 65 |
| Red-necked Grebe | 78 | 1136 | 29-Jul | 19-Oct | 71 | 20-Aug | 31-Aug | 46 | 1090 |
| Greater White-fronted Goose | 18 | 1351 | 17-Aug | 22-Sep | 628 | 27-Aug | 27-Aug | 1351 | |
| Snow Goose | 3 | 135 | 21-Sep | 10-Oct | 116 | 24-Sep | - | 135 | |
| Canada Goose | 22 | 1252 | 28-Aug | 10-Oct | 394 | 22-Sep | 22-Sep | 1198 | 54 |
| <i>Canada / Cackling Goose</i> | 1 | 1 | 7-Oct | - | 1 | 7-Oct | - | 1 | |
| <i>Unidentified Goose</i> | 6 | 151 | 26-Aug | 24-Sep | 61 | 24-Sep | - | 151 | |
| Trumpeter Swan | 10 | 709 | 6-Oct | 31-Oct | 215 | 11-Oct | 11-Oct | 705 | 1 |
| Tundra Swan | 19 | 2294 | 14-Sep | 18-Oct | 521 | 10-Oct | 7-Oct | 2294 | 0 |
| <i>Tundra / Trumpeter Swan</i> | 15 | 745 | 24-Sep | 19-Oct | 163 | 10-Oct | - | 745 | |
| American Wigeon | 83 | 4 | 12-Sep | 6-Oct | 44 | 13-Sep | - | 72 | - |
| Mallard | 30 | 404 | 27-Jul | 19-Oct | 78 | 11-Oct | 26-Sep | 359 | 45 |
| Northern Shoveler | 7 | 24 | 11-Aug | 11-Oct | 13 | 12-Aug | - | 23 | 1 |
| Northern Pintail | 9 | 127 | 12-Aug | 6-Oct | 70 | 14-Aug | - | 127 | |
| American Green-winged Teal | 20 | 5 | 5-Aug | 10-Oct | 15 | 12-Oct | - | 19 | 1 |
| <i>Unidentified Dabbling Duck</i> | 3 | 18 | 5-Aug | 9-Sep | 8 | 10-Aug | - | 18 | |
| Canvasback | 11 | 210 | 27-Sep | 14-Oct | 44 | 29-Sep | 4-Oct | 210 | |
| Ring-necked Duck | 4 | 15 | 21-Sep | 11-Oct | 6 | 6-Oct | - | 15 | |
| Greater Scaup | 7 | 38 | 29-Sep | 19-Oct | 17 | 19-Oct | - | 38 | |
| Lesser Scaup | 24 | 511 | 30-Jul | 19-Oct | 112 | 10-Oct | 1-Oct | 474 | 37 |
| <i>Greater / Lesser Scaup</i> | 3 | 122 | 28-Sep | 8-Oct | 75 | 6-Oct | - | 122 | |
| Harlequin Duck | 2 | 4 | 10-Sep | 11-Oct | 3 | 11-Oct | - | 3 | 1 |
| Surf Scoter | 23 | 293 | 28-Jul | 9-Oct | 60 | 10-Aug | 14-Aug | 243 | 50 |

| Species | ALL OBS | | First Date | Last Date | HIGH COUNT | | Median Date | All Visual Migrants | Total Observed on Lake Counts |
|--|-----------|-----------|------------|-----------|------------|-----------|-------------|---------------------|-------------------------------|
| | # of Days | Bird Days | | | # | Date | | | |
| White-winged Scoter | 9 | 48 | 7-Aug | 11-Oct | 12 | 10-Oct | - | 45 | 3 |
| Long-tailed Duck | 4 | 44 | 14-Sep | 11-Oct | 27 | 11-Oct | - | 31 | 13 |
| Bufflehead | 1 | 1 | 8-Oct | - | 1 | 8-Oct | - | 1 | |
| Common Goldeneye | 7 | 73 | 19-Sep | 15-Oct | 37 | 12-Oct | - | 72 | 1 |
| Barrow's Goldeneye | 2 | 8 | 12-Oct | 18-Oct | 5 | 12-Oct | - | 8 | 0 |
| <i>Common / Barrow's Goldeneye</i> | 6 | 36 | 10-Sep | 7-Oct | 22 | 2-Oct | - | 35 | 1 |
| Common Merganser | 16 | 147 | 25-Jul | 9-Oct | 38 | 9-Oct | - | 131 | 16 |
| Red-breasted Merganser | 51 | 256 | 25-Jul | 19-Oct | 45 | 31-Aug | 31-Aug | 33 | 223 |
| <i>Common / Red-breasted Merganser</i> | 5 | 29 | 5-Aug | 16-Oct | 20 | 5-Aug | - | 8 | 21 |
| <i>Unidentified Duck</i> | 11 | 129 | 14-Sep | 12-Oct | 30 | 18-Sep | - | 76 | 53 |
| Bald Eagle | 64 | 161 | 26-Jul | 31-Oct | 30 | 21/24 Sep | 22-Sep | 95 | - |
| Northern Harrier | 47 | 305 | 17-Aug | 15-Oct | 32 | 19-Sep | 24-Sep | 307 | |
| Sharp-shinned Hawk | 53 | 854 | 17-Aug | 15-Oct | 187 | 22-Sep | 23-Sep | 830 | |
| Northern Goshawk | 14 | 18 | 20-Aug | 15-Oct | 4 | 7-Oct | - | 4 | |
| Swainson's Hawk | 2 | 3 | 27-Aug | 2-Sep | 2 | 27-Aug | - | 3 | |
| Red-tailed Hawk | 40 | 447 | 17-Aug | 31-Oct | 49 | 27-Aug | 24-Sep | 432 | |
| Rough-legged Hawk | 20 | 126 | 18-Sep | 12-Oct | 23 | 7-Oct | 5-Oct | 126 | |
| <i>Unidentified Buteo</i> | 11 | 65 | 15-Sep | 9-Oct | 34 | 30-Sep | - | 65 | |
| Golden Eagle | 27 | 293 | 27-Aug | 31-Oct | 86 | 9-Oct | 5-Oct | 293 | |
| <i>Bald / Golden Eagle</i> | 4 | 4 | 17-Sep | 7-Oct | 1 | all days | - | 4 | |
| American Kestrel | 168 | 37 | 9-Aug | 11-Oct | 19 | 22-Sep | 24-Sep | 166 | - |
| Merlin | 31 | 76 | 10-Aug | 12-Oct | 9 | 30-Sep | 22-Sep | 57 | |
| Peregrine Falcon | 17 | 51 | 27-Aug | 30-Sep | 11 | 18-Sep | 19-Sep | 49 | |
| <i>Merlin / American Kestrel</i> | 1 | 1 | 6-Oct | - | 1 | 6-Oct | - | 1 | |
| <i>Unidentified Falcon</i> | 3 | 3 | 8-Sep | 29-Sep | 1 | all days | - | 2 | |
| Osprey | 27 | 77 | 7-Aug | 7-Oct | 11 | 22-Sep | 20-Sep | 70 | |
| <i>Unidentified Large Raptor</i> | 3 | 3 | 2-Sep | 6-Oct | 1 | all days | - | 3 | |
| <i>Unidentified Small Raptor</i> | 1 | 1 | 7-Oct | - | 1 | 7-Oct | - | 1 | |

| Species | ALL OBS | | First Date | Last Date | HIGH COUNT | | Median Date | All Visual Migrants | Total Observed on Lake Counts |
|--------------------------------------|-----------|-----------|------------|-----------|------------|-----------|-------------|---------------------|-------------------------------|
| | # of Days | Bird Days | | | # | Date | | | |
| Ruffed Grouse | 67 | 177 | 25-Jul | 18-Oct | 9 | 15-Aug | - | 0 | |
| Spruce Grouse | 3 | 3 | 30-Jul | 30-Sep | 1 | all days | - | 0 | |
| Sandhill Crane | 6 | 281 | 23-Sep | 10-Oct | 111 | 30-Sep | - | 281 | |
| American Golden Plover | 2 | 2 | 3-Aug | 14-Aug | 1 | both days | - | 1 | 1 |
| Semi-palmated Plover | 15 | 27 | 28-Jul | 28-Aug | 5 | 13-Aug | 13-Aug | 11 | 16 |
| Greater Yellowlegs | 1 | 1 | 29-Jul | - | 1 | 29-Jul | - | 0 | 1 |
| Lesser Yellowlegs | 9 | 15 | 25-Jul | 19-Aug | 4 | 27-Jul | 29-Jul | 11 | 4 |
| Solitary Sandpiper | 16 | 17 | 27-Jul | 6-Sep | 2 | 31-Jul | 7-Aug | 2 | |
| Spotted Sandpiper | 46 | 192 | 25-Jul | 23-Sep | 14 | 2, 8 Aug | 8-Aug | 6 | 186 |
| Upland Sandpiper | 1 | 1 | 20-Aug | - | 1 | 20-Aug | - | 1 | |
| Least Sandpiper | 20 | 59 | 27-Jul | 22-Aug | 20 | 14-Aug | 14-Aug | 27 | 32 |
| Semi-palmated Sandpiper | 5 | 10 | 27-Jul | 14-Aug | 3 | 8-Aug | - | 1 | 9 |
| <i>Unidentified 'Peep' sandpiper</i> | 3 | 13 | 7-Aug | 31-Aug | 8 | 7-Aug | - | 13 | |
| Baird's Sandpiper | 1 | 1 | 25-Aug | - | 1 | 25-Aug | - | 1 | - |
| Pectoral Sandpiper | 11 | 33 | 25-Aug | 1-Oct | 13 | 19-Sep | - | 29 | 4 |
| Stilt Sandpiper | 1 | 3 | 14-Aug | - | 3 | 14-Aug | - | 3 | |
| Wilson's Snipe | 3 | 4 | 28-Aug | 21-Sep | 2 | 21-Sep | - | 4 | |
| Red-necked Phalarope | 4 | 15 | 3-Aug | 2-Sep | 7 | 30-Aug | - | 14 | 1 |
| <i>Unidentified Shorebird</i> | 4 | 31 | 6-Aug | 24-Sep | 18 | 25-Aug | - | 31 | |
| Mew Gull | 45 | 429 | 25-Jul | 15-Oct | 30 | 1-Sep | 26-Aug | 22 | 407 |
| Ring-billed Gull | 6 | 6 | 3-Sep | 9-Sep | 1 | all days | - | 0 | |
| Herring Gull | 86 | 2608 | 25-Jul | 31-Oct | 100 | 26-Jul | - | 0 | 2608 |
| Thayer's Gull | 54 | 274 | 3-Aug | 19-Oct | 55 | 18-Sep | 18-Sep | 147 | 127 |
| Glaucous Gull | 13 | 13 | 18-Sep | 11-Oct | 1 | all days | - | 0 | 13 |
| <i>Unidentified Large Gull</i> | 2 | 15 | 14-Sep | 18-Sep | 14 | 18-Sep | - | 14 | 1 |
| Bonaparte's Gull | 18 | 66 | 26-Jul | 5-Oct | 13 | 11-Aug | 11-Aug | 28 | 38 |
| Sabine's Gull | 11 | 14 | 26-Aug | 5-Sep | 2 | many days | - | 0 | |
| <i>Unidentified Gull</i> | 2 | 7 | 4-Aug | 15-Sep | 5 | 15-Sep | - | 2 | 5 |

| Species | ALL OBS | | First Date | Last Date | HIGH COUNT | | Median Date | All Visual Migrants | Total Observed on Lake Counts |
|--|-----------|-----------|------------|-----------|------------|--------------|-------------|---------------------|-------------------------------|
| | # of Days | Bird Days | | | # | Date | | | |
| Arctic Tern | 549 | 42 | 25-Jul | 7-Sep | 48 | 5-Aug | 11-Aug | 180 | 369 |
| Parasitic Jaeger | 25 | 53 | 24-Aug | 23-Sep | 6 | 11-Sep | 7-Sep | 0 | 53 |
| Long-tailed Jaeger | 2 | 2 | 11-Sep | 12-Sep | 1 | both days | - | 1 | 1 |
| Northern Hawk-owl | 1 | 1 | 19-Sep | - | 1 | 19-Sep | - | 1 | |
| Common Nighthawk | 3 | 9 | 25-Aug | 10-Sep | 4 | 25/27 Aug | - | 9 | |
| Belted Kingfisher | 33 | 38 | 25-Jul | 7-Oct | 2 | many days | - | 2 | 36 |
| Yellow-bellied Sapsucker | 1 | 1 | 30-Aug | - | 1 | 30-Aug | - | 0 | |
| Hairy Woodpecker | 3 | 3 | 30-Aug | 11-Oct | 1 | all days | - | 0 | |
| American Three-toed Woodpecker | 12 | 10 | 6-Sep | 15-Oct | 2 | 6-Sep/15-Oct | - | 6 | - |
| Black-backed Woodpecker | 2 | 3 | 11-Sep | 12-Oct | 2 | 11-Sep | - | 2 | - |
| Northern Flicker | 12 | 15 | 30-Jul | 3-Oct | 2 | many days | - | 3 | |
| <i>Unidentified Woodpecker</i> | 1 | 1 | 3-Sep | - | 1 | 3-Sep | - | 1 | |
| Olive-sided Flycatcher | 1 | 1 | 12-Aug | - | 1 | 12-Aug | - | 0 | |
| Western Wood-Pewee | 5 | 8 | 14-Aug | 28-Aug | 2 | many days | - | 1 | |
| Yellow-bellied Flycatcher | 8 | 12 | 11-Aug | 26-Aug | 2 | many days | 19-Aug | 0 | |
| Alder Flycatcher | 802 | 50 | 27-Jul | 25-Sep | 118 | 28-Aug | 24-Aug | 0 | - |
| Least Flycatcher | 6 | 6 | 4-Aug | 19-Aug | 1 | all days | - | 0 | |
| Hammond's Flycatcher | 11 | 14 | 28-Jul | 23-Sep | 2 | 5,19,22 Aug | 17-Aug | 0 | |
| Dusky Flycatcher | 3 | 3 | 23-Aug | 12-Sep | 1 | all days | - | 0 | |
| <i>Unidentified Empidonax flycatcher</i> | 1 | 1 | 8-Aug | - | 1 | 8-Aug | - | 1 | |
| Say's Phoebe | 2 | 2 | 22-Aug | 14-Sep | 1 | both days | - | 1 | |
| Northern Shrike | 1 | 1 | 31-Jul | - | 1 | 31-Jul | - | 0 | |
| Warbling Vireo | 36 | 113 | 25-Jul | 7-Sep | 10 | 26-Jul | 8-Aug | 2 | |
| Gray Jay | 16 | 30 | 7-Aug | 31-Oct | 3 | many days | - | 0 | |
| Black-billed Magpie | 42 | 52 | 31-Aug | 31-Oct | 3 | 1/2 Oct | - | 0 | - |
| Common Raven | 85 | 345 | 26-Jul | 31-Oct | 14 | 22-Sep | - | 0 | |
| Tree Swallow | 2 | 3 | 28-Jul | 30-Jul | 2 | 28-Jul | - | 1 | |
| Bank Swallow | 14 | 104 | 11-Aug | 3-Sep | 60 | 13-Aug | - | 104 | - |

| Species | ALL OBS | | First Date | Last Date | HIGH COUNT | | Median Date | All Visual Migrants | Total Observed on Lake Counts |
|---------------------------------------|-----------|-----------|------------|-----------|------------|-----------|-------------|---------------------|-------------------------------|
| | # of Days | Bird Days | | | # | Date | | | |
| Cliff Swallow | 7 | 16 | 30-Jul | 23-Aug | 6 | 5-Aug | - | 16 | |
| Barn Swallow | 3 | 6 | 12-Aug | 5-Sep | 3 | 23-Aug | - | 6 | - |
| <i>Unidentified Swallow</i> | 14 | 134 | 5-Aug | 5-Sep | 45 | 5-Aug | - | 134 | |
| Black-capped Chickadee | 77 | 209 | 25-Sep | 17-Oct | 10 | 26-Jul | - | 0 | - |
| Mountain Chickadee | 1 | 1 | 31-Aug | - | 1 | 31-Aug | - | 0 | |
| Boreal Chickadee | 22 | 40 | 28-Jul | 15-Oct | 4 | 3/11 Oct | - | 5 | |
| Red-breasted Nuthatch | 24 | 33 | 25-Jul | 8-Sep | 5 | 29-Aug | 22-Aug | 2 | |
| Golden-crowned Kinglet | 2 | 2 | 5-Sep | 30-Sep | 1 | both days | - | 0 | |
| Ruby-crowned Kinglet | 49 | 183 | 26-Jul | 11-Oct | 19 | 19-Sep | 20-Sep | 0 | |
| Mountain Bluebird | 4 | 18 | 18-Sep | 3-Oct | 8 | 18-Sep | - | 18 | |
| Townsend's Solitaire | 18 | 64 | 15-Aug | 15-Oct | 11 | 22-Sep | 7-Sep | 63 | |
| Gray-cheeked Thrush | 2 | 2 | 14-Aug | 2-Oct | 1 | both days | - | 0 | |
| Swainson's Thrush | 33 | 72 | 25-Jul | 12-Sep | 8 | 23-Aug | 22-Aug | 0 | |
| Hermit Thrush | 2 | 2 | 4-Aug | 2-Oct | 1 | both days | - | 0 | |
| <i>Unidentified Catharus thrush</i> | 1 | 1 | 16-Aug | - | 1 | 16-Aug | - | 1 | |
| American Robin | 5923 | 58 | 25-Jul | 11-Oct | 3135 | 22-Sep | 22-Sep | 5863 | - |
| Varied Thrush | 28 | 1242 | 29-Aug | 7-Oct | 380 | 22-Sep | 19-Sep | 1225 | |
| <i>Varied Thrush / American Robin</i> | 28 | 7774 | 30-Aug | 4-Oct | 3445 | 19-Sep | - | 7774 | |
| American Pipit | 540 | 53 | 12-Aug | 16-Oct | 59 | 27-Sep | 19-Sep | 453 | - |
| Bohemian Waxwing | 25 | 935 | 15-Aug | 31-Oct | 215 | 4-Oct | 4-Oct | 549 | |
| Cedar Waxwing | 43 | 118 | 25-Jul | 23-Sep | 12 | 17-Aug | 21-Aug | 0 | |
| <i>Bohemian / Cedar Waxwing</i> | 6 | 136 | 7-Aug | 21-Sep | 55 | 20-Aug | - | 81 | |
| Lapland Longspur | 16 | 28 | 28-Aug | 7-Oct | 3 | many days | 12-Sep | 28 | |
| Smith's Longspur | 1 | 1 | 8-Aug | - | 1 | 8-Aug | - | 1 | |
| Snow Bunting | 2 | 3 | 1-Oct | 12-Oct | 2 | 1-Oct | - | 3 | |
| Tennessee Warbler | 1 | 1 | 29-Jul | - | 1 | 29-Jul | - | 0 | |
| Orange-crowned Warbler | 47 | 166 | 29-Jul | 6-Oct | 22 | 28-Aug | 2-Sep | 6 | |
| Yellow Warbler | 63 | 522 | 25-Jul | 6-Oct | 46 | 26-Aug | 23-Aug | 39 | |

| Species | ALL OBS | | First Date | Last Date | HIGH COUNT | | Median Date | All Visual Migrants | Total Observed on Lake Counts |
|-------------------------------------|-----------|-----------|------------|-----------|------------|----------------|-------------|---------------------|-------------------------------|
| | # of Days | Bird Days | | | # | Date | | | |
| Magnolia Warbler | 1 | 1 | 30-Aug | - | 1 | 30-Aug | - | 0 | |
| Myrtle Warbler | 76 | 1126 | 26-Jul | 13-Oct | 157 | 30-Aug | 31-Aug | 743 | |
| Townsend's Warbler | 10 | 11 | 25-Jul | 25-Sep | 2 | 23-Aug | - | 2 | |
| Blackpoll Warbler | 41 | 175 | 26-Jul | 17-Sep | 13 | 13-Aug | 17-Aug | 55 | |
| American Redstart | 62 | 30 | 25-Jul | 11-Sep | 4 | 25/29 Jul | 10-Aug | 1 | - |
| Northern Waterthrush | 30 | 54 | 25-Jul | 5-Oct | 6 | 9, 12 Aug | 12-Aug | 0 | |
| Common Yellowthroat | 42 | 84 | 26-Jul | 30-Sep | 6 | 28-Aug | 25-Aug | 0 | |
| MacGillivray's Warbler | 1 | 1 | 8-Aug | - | 1 | 8-Aug | - | 0 | |
| Wilson's Warbler | 48 | 139 | 28-Jul | 12-Oct | 9 | 13-Aug | 20-Aug | 0 | |
| <i>Unidentified Warbler</i> | 20 | 73 | 5-Aug | 18-Oct | 15 | 30-Aug | - | 73 | |
| American Tree Sparrow | 40 | 20 | 28-Jul | 11-Oct | 8 | 5-Oct | 1-Oct | 0 | - |
| Chipping Sparrow | 24 | 49 | 26-Jul | 4-Sep | 7 | 31-Jul | 9-Aug | 15 | |
| Savannah Sparrow | 27 | 40 | 25-Jul | 25-Sep | 4 | 29-Aug | 29-Aug | 8 | |
| Fox Sparrow | 8 | 10 | 20-Aug | 11-Oct | 2 | 28 Aug/22 Sep | - | 0 | |
| Lincoln's Sparrow | 10 | 10 | 25-Jul | 19-Sep | 1 | all days | 23-Aug | 0 | |
| White-crowned Sparrow | 16 | 23 | 10-Aug | 2-Oct | 3 | 22-Aug | 26-Aug | 0 | |
| Golden-crowned Sparrow | 1 | 1 | 6-Sep | - | 1 | 6-Sep | - | 0 | |
| Slate-colored Junco | 75 | 568 | 25-Jul | 11-Oct | 75 | 13-Sep | 10-Sep | 9 | |
| <i>Unidentified Sparrow</i> | 4 | 8 | 18-Aug | 3-Oct | 4 | 3-Oct | - | 11 | |
| Red-winged Blackbird | 11 | 13 | 27-Jul | 14-Aug | 2 | 2, 6 Aug | - | 1 | 12 |
| Rusty Blackbird | 49 | 1584 | 19-Aug | 19-Oct | 296 | 1-Oct | 24-Sep | 1142 | 442 |
| Brown-headed Cowbird | 1 | 1 | 13-Aug | - | 1 | 13-Aug | - | 0 | |
| Pine Grosbeak | 13 | 84 | 4-Oct | 31-Oct | 17 | 18-Oct | - | 80 | |
| Purple Finch | 9 | 11 | 25-Jul | 29-Aug | 2 | 26 Jul / 3 Aug | - | 5 | |
| Red Crossbill | 8 | 35 | 27-Jul | 17-Aug | 17 | 27-Jul | - | 34 | |
| White-winged Crossbill | 53 | 551 | 25-Jul | 10-Oct | 69 | 7-Sep | 9-Sep | 459 | |
| <i>Red / White-winged Crossbill</i> | 16 | 191 | 5-Sep | 18-Oct | 56 | 9-Sep | - | 191 | |
| Pine Siskin | 55 | 473 | 25-Jul | 31-Oct | 67 | 22-Sep | 30-Aug | 396 | |

| Species | ALL OBS | | First Date | Last Date | HIGH COUNT | | Median Date | All Visual Migrants | Total Observed on Lake Counts |
|-------------------------------------|-----------|-----------|------------|-----------|------------|--------|-------------|---------------------|-------------------------------|
| | # of Days | Bird Days | | | # | Date | | | |
| Common Redpoll | 7 | 105 | 31-Jul | 31-Oct | 91 | 31-Oct | - | 105 | |
| <i>Common Redpoll / Pine Siskin</i> | 30 | 1401 | 30-Aug | 19-Oct | 229 | 1-Oct | - | 1401 | |
| <i>Unidentified Finch</i> | 3 | 19 | 19-Aug | 11-Oct | 10 | 19-Aug | - | 19 | |
| <i>Unidentified Small Passerine</i> | 71 | 8150 | 29-Jul | 19-Oct | 1242 | 19-Sep | - | 8150 | |

Appendix D – Migration Timing (Mist Netting)

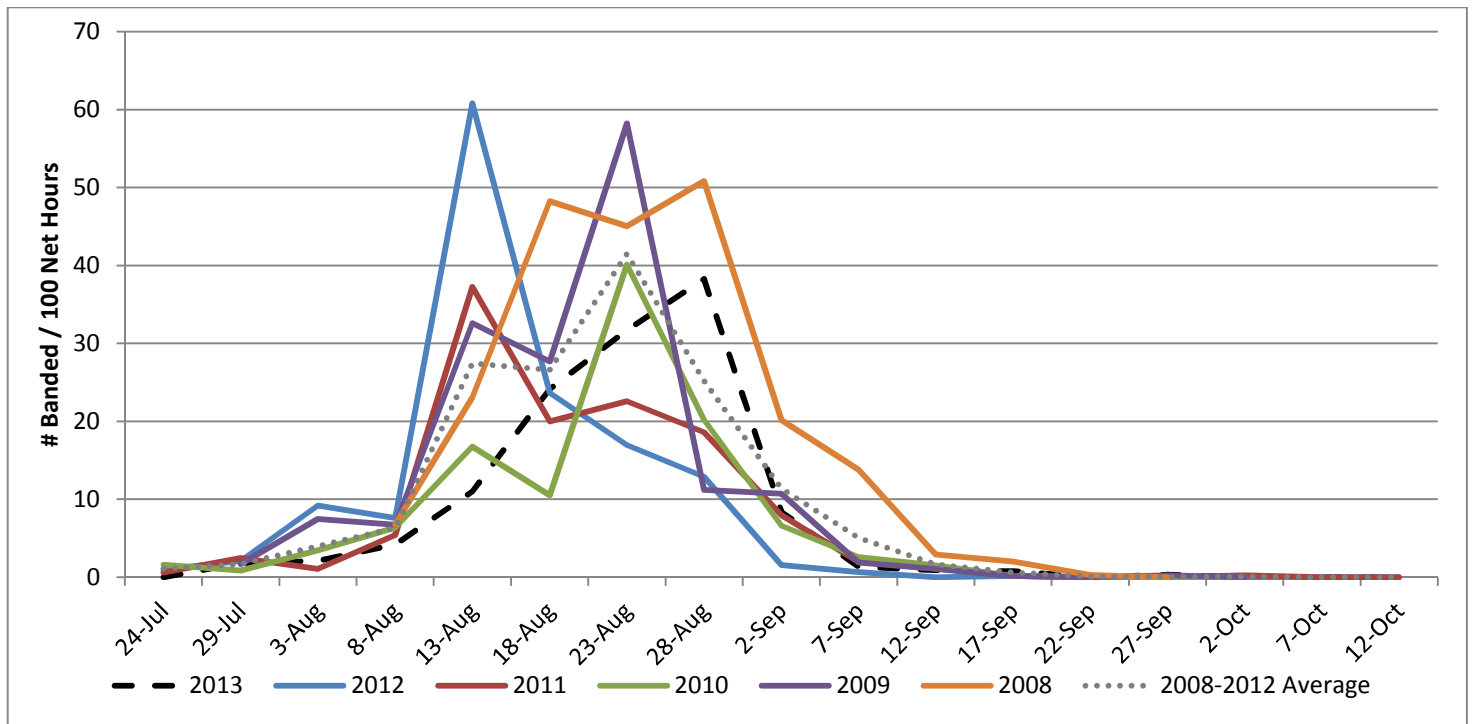


Figure D1. Alder Flycatcher fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

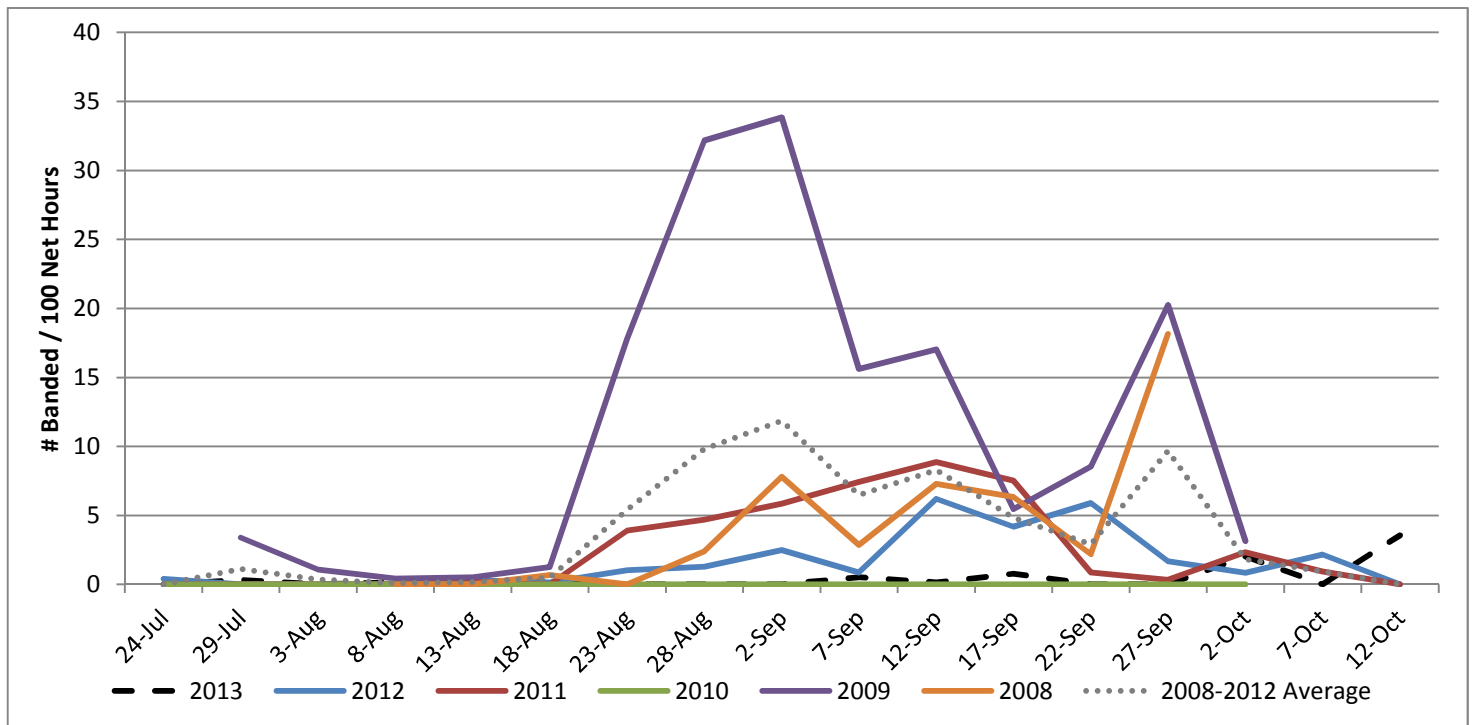


Figure D2. Boreal Chickadee fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013. Note zero individuals were banded in 2010.

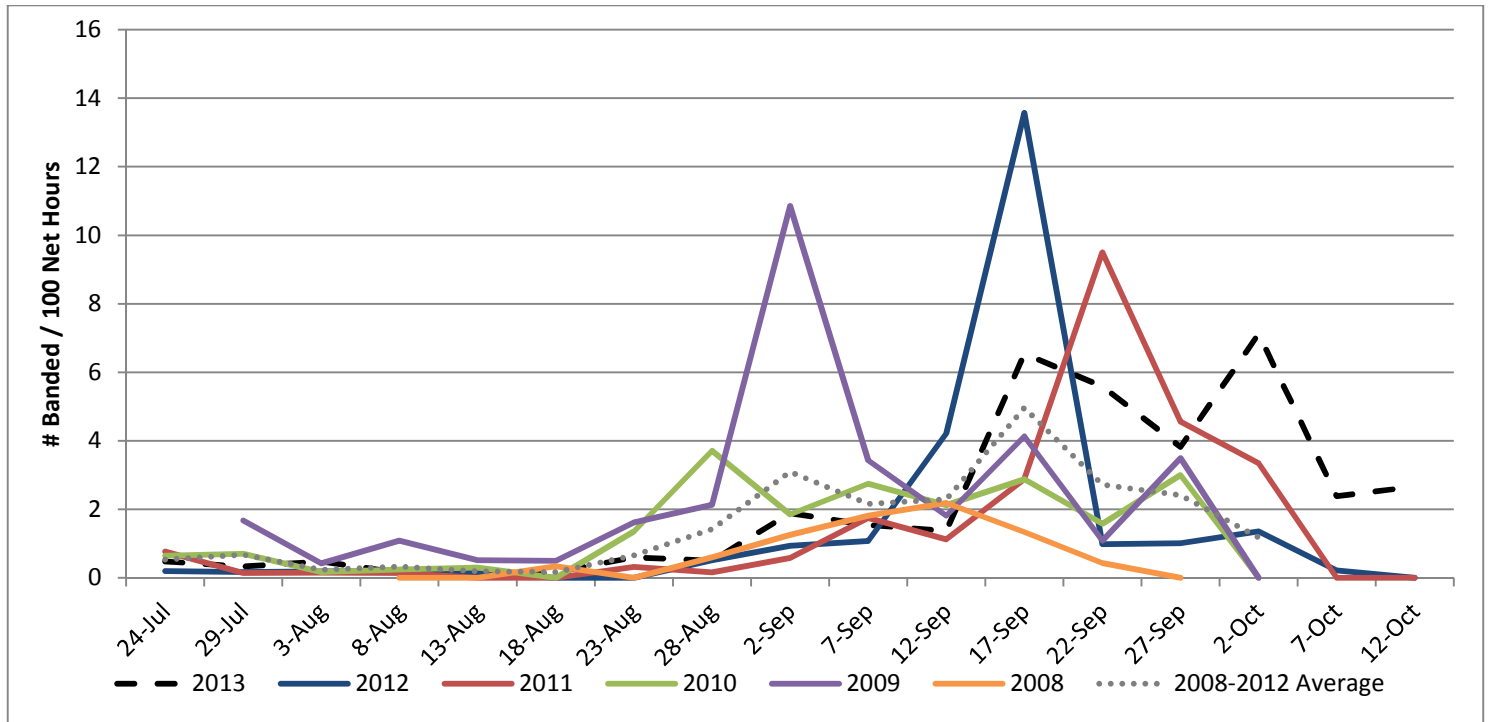


Figure D3. Ruby-crowned Kinglet fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

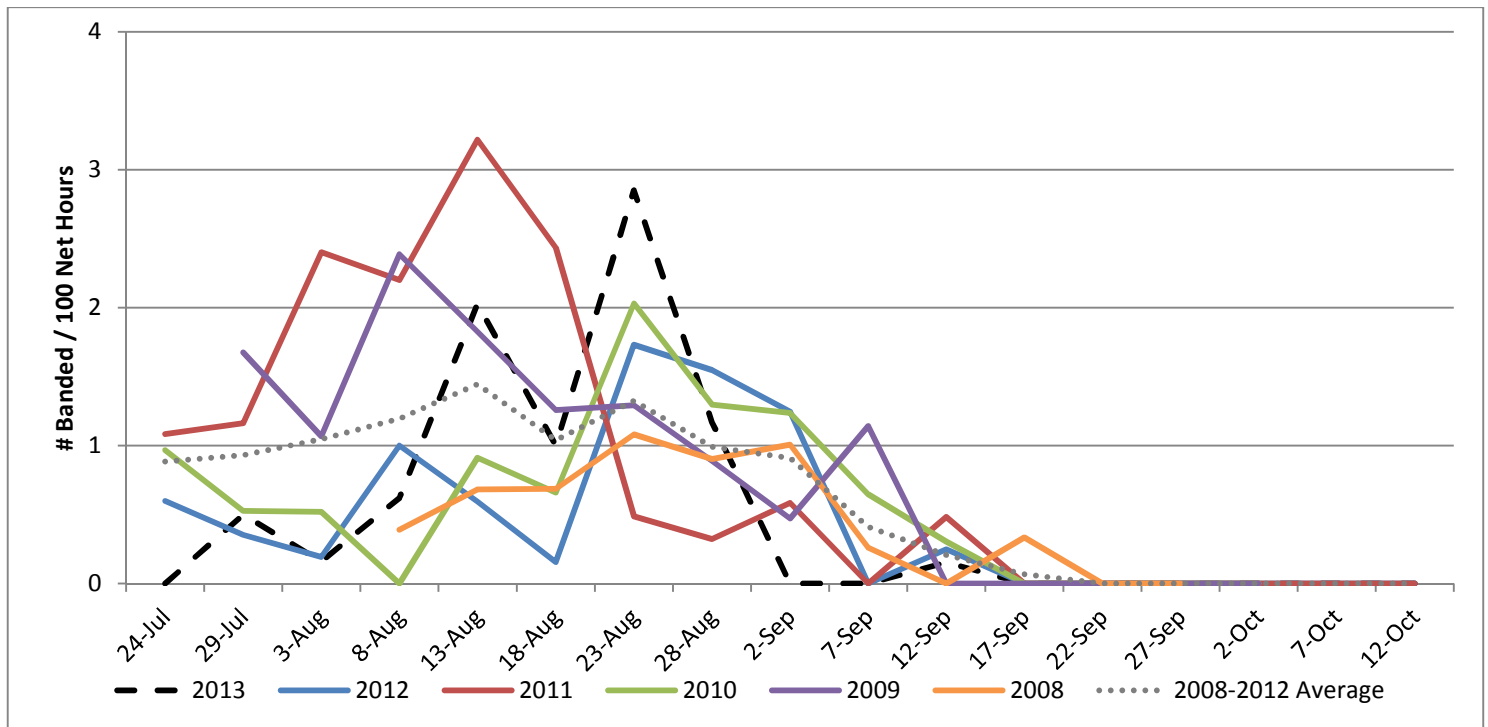


Figure D4. Swainson's Thrush fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

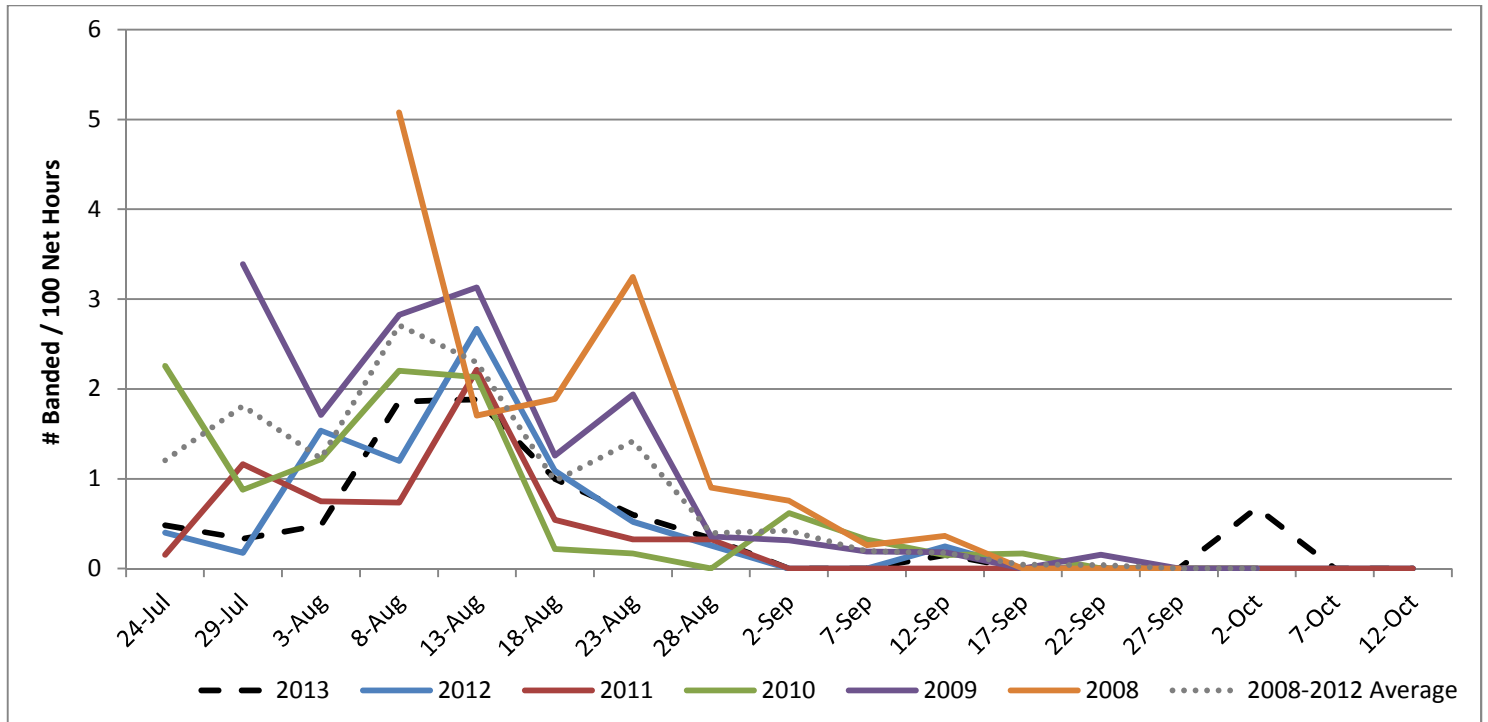


Figure D5. Northern Waterthrush fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

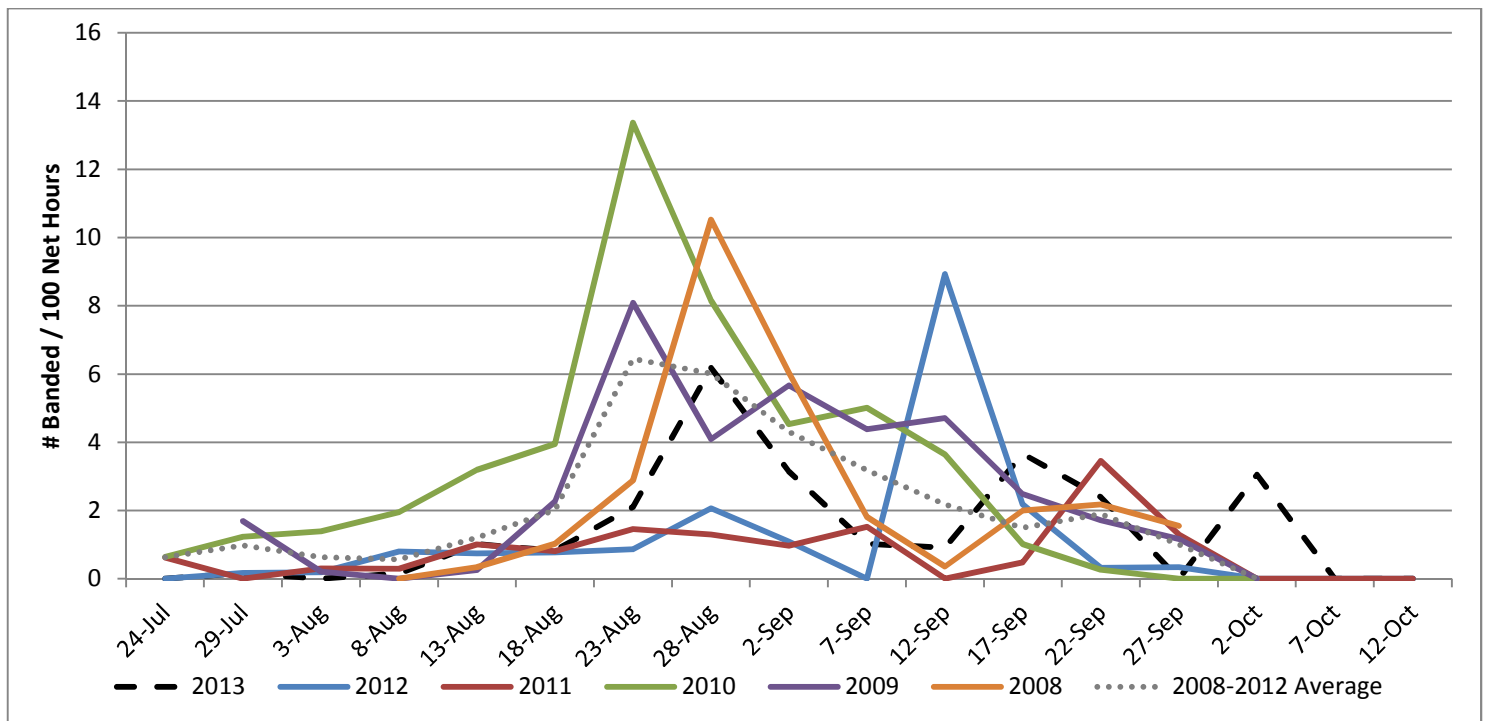


Figure D6. Orange-crowned Warbler fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

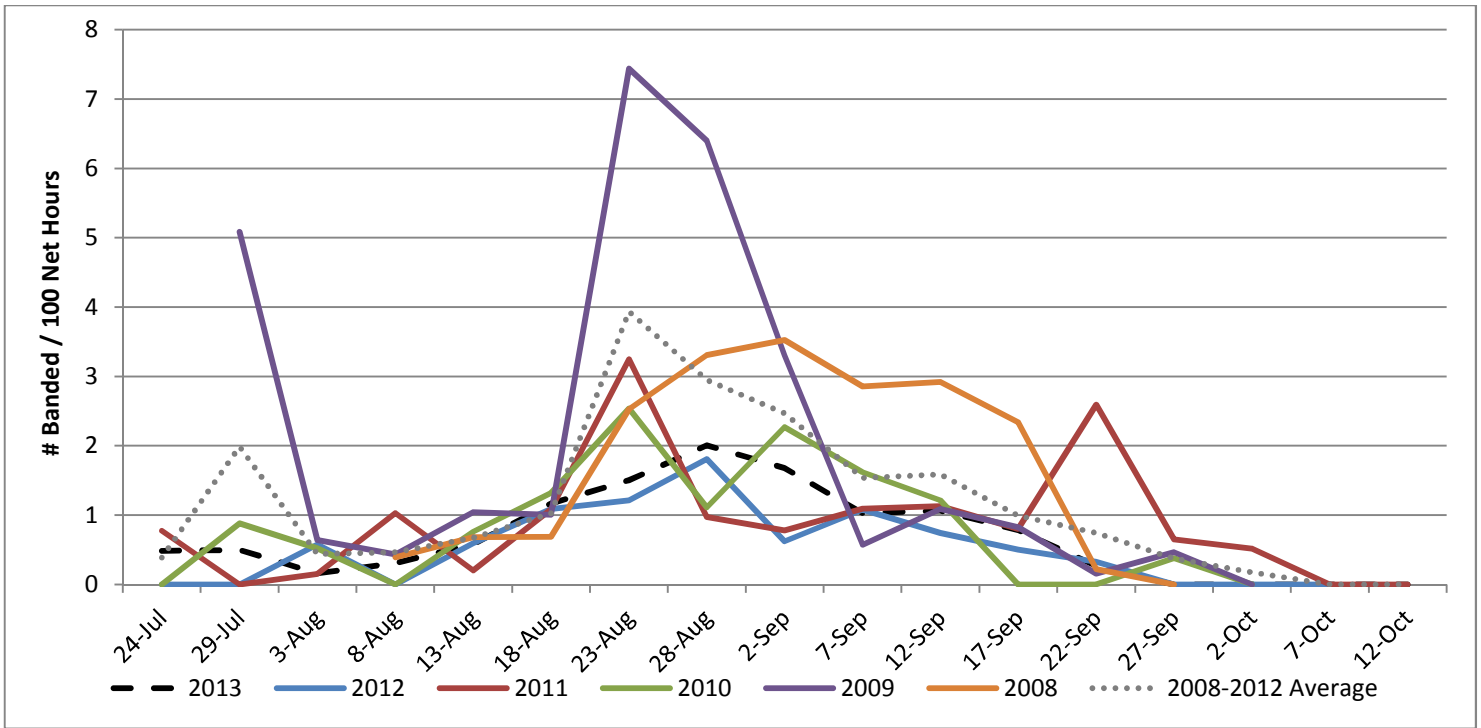


Figure D7. Common Yellowthroat fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

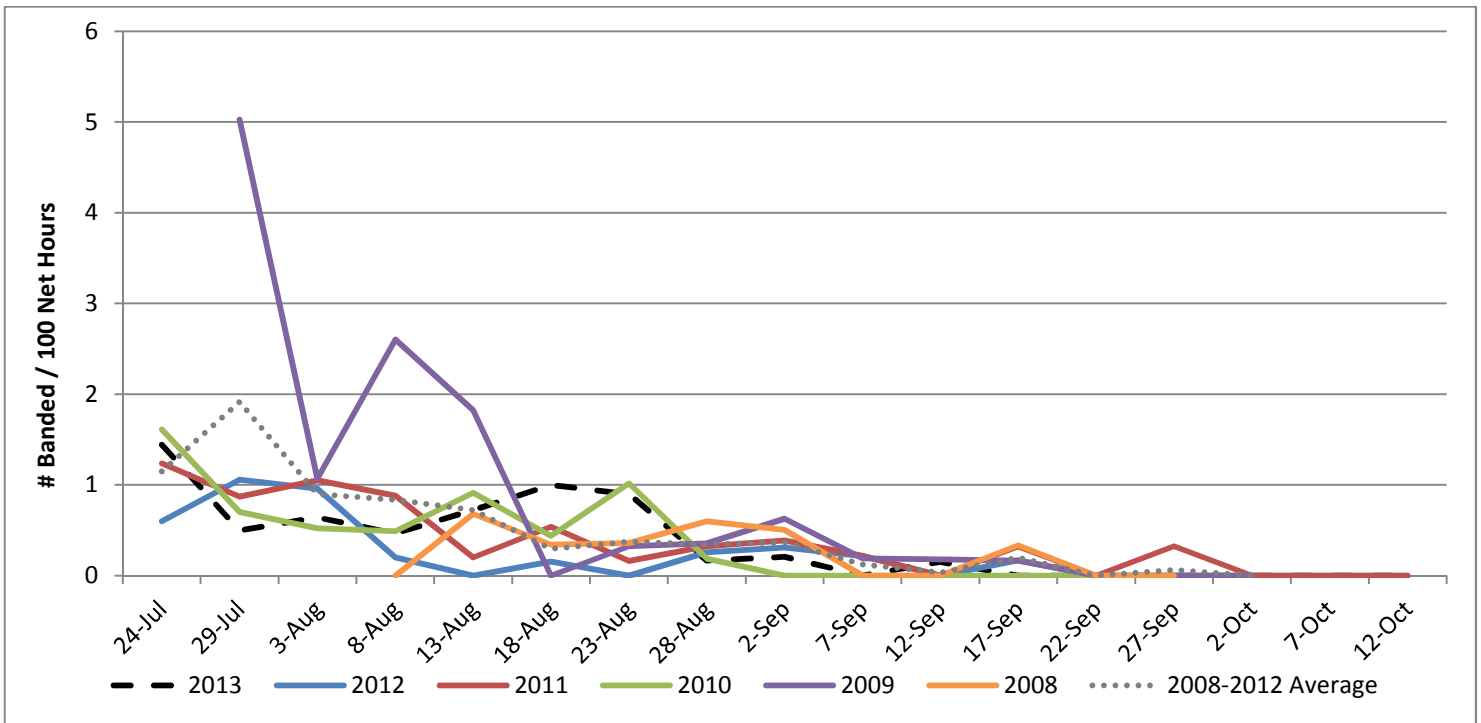


Figure D8. American Redstart fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

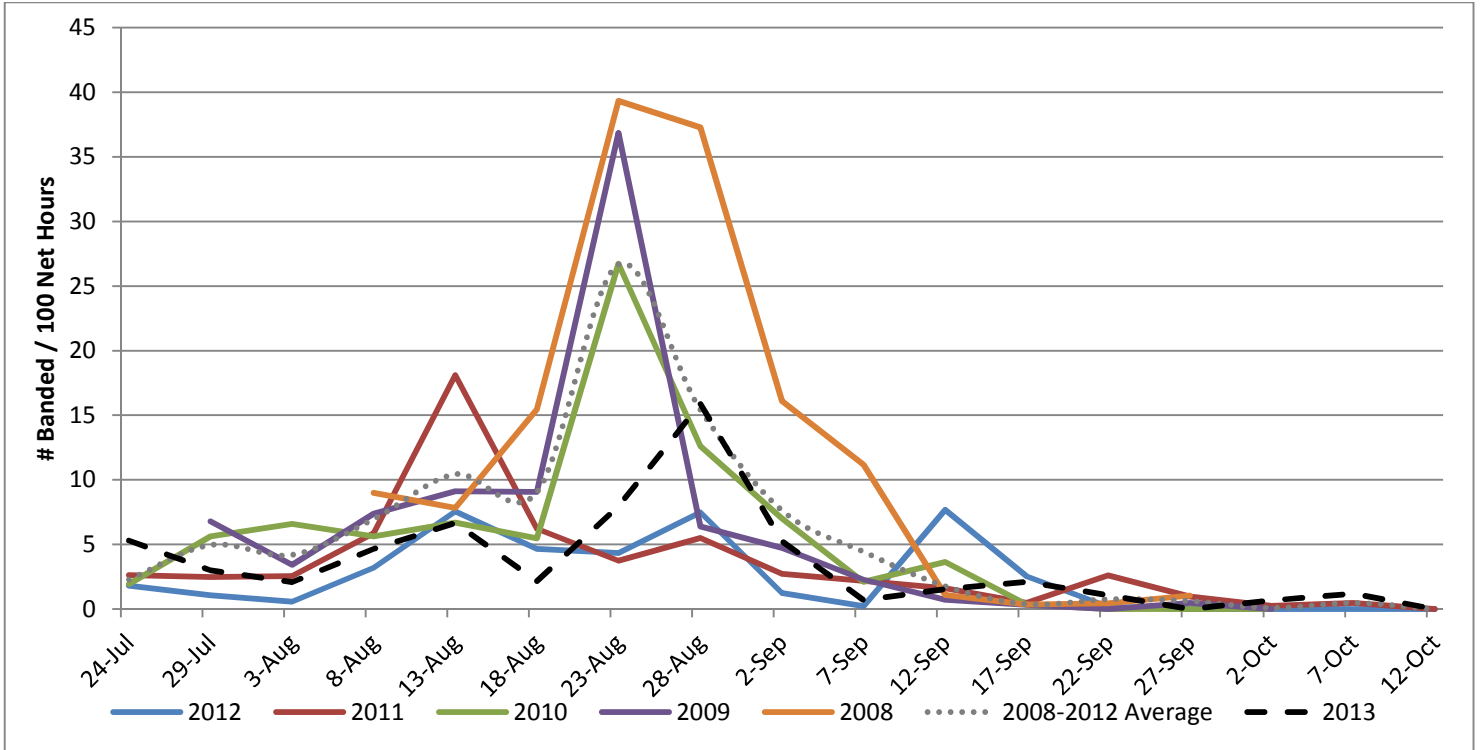


Figure D9. Yellow Warbler fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

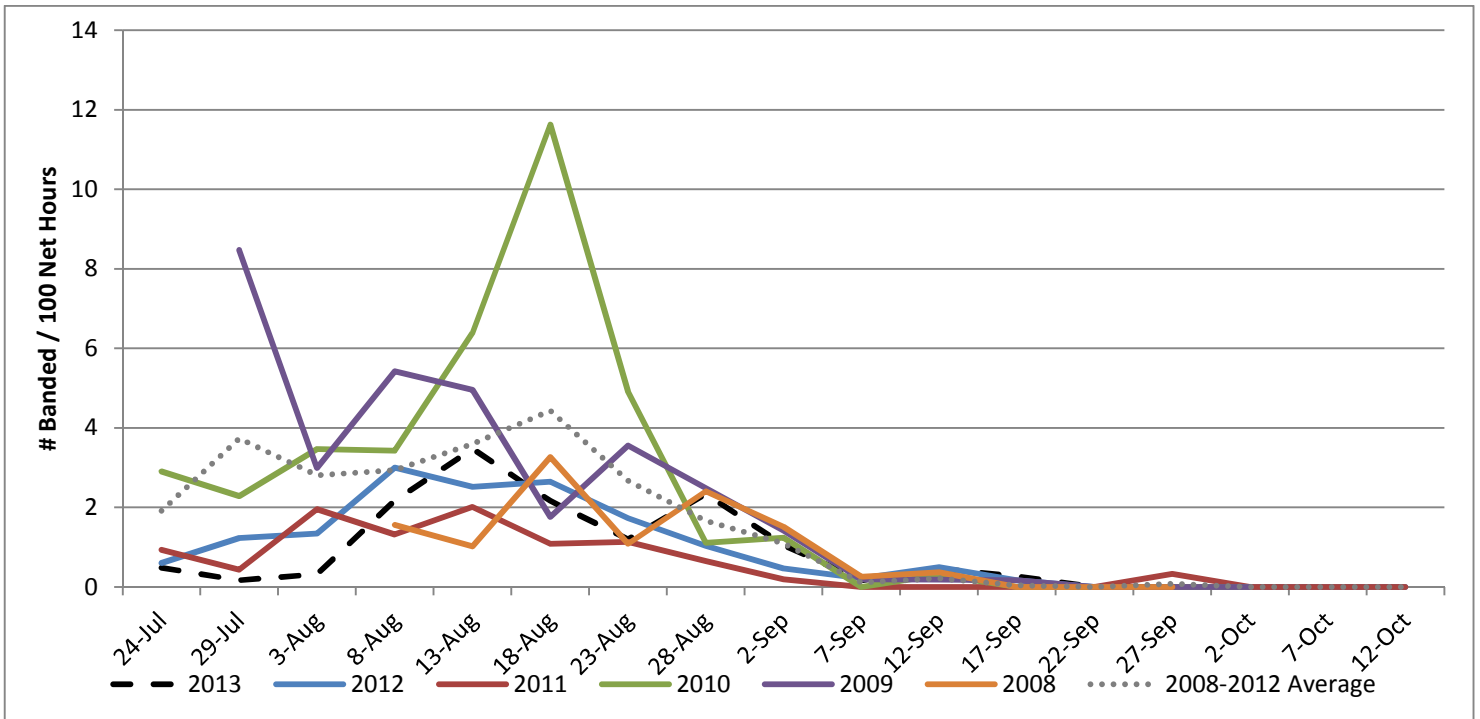


Figure D10. Blackpoll Warbler fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

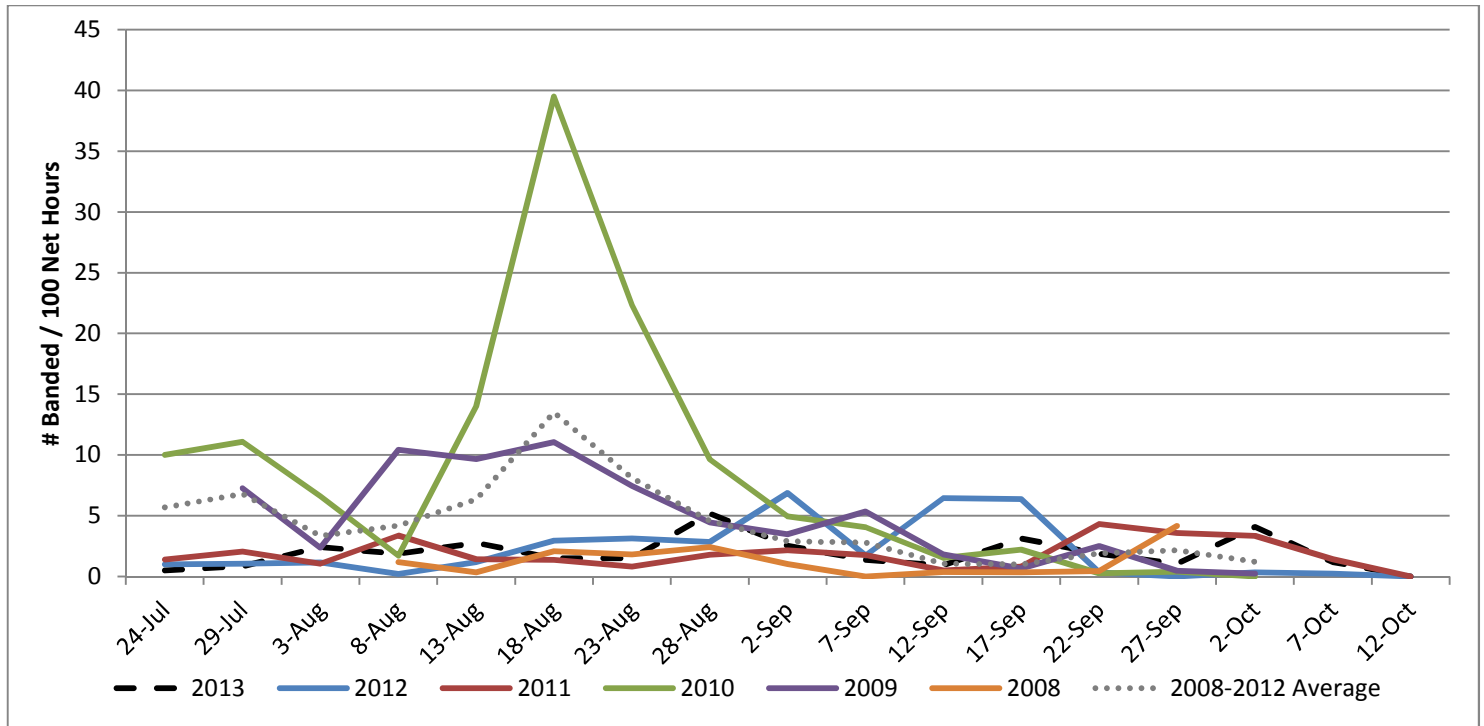


Figure D11. Myrtle Warbler fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

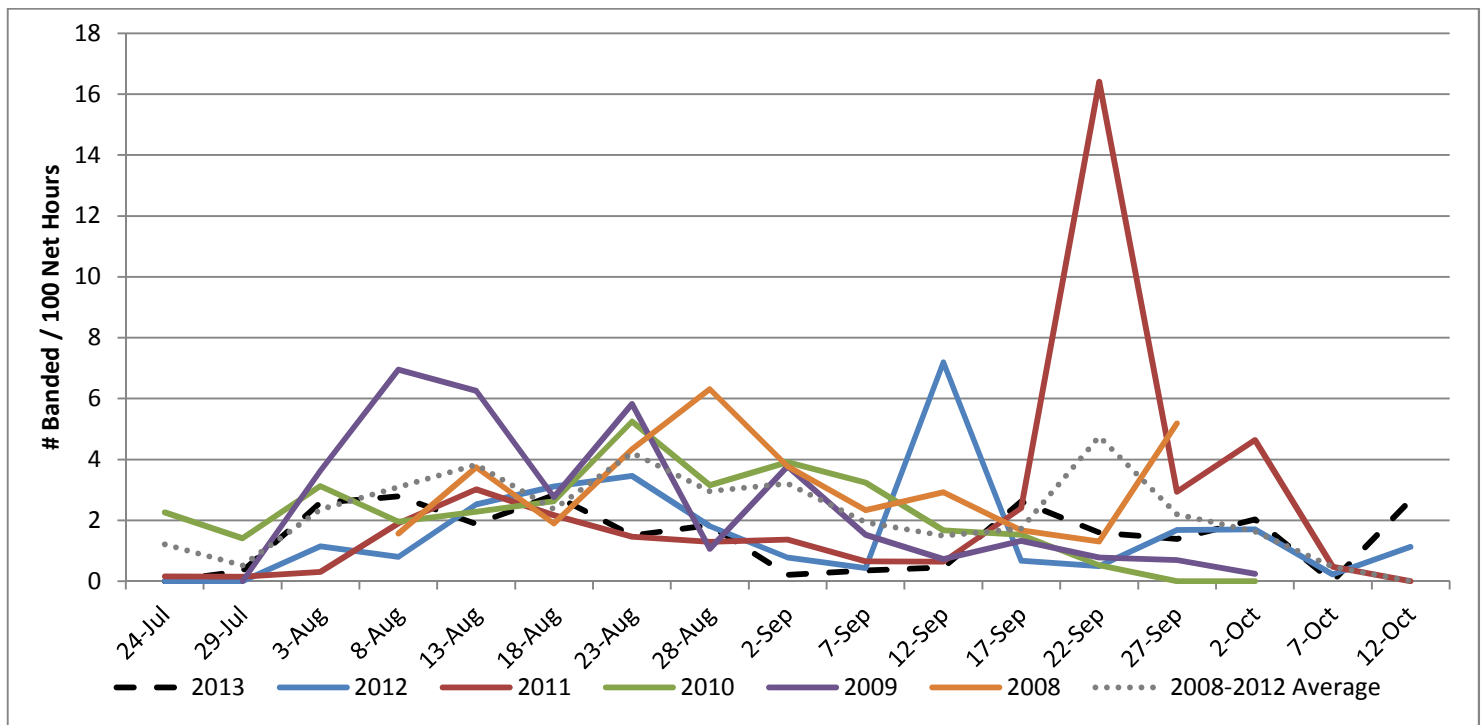


Figure D12. Wilson's Warbler fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

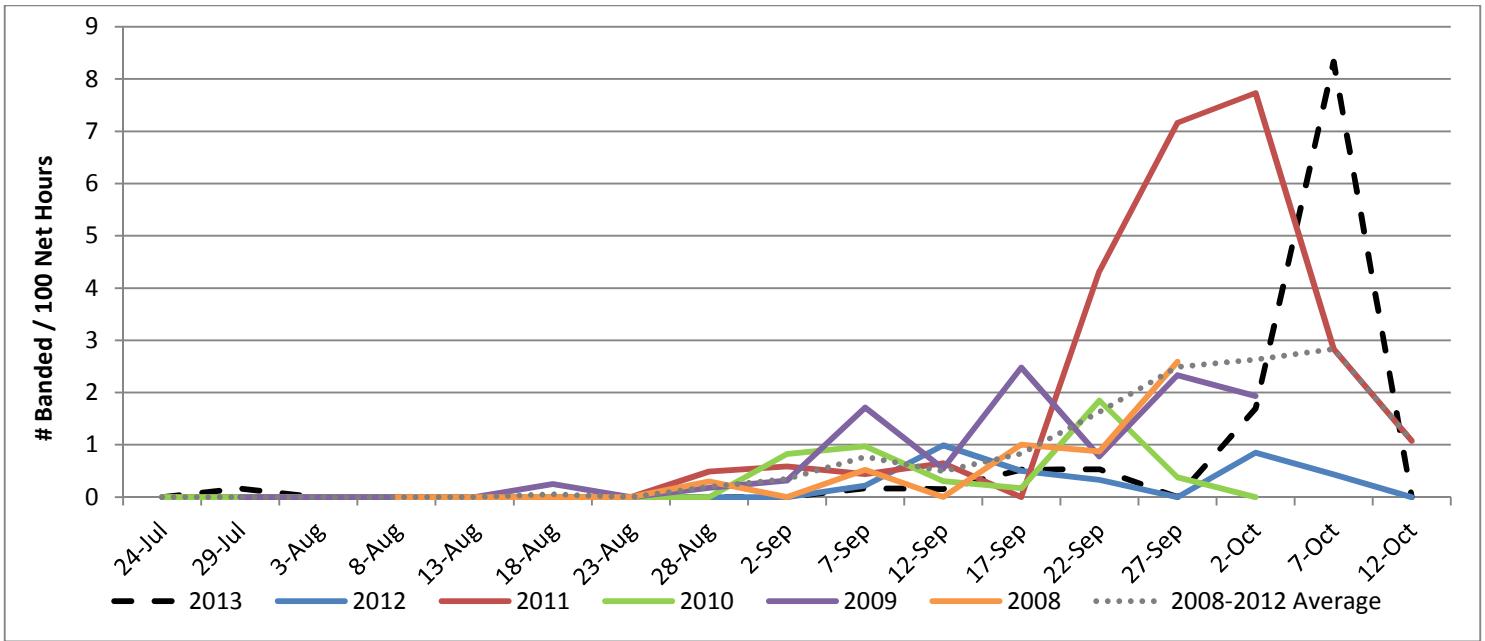


Figure D13. American Tree Sparrow fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

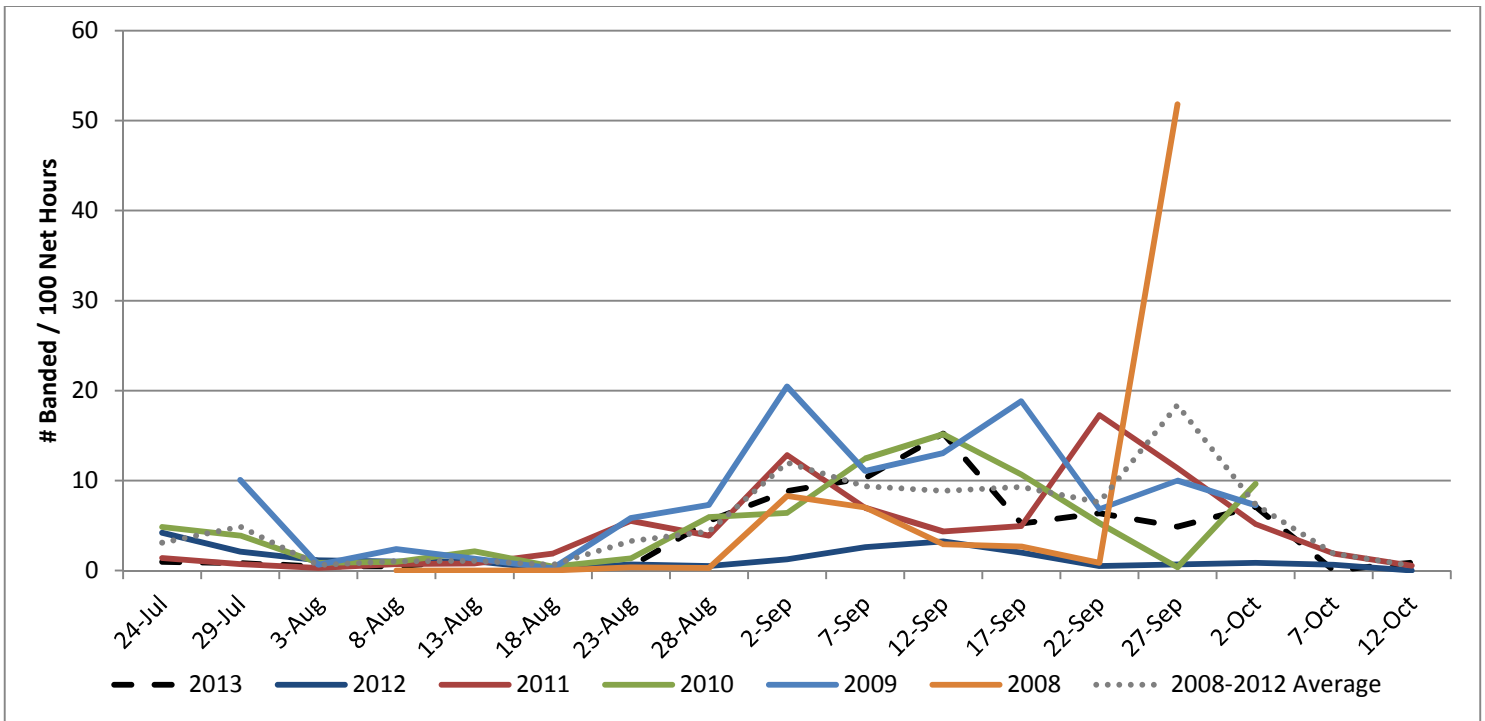


Figure D14. Dark-eyed Junco fall migration timing at Teslin Lake Bird Observatory from 2008 to 2013.

Appendix E – Migration Timing (Visual Migration Counts)

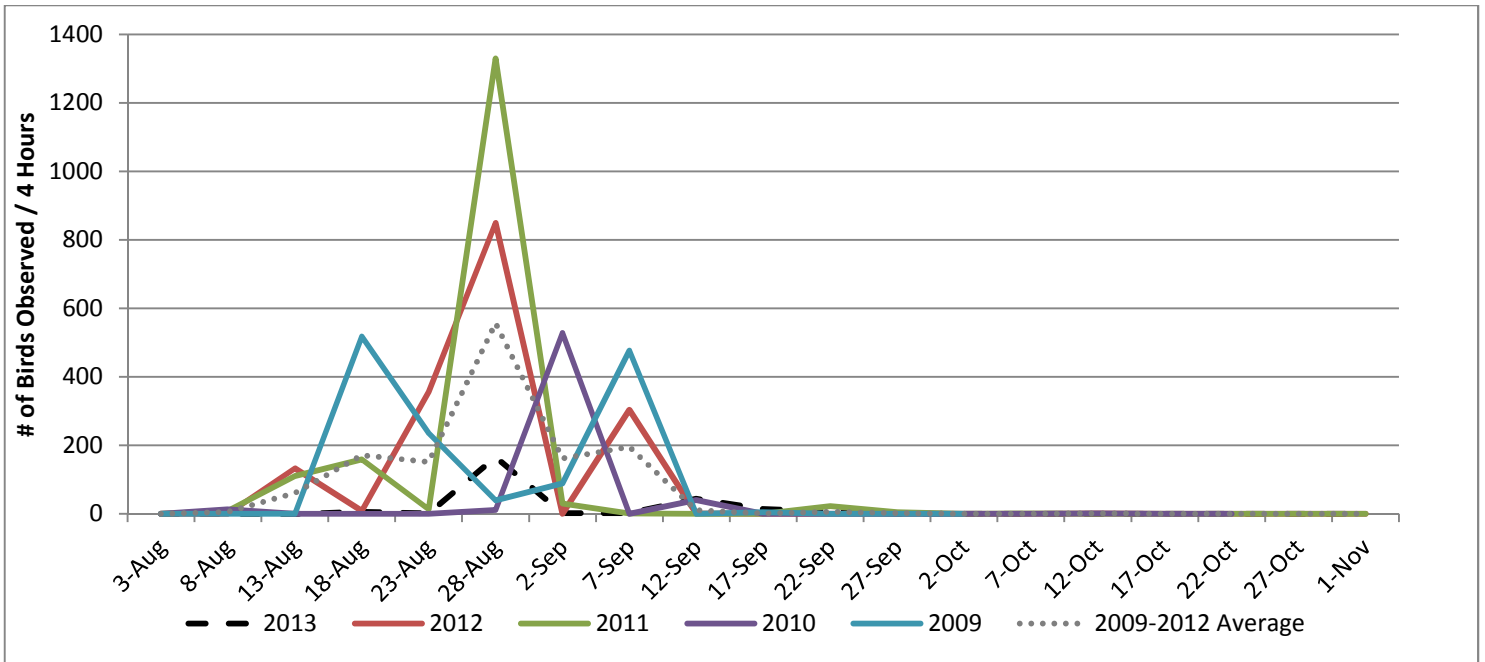


Figure E1. Greater White-fronted Goose visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

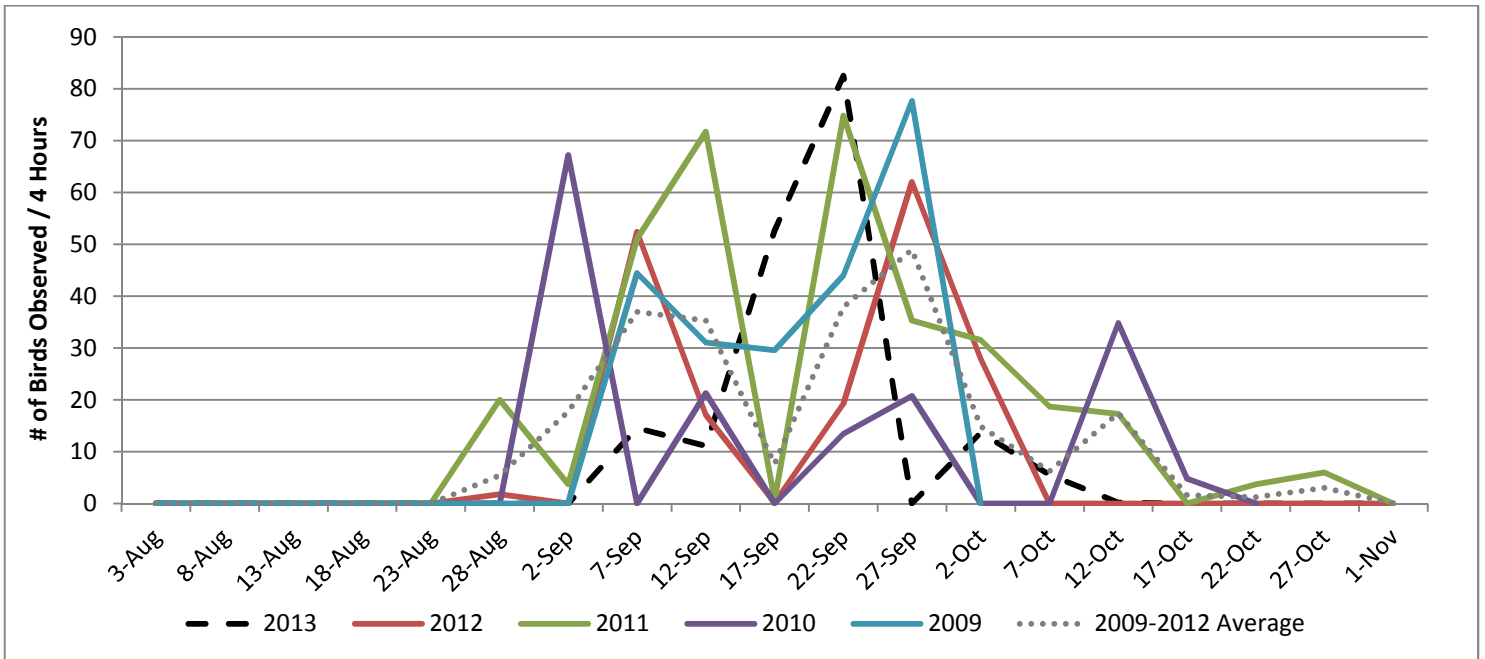


Figure E2. Canada Goose visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

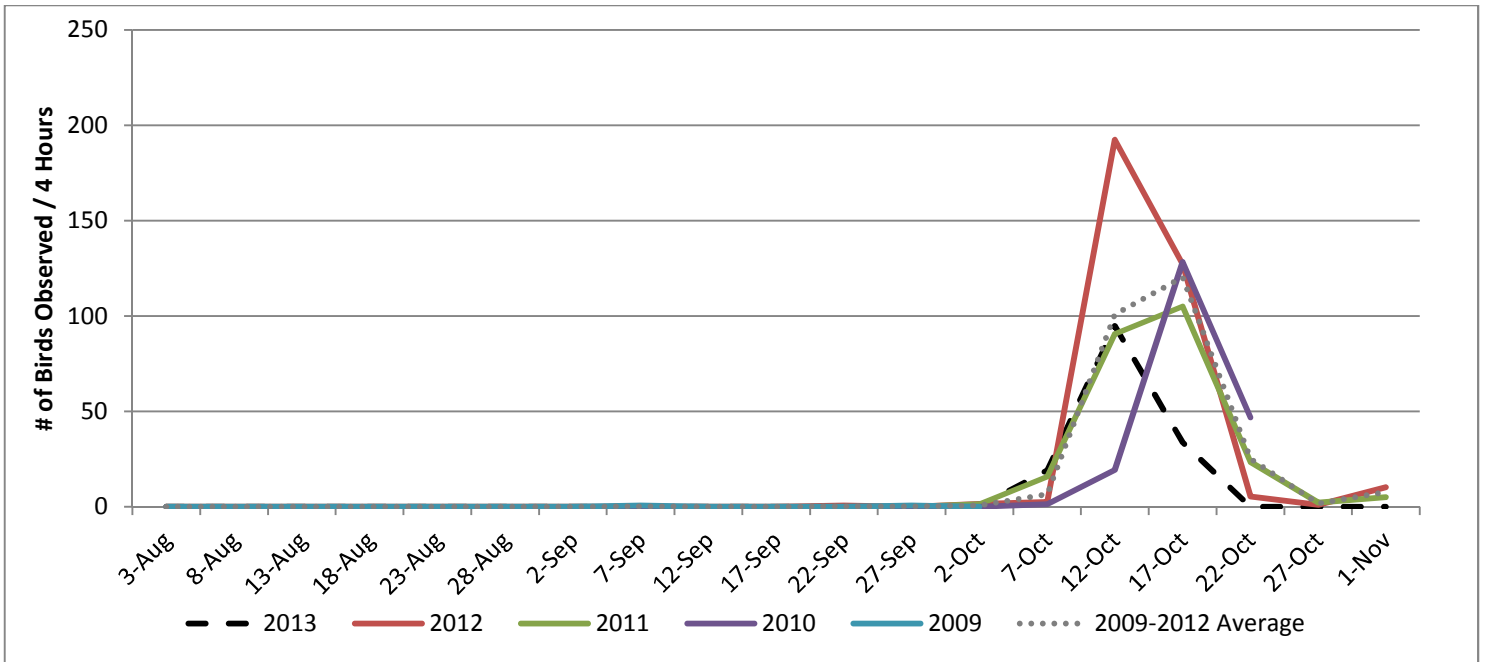


Figure E3. Trumpeter Swan visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

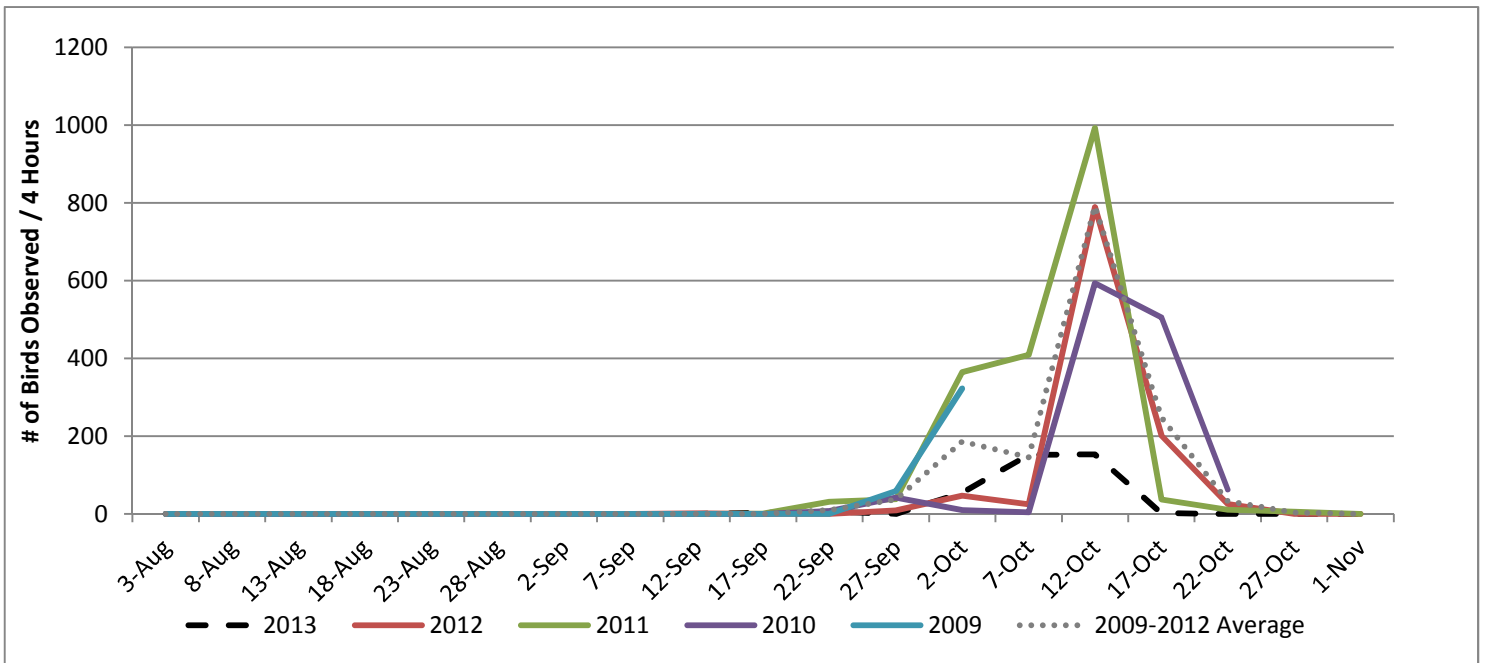


Figure E4. Tundra Swan visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

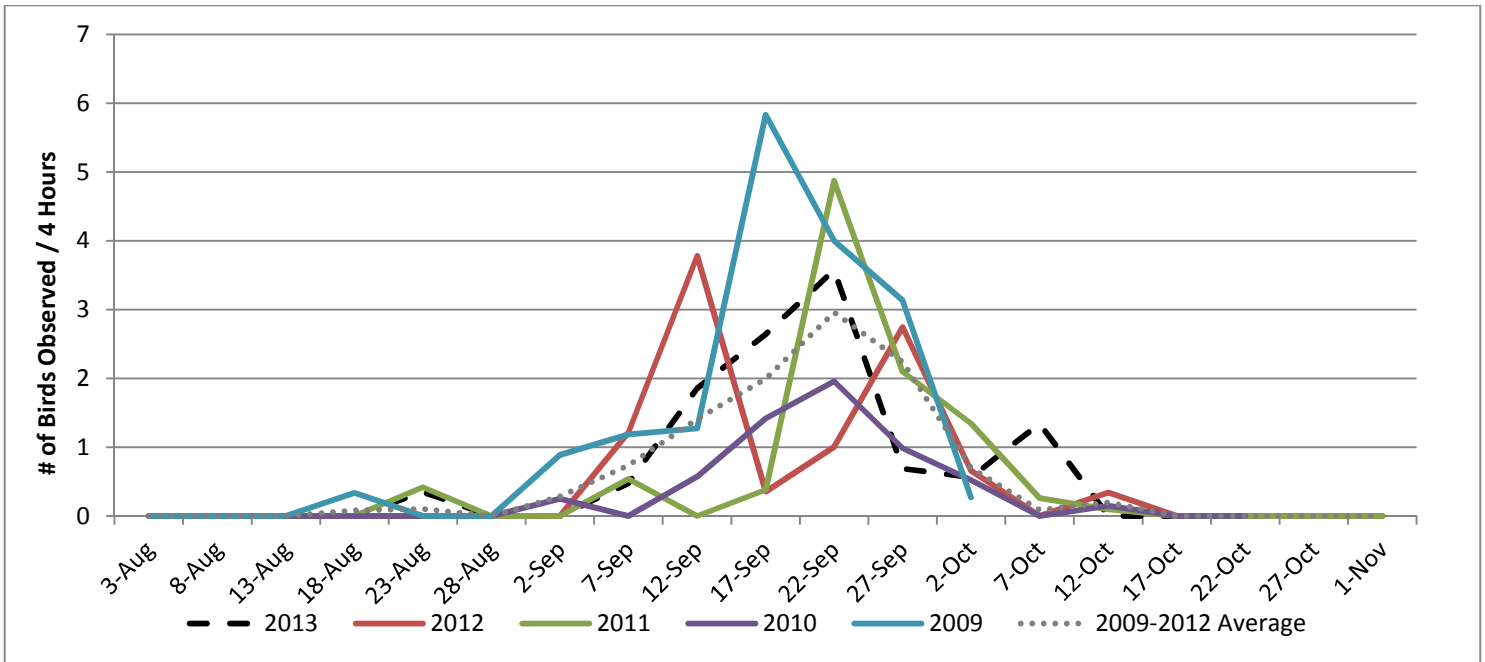


Figure E5. Osprey visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

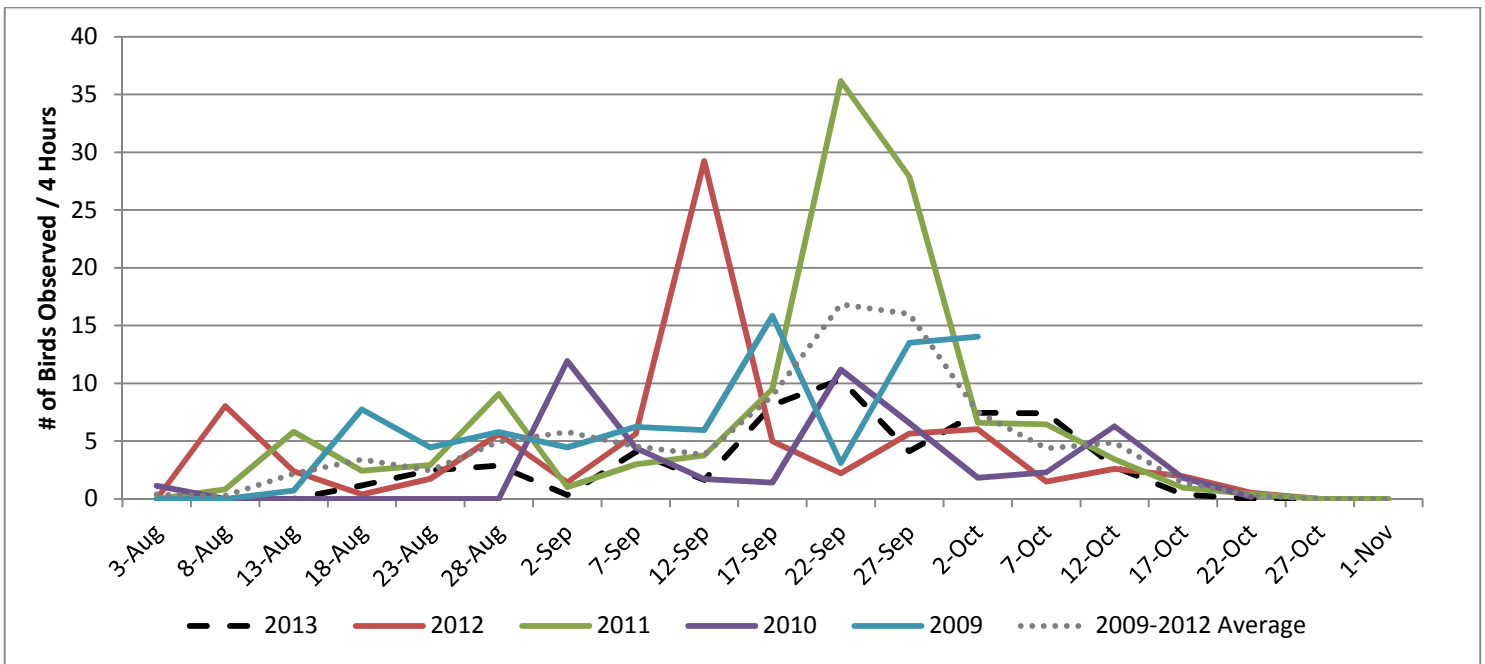


Figure E6. Northern Harrier visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

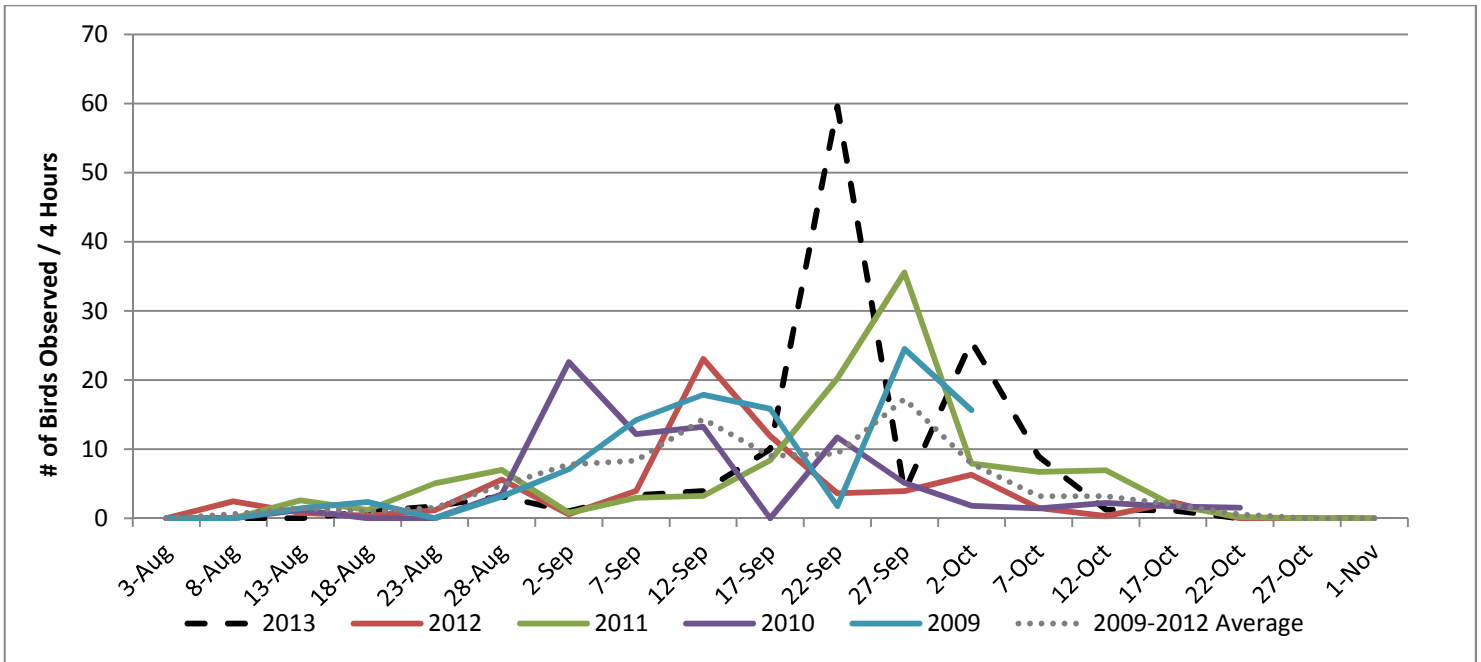


Figure E7. Sharp-shinned Hawk visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

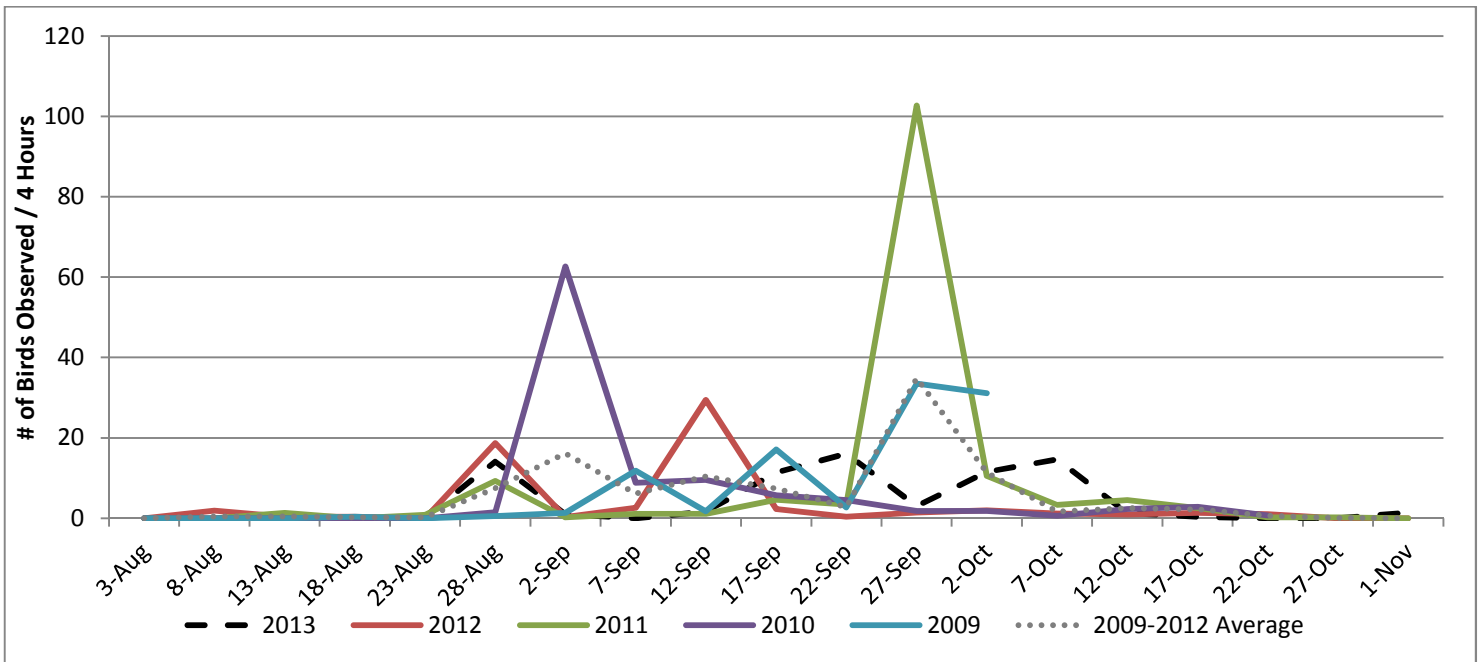


Figure E8. Red-tailed Hawk visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

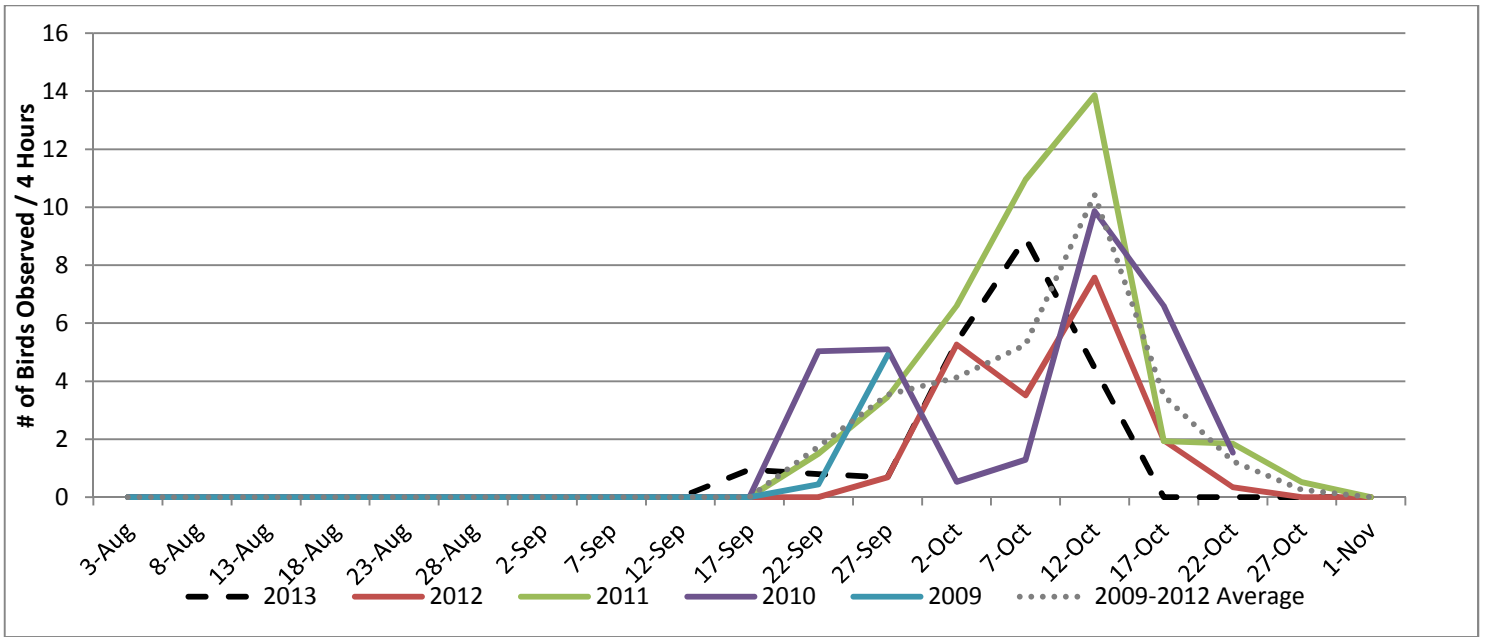


Figure E9. Rough-legged Hawk visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

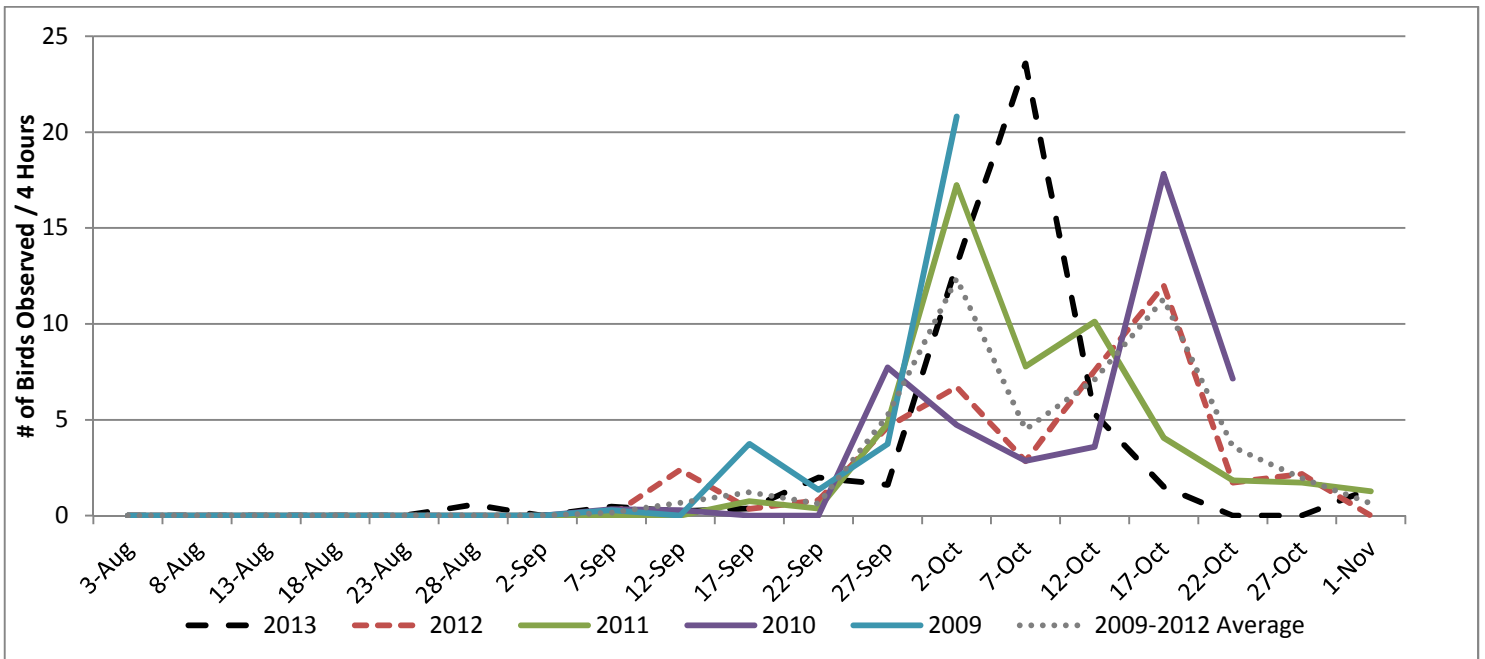


Figure E10. Golden Eagle visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

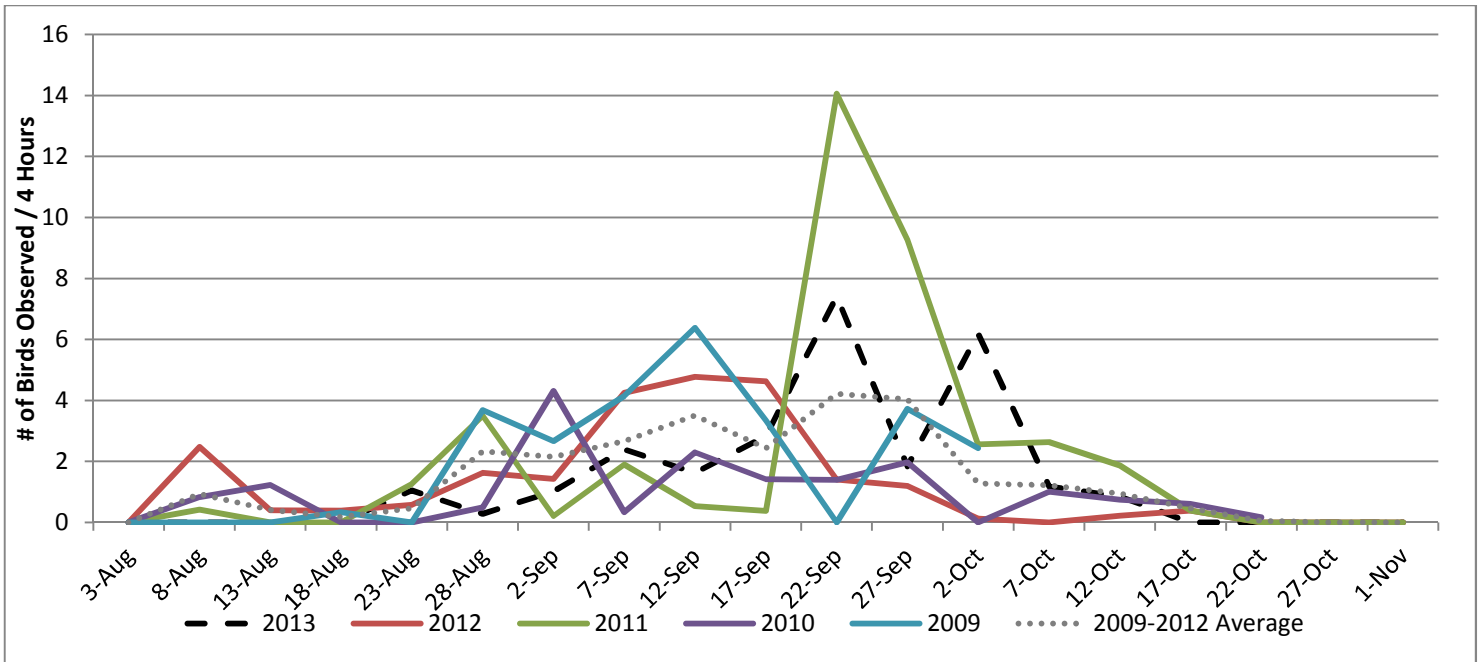


Figure E11. American Kestrel visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

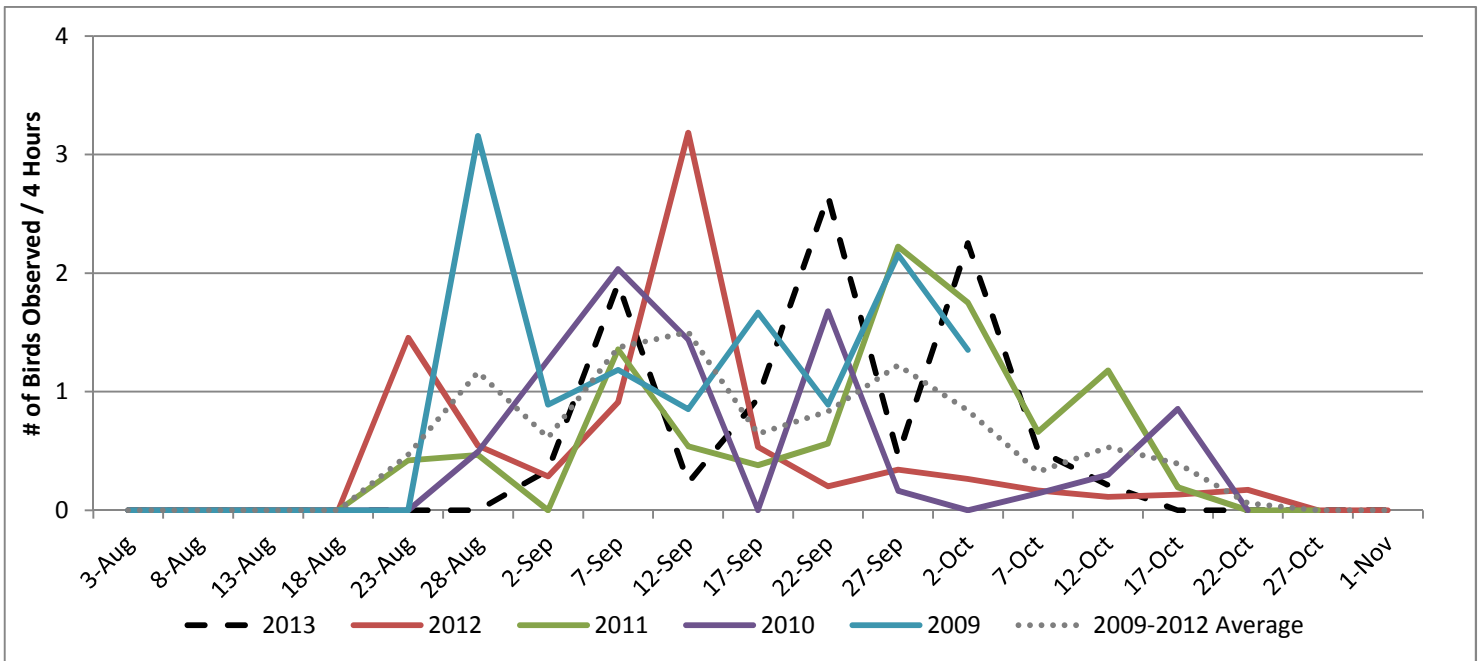


Figure E12. Merlin visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

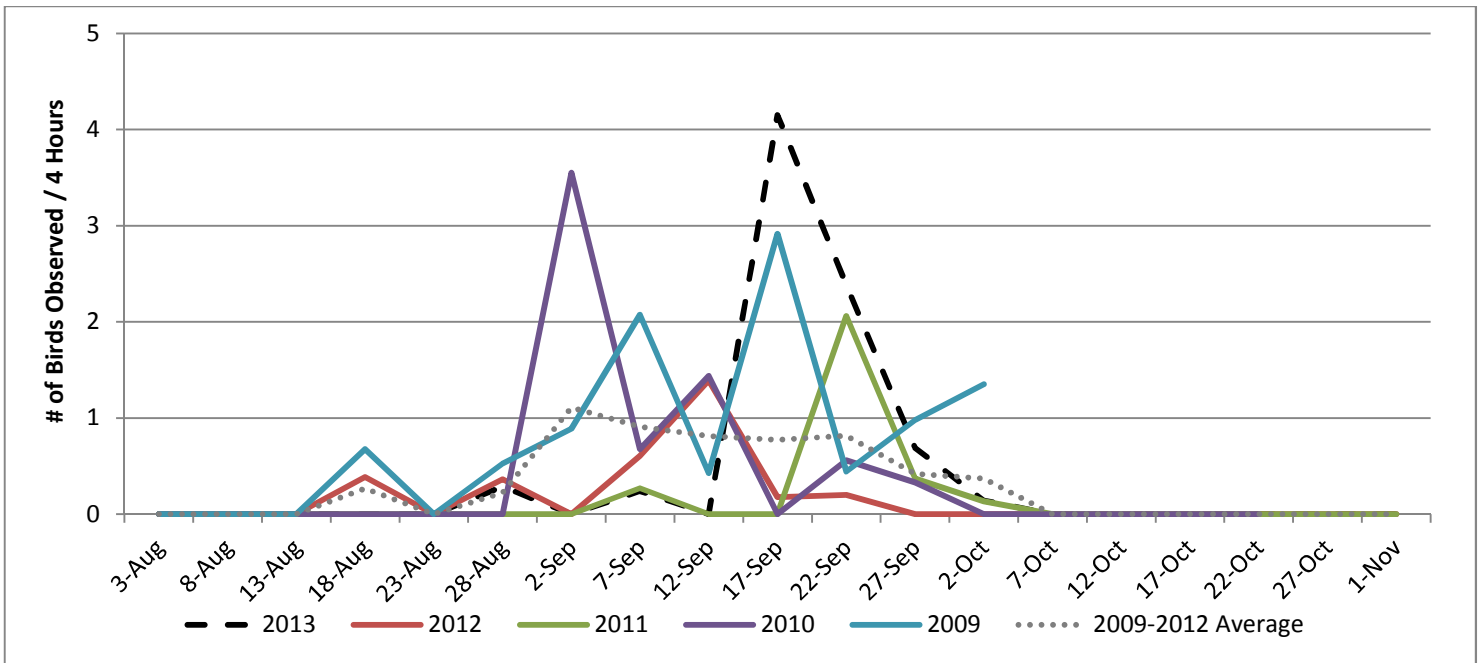


Figure E13. Peregrine Falcon visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

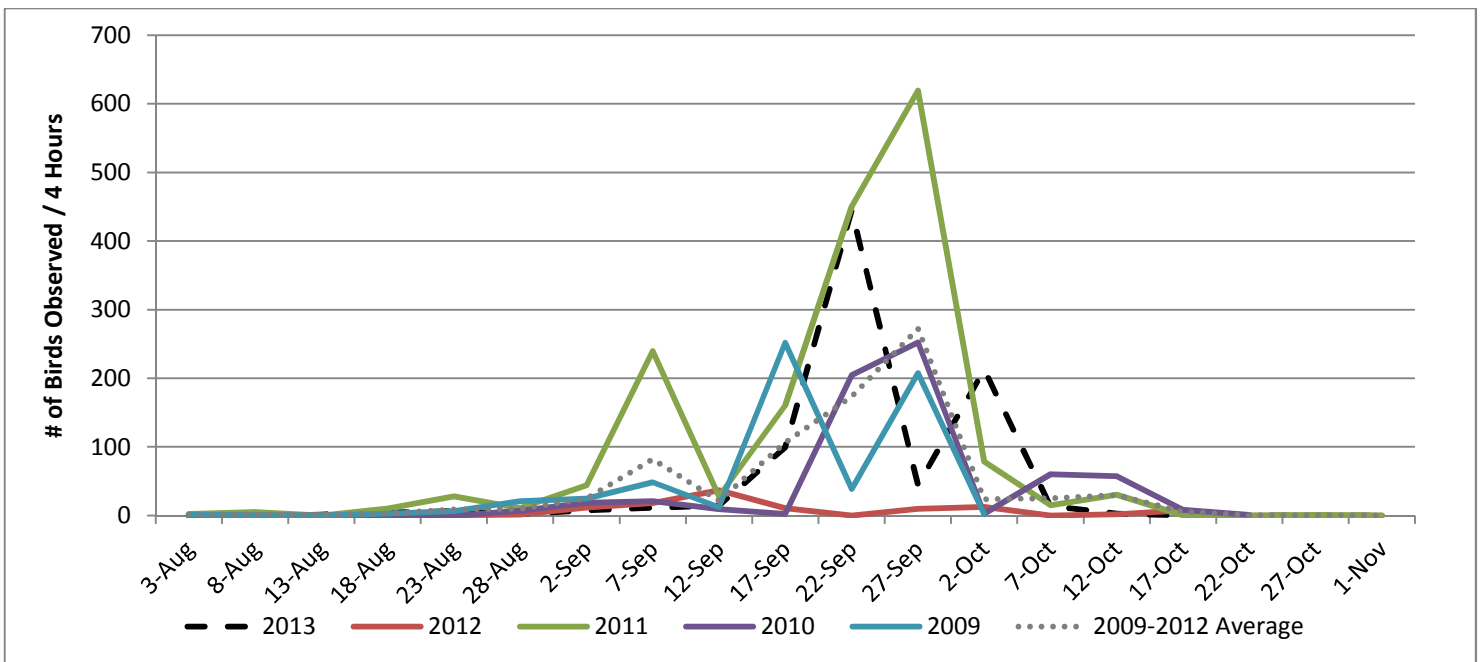


Figure E14. American Robin visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

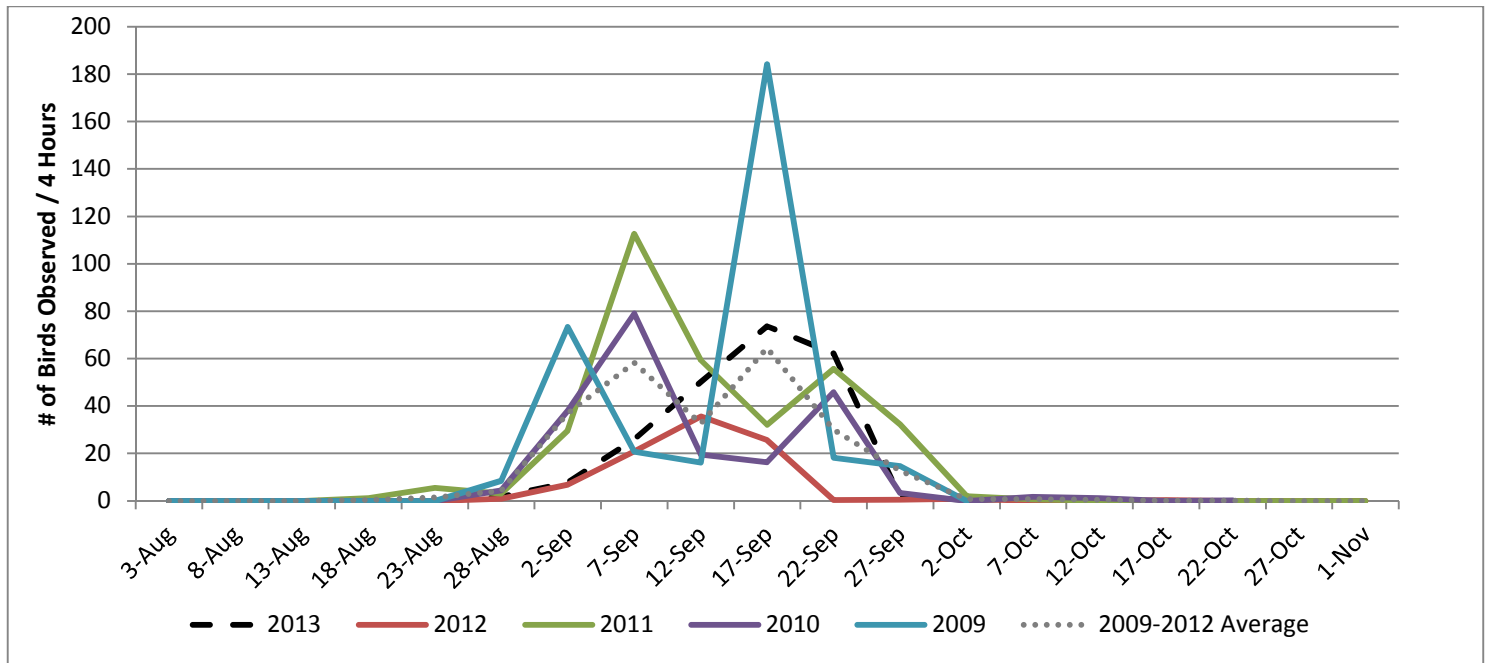


Figure E15. Varied Thrush visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

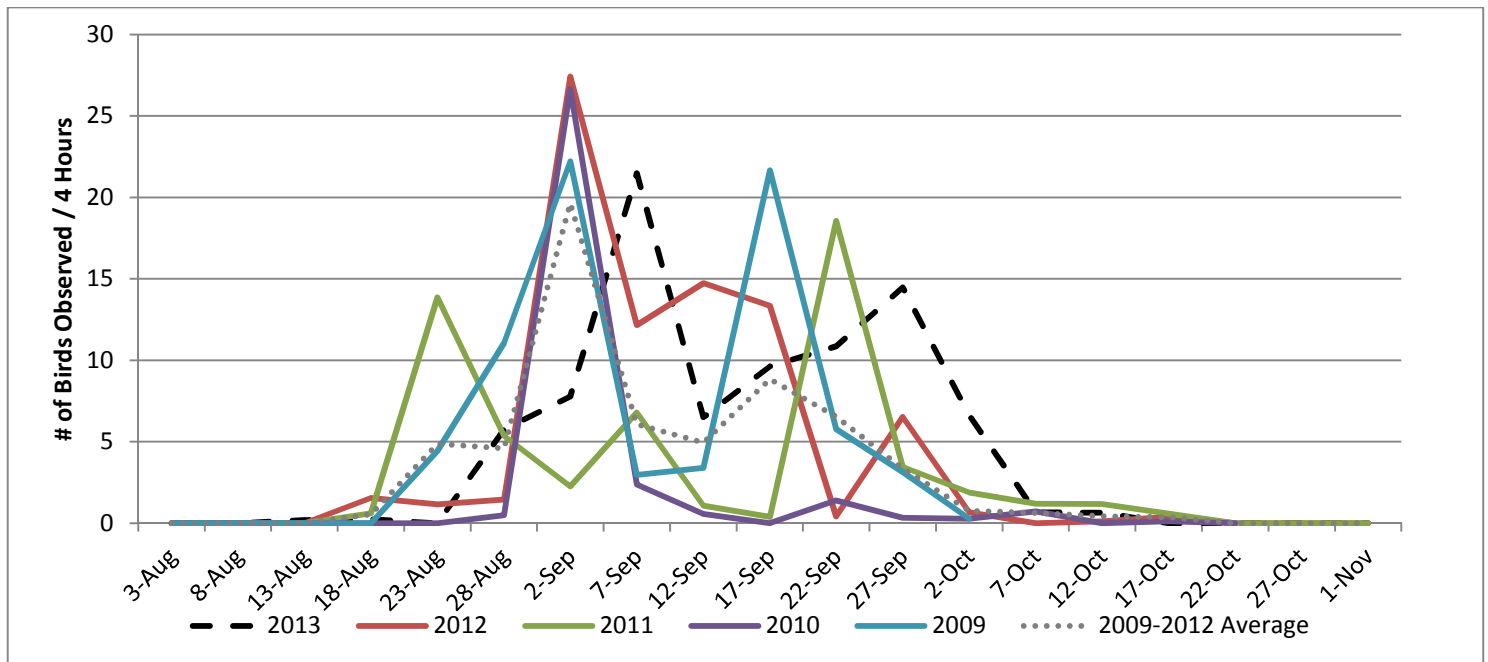


Figure E16. American Pipit visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

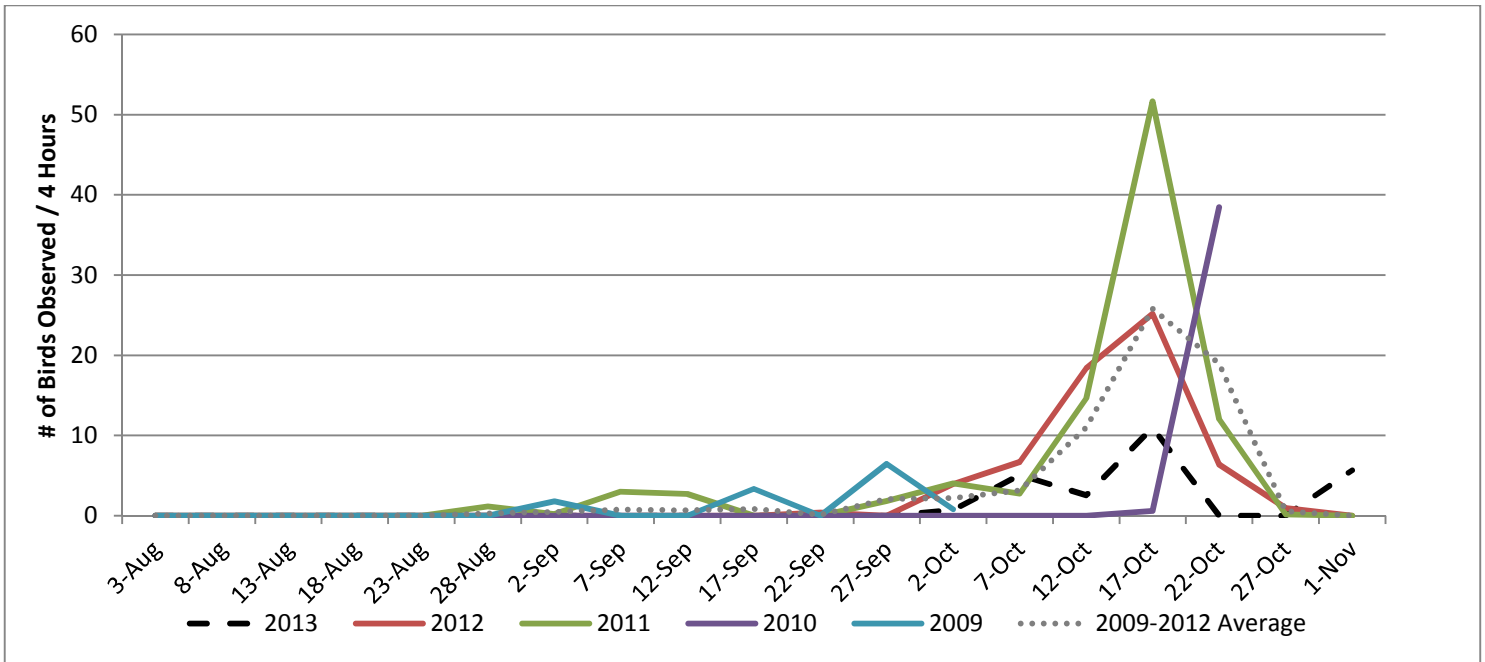


Figure E17. Pine Grosbeak visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

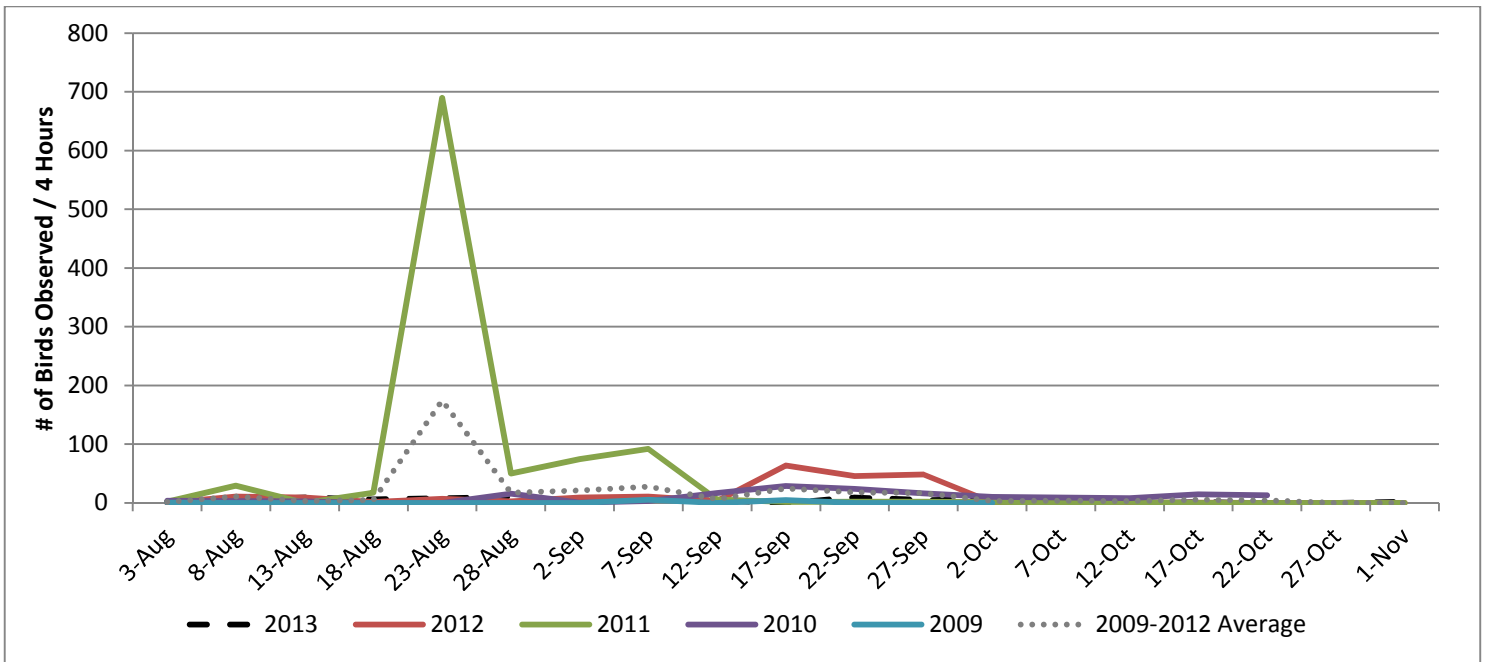


Figure E18. Pine Siskin visual migration count timing at Teslin Lake Bird Observatory from 2009 to 2013.

Appendix F – Migration Timing (Daily Species Totals)

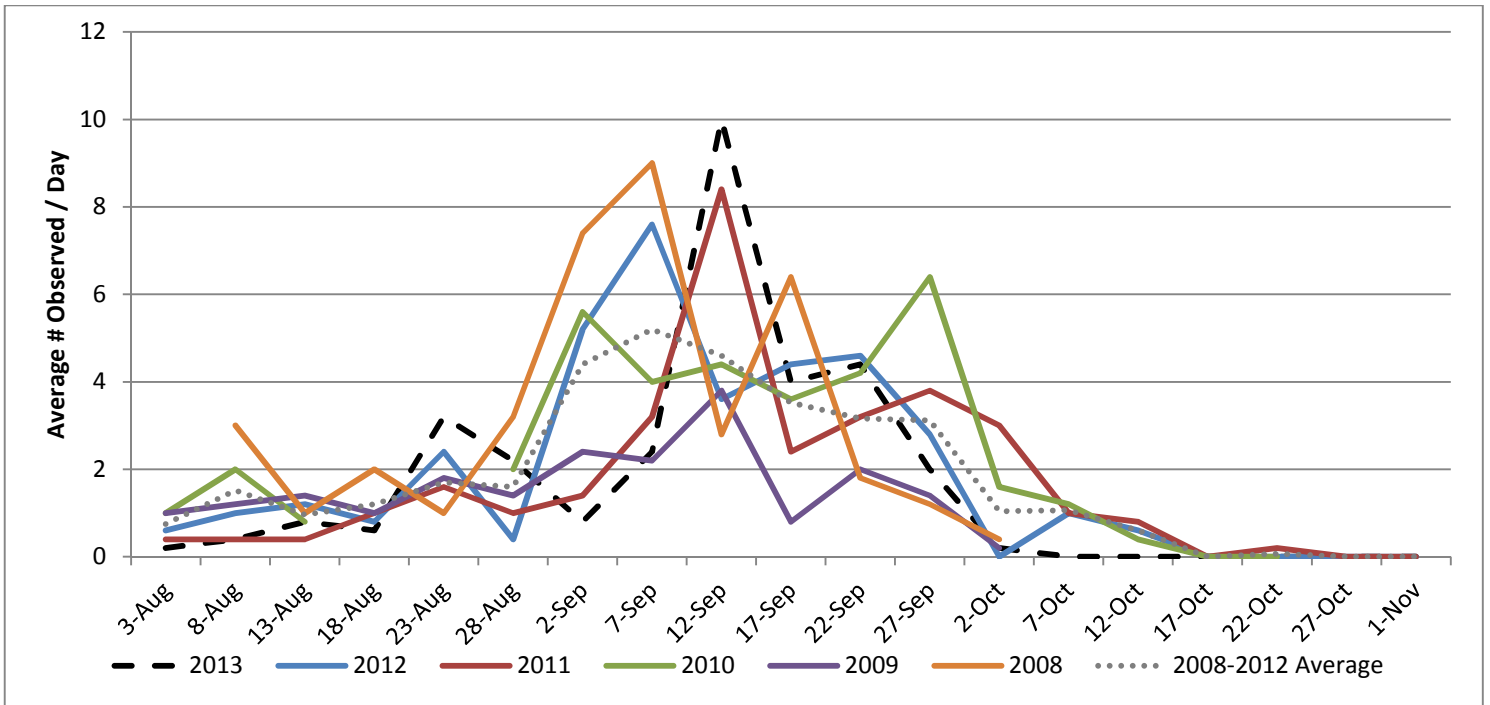


Figure F1. Red-throated Loon daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013.

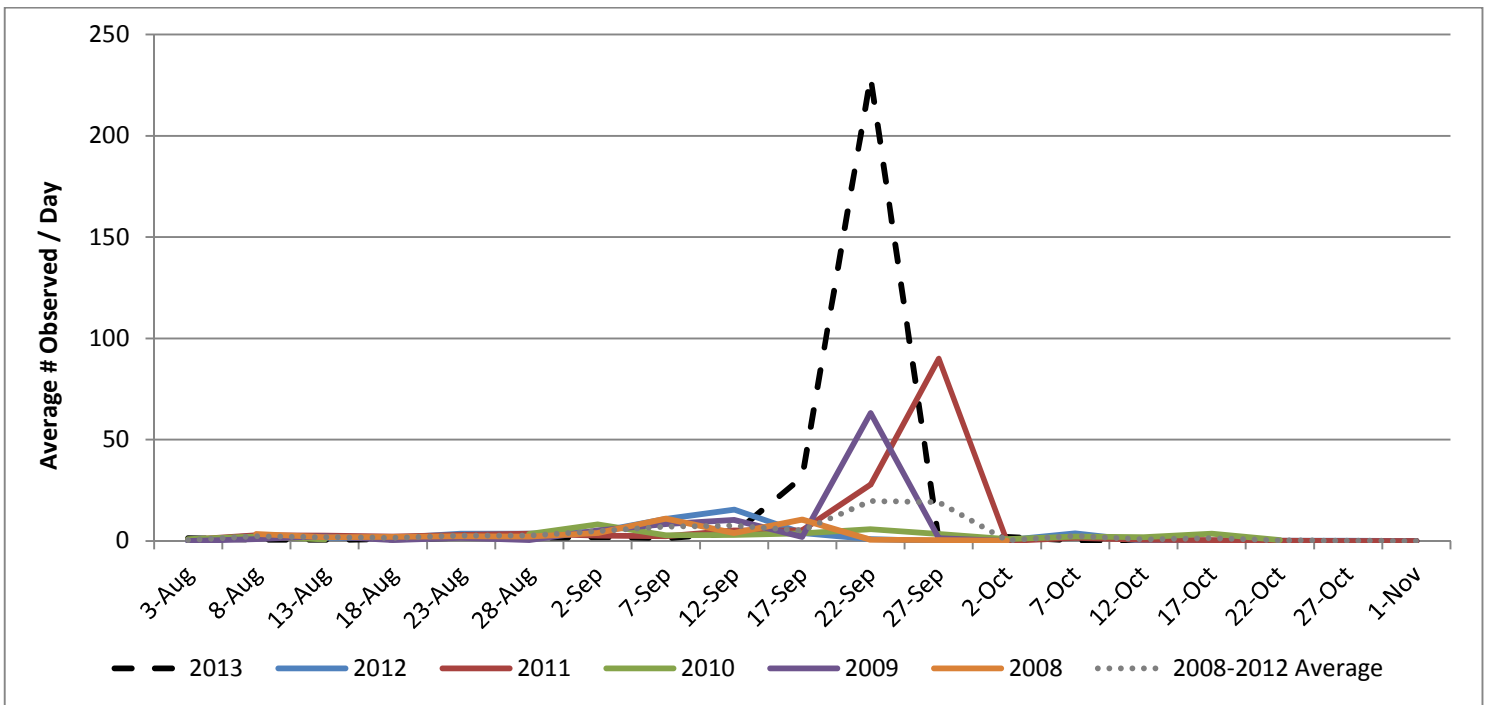


Figure F2. Pacific Loon daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013.

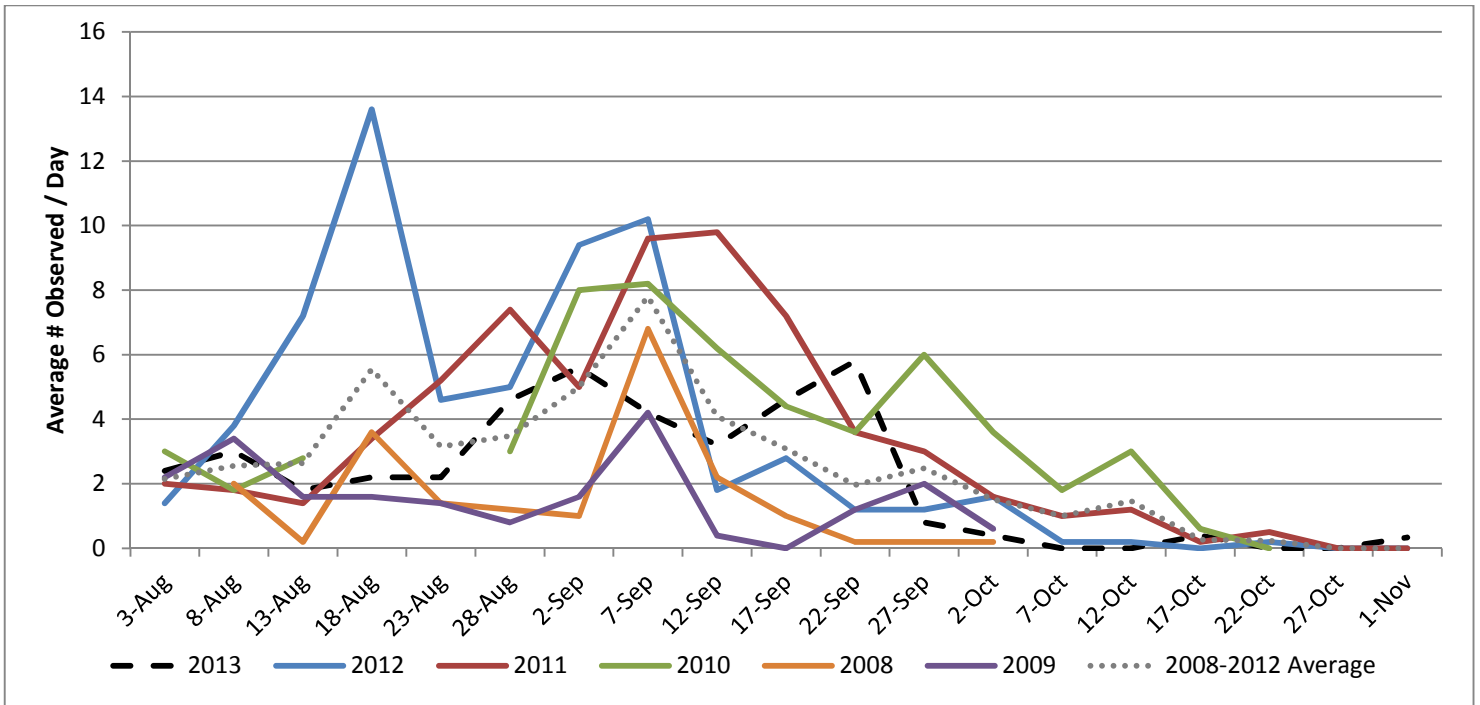


Figure F3. Common Loon daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013

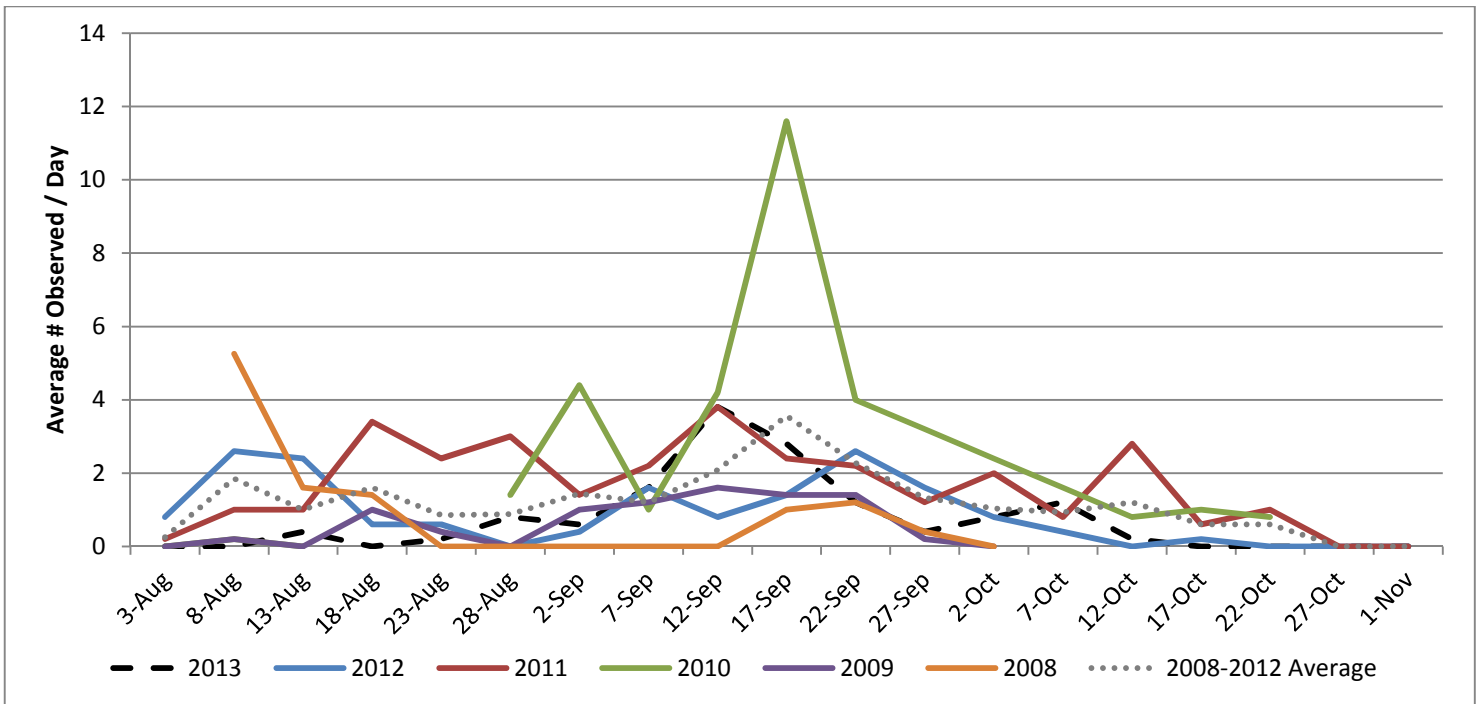


Figure F4. Horned Grebe daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013.

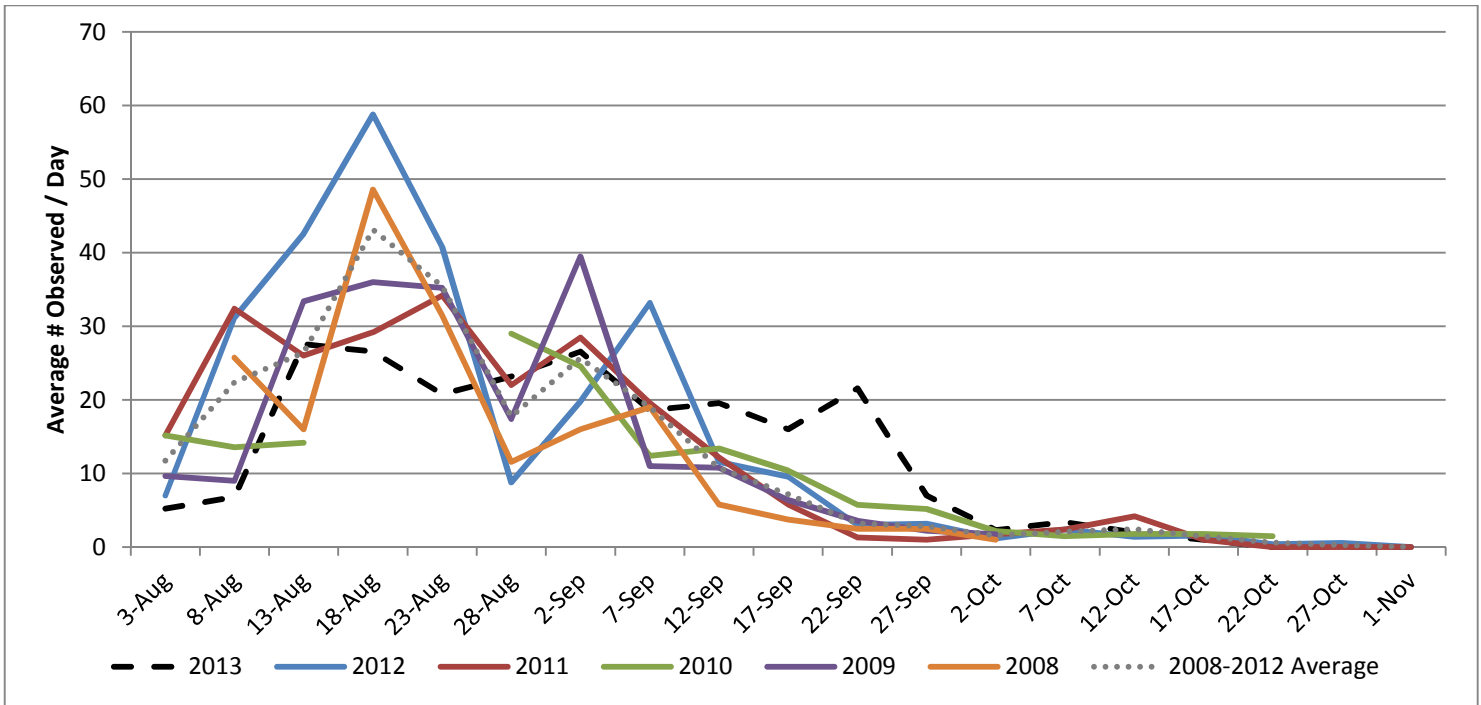


Figure F5. Red-necked Grebe daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013.

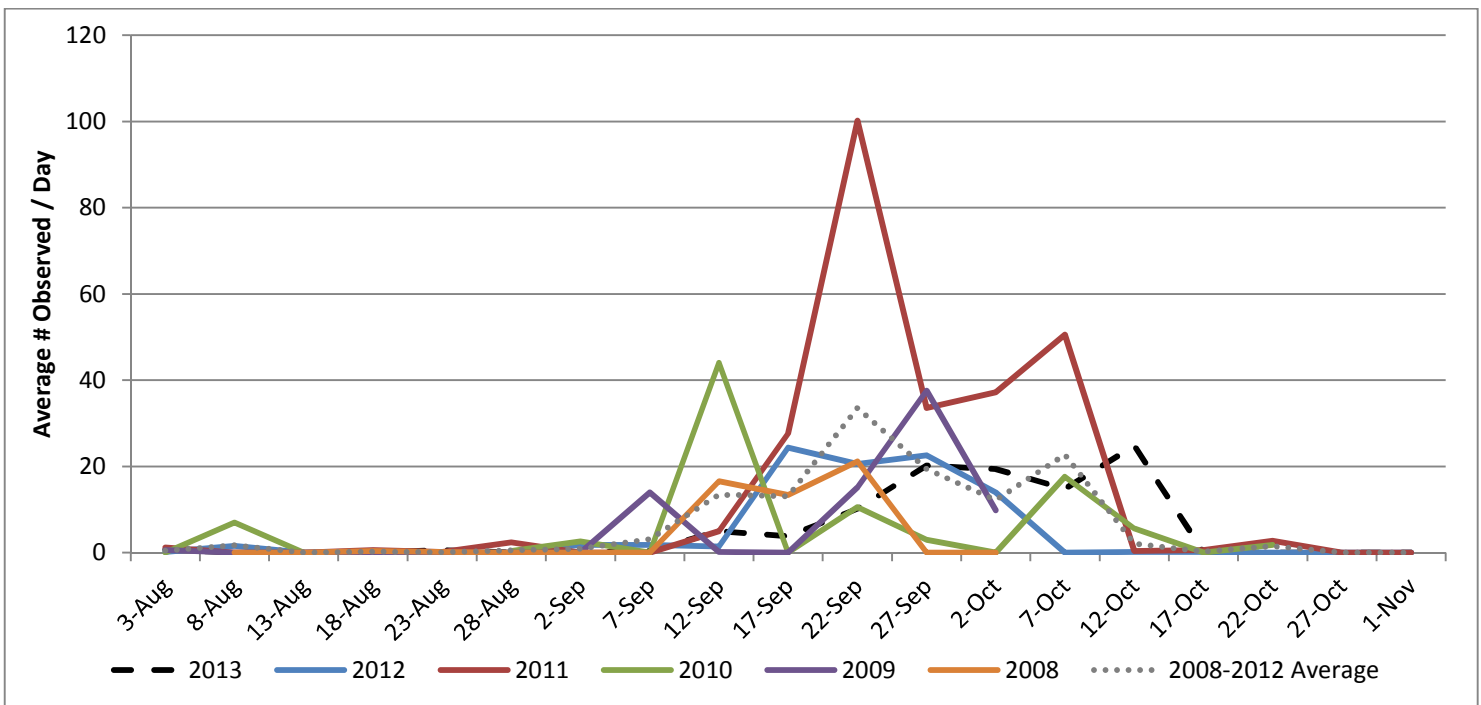


Figure F6. Lesser Scaup daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013.

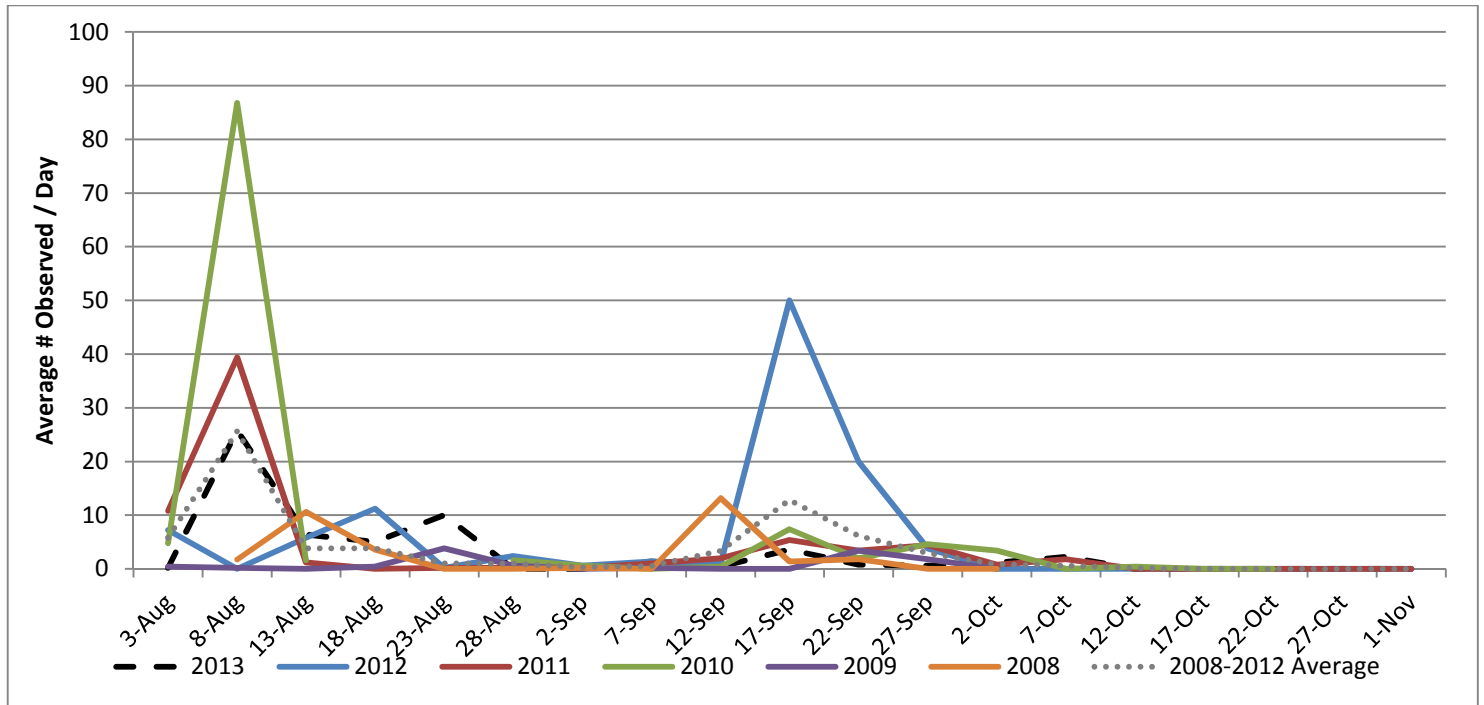


Figure F7. Surf Scoter daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013.

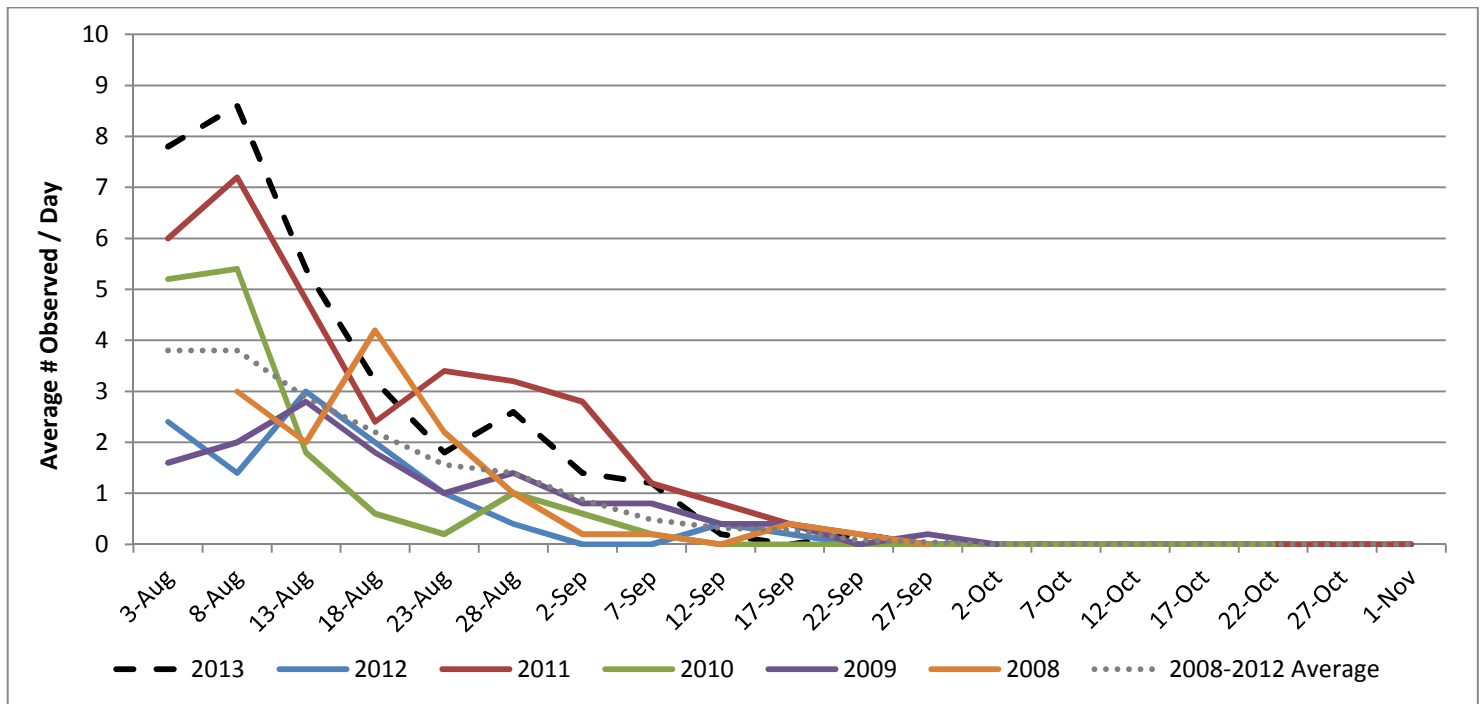


Figure F8. Spotted Sandpiper daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013.

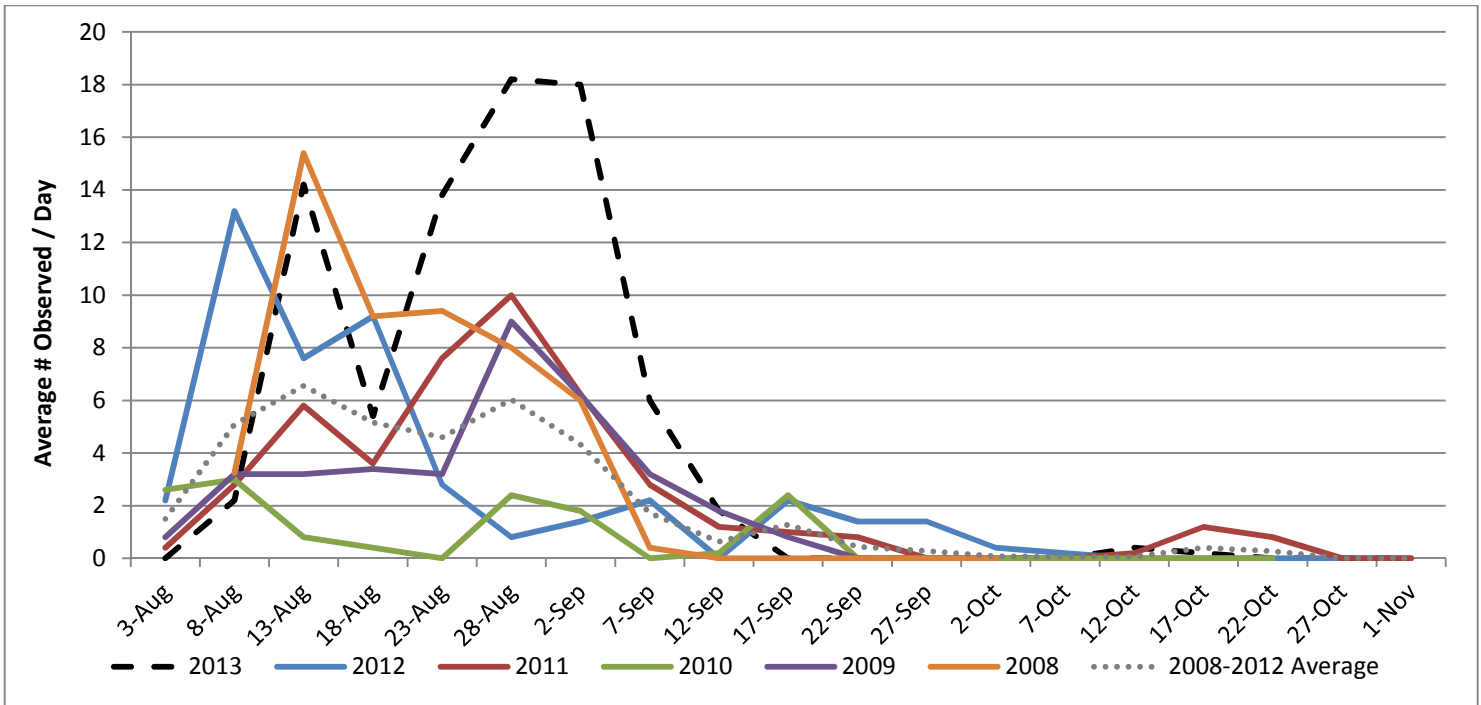


Figure F9. Mew Gull daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013.

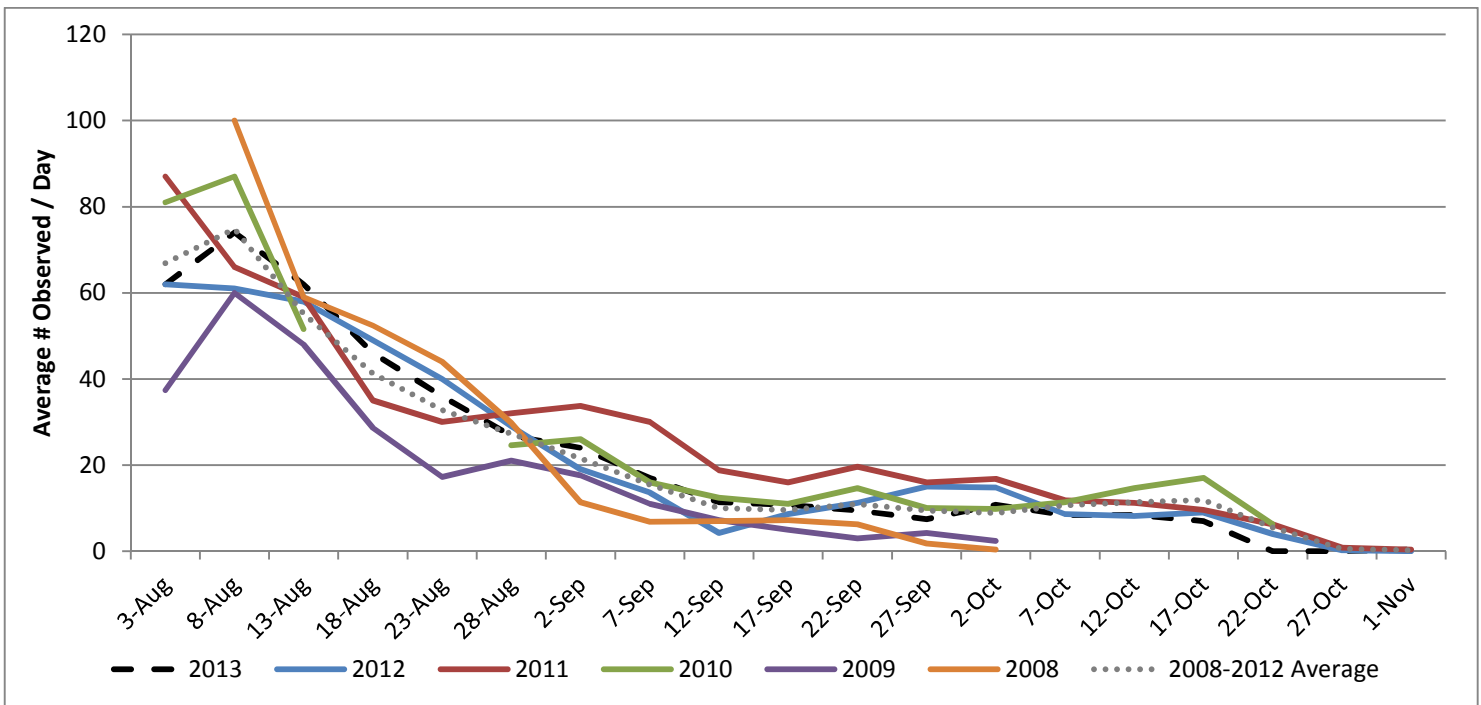


Figure F10. Herring Gull daily species total timing at Teslin Lake Bird Observatory from 2008 to 2011.

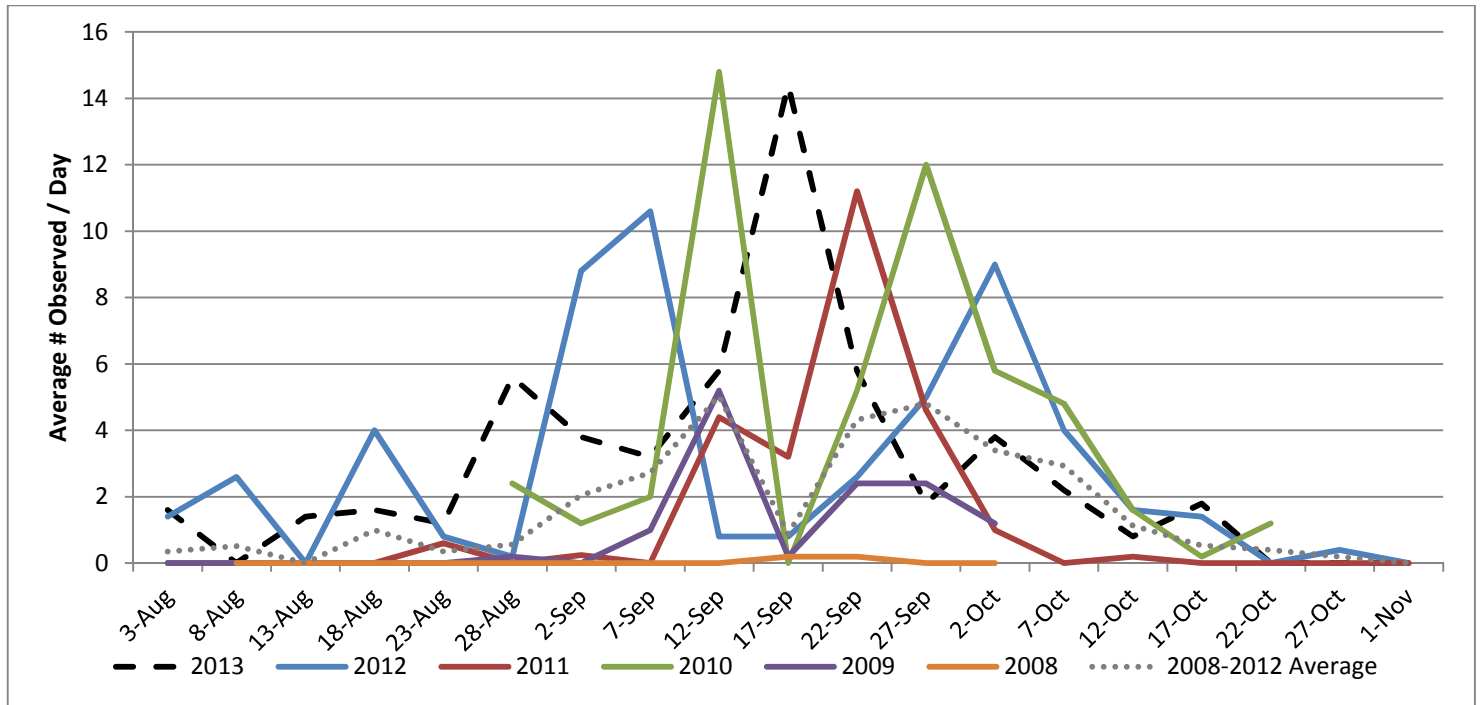


Figure F11. Thayer's Gull daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013.

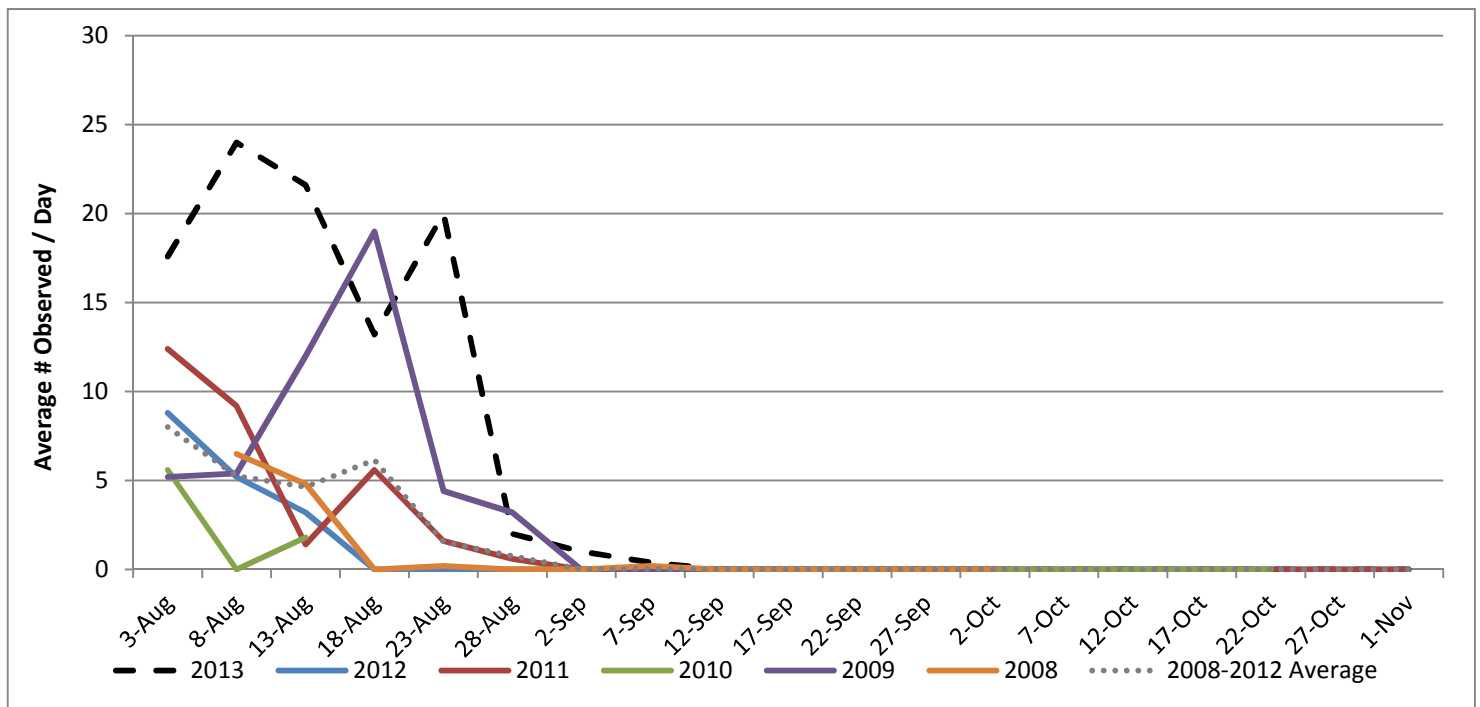


Figure F12. Arctic Tern daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013.

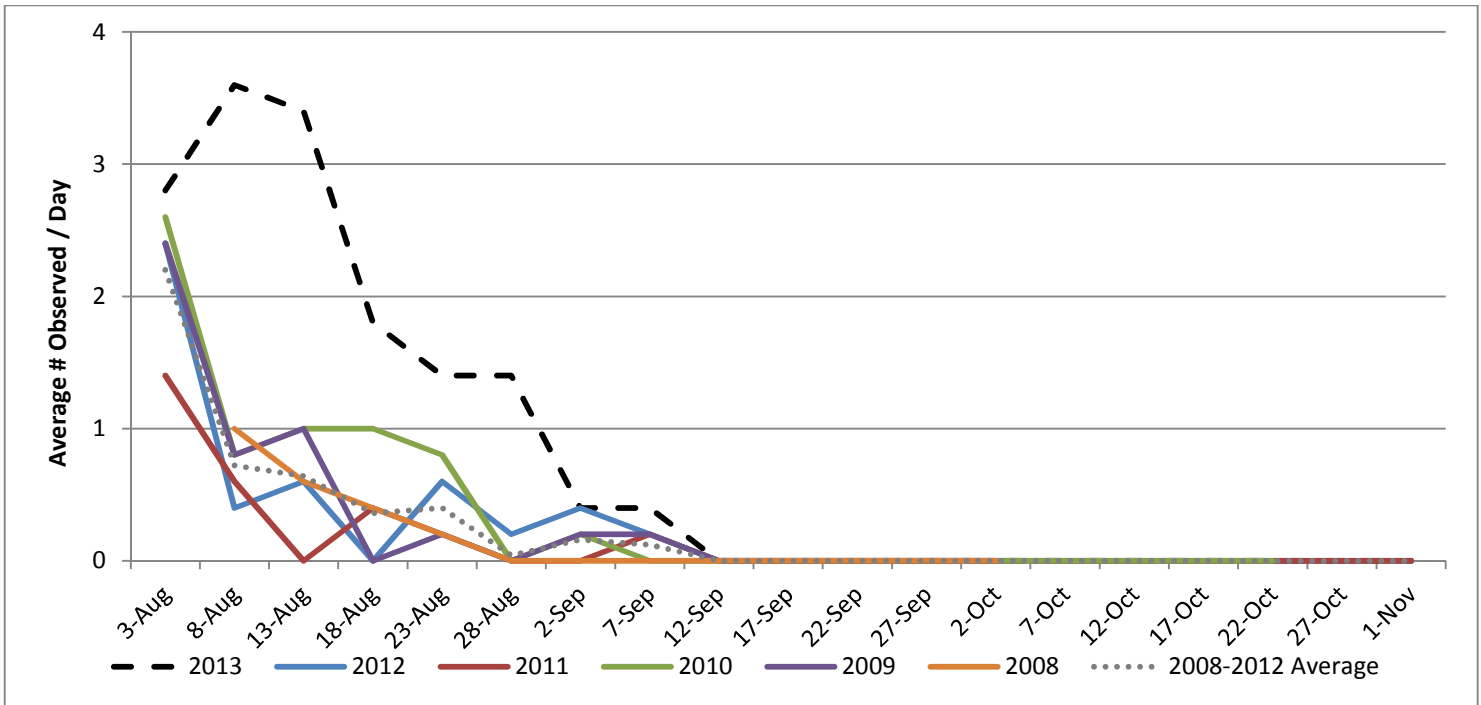


Figure F13. Warbling Vireo daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013.

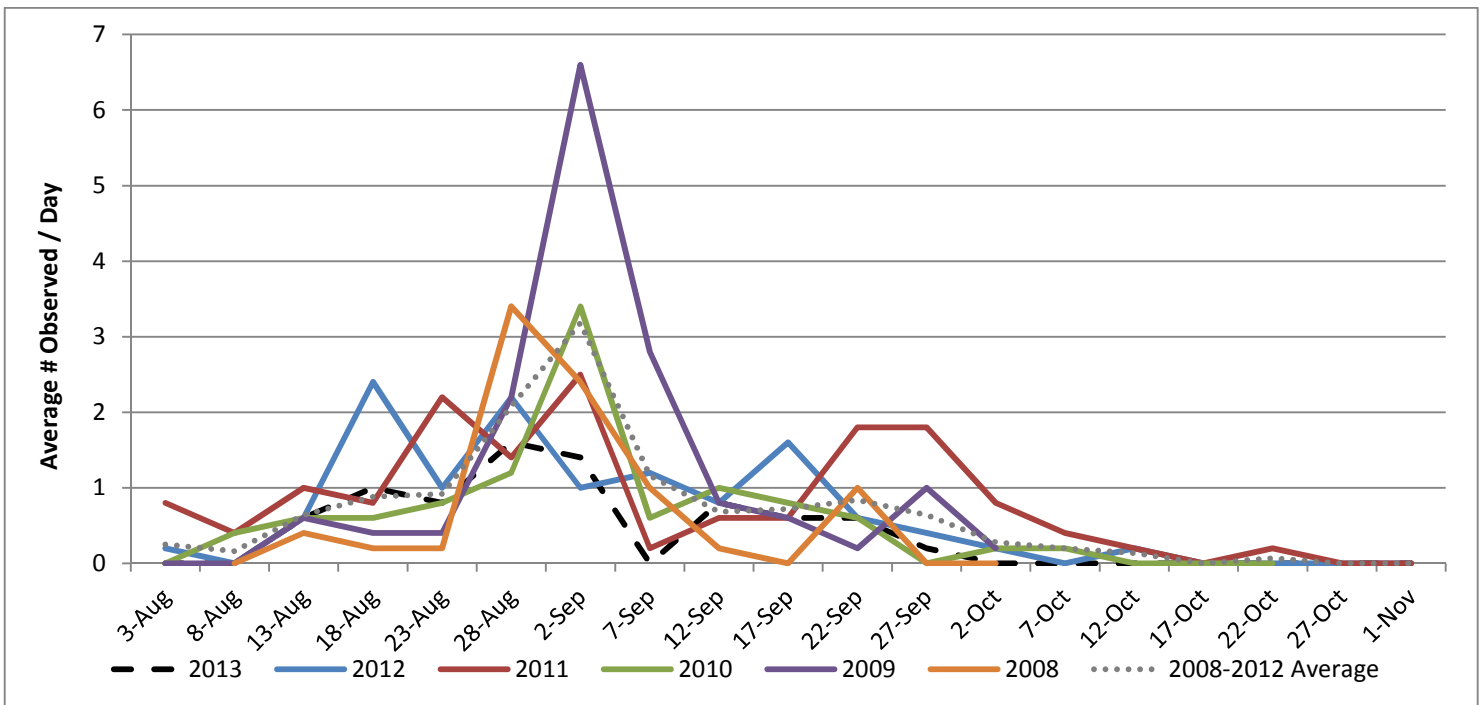


Figure F14. Savannah Sparrow daily species total timing at Teslin Lake Bird Observatory from 2008 to 2013.