

# Teslin Lake Bird Observatory Annual Report 2020



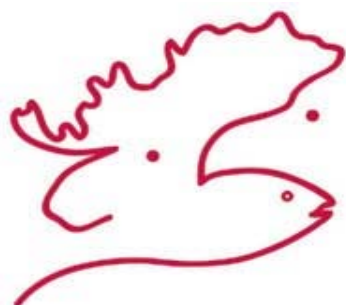
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Society of Yukon Bird Observatories  
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The 2019 operation of the Teslin Lake Bird Observatory was made possible due to support and financial contributions from the following organizations.



**Environment  
Canada**

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**Yukon Fish and Wildlife  
Enhancement Trust**



**Yukon   
Bird Club**

Cover Photo: A Rustic Bunting observed at the observatory on October 9, 2019 was the first record of the species for the Yukon (Photo: Jukka Jantunen).

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

## SUMMARY

During 2015, the Yukon Bird Observatories (Teslin Lake and Albert Creek) were granted full membership status to the Canadian Migration Monitoring Network (CMMN). The Yukon Bird Observatories are the northernmost and the only stations located within the core of Canada's Boreal Forest.

The Teslin Lake Bird Observatory completed its twelfth consecutive year of fall migration monitoring in 2019. The field station operated for a total of 79 days between July 25 and October 20. The observatory has followed the same operating procedures since standardized migration monitoring began during the fall of 2008.

Crews followed standard methods to mist net, handle, band and record information from captured birds. They banded a total of 4,138 birds of 55 species with 6,200 net hours (66.73 birds/100 net hours). Alder Flycatcher, Yellow Warbler, Slate-colored Junco, Myrtle Warbler and Wilson's Warbler were the five most common species banded, accounting for over 62 % of all individuals banded. These have been among the top species banded in previous years although numerous species were banded in above average or record high totals. The most notable record high banding total was 655 Yellow Warblers which surpassed the previous high of 556 banded during 2015.

Visual migration and lake counts were conducted to collect monitoring data for bird species not adequately sampled by mist netting (for example diurnal raptors, loons and grebes). Between August 13 and October 20, personnel spent 201.6 hours doing visual counts and observed 50,034 individuals (248 birds per hour) which is the highest recorded to date. The 2019 observations included 2,095 individuals of 15 diurnal raptor species, of which two are regional species of interest for monitoring - Swainson's Hawk and American Kestrel. The remaining visual migrants included a number of species with the most common species being Tundra Swan, Greater White-fronted Goose and Sandhill Crane.

Noteworthy results from 2019 included:

- The number of birds banded was well above the long term average and the capture rate of birds per 100 net hours (66.7) was the highest recorded to date.
- Numerous species were banded in record high numbers with Yellow Warbler, Swainson's Thrush, Common Yellowthroat and Alder Flycatcher being the most notable.
- No new species were banded during 2019 although two Hairy Woodpeckers banded were a first for the current banding site. Although not new banding records for the observatory, the capture of four species were rare and unusual for the site and included: Philadelphia Vireo, Black-and-white Warbler, Swamp Sparrow and Song Sparrow.
- Two new species were observed at the site, including Sora and Rustic Bunting, the latter of which provided the first record for the Yukon.
- A total of 2,095 raptors and 30,544 waterfowl were observed on the visual migration counts.
- The lake counts tallied a total of 153 bird days of shorebirds (10 species), 409 bird-days of loons (3 species), 461 bird-days of grebes (2 species) and 2,129 bird-days of gulls/terns/jaegers (9 species).
- A total of 33 volunteers spent a total of 665 hours at the observatory and a total of 117 individuals visited the observatory totaling 183 visitor hours.

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## 1.0 Introduction

This report describes methods and results of work done at the Teslin Lake Bird Observatory from July 25 to October 20, 2019, the twelfth year of fall operation at this site. No new activities were undertaken at the observatory in 2019.

Previous annual reports and the database of band recoveries can be found on the Society of Yukon Bird Observatories website: [www.yukonbirdobservatories.org](http://www.yukonbirdobservatories.org)

### 1.1 Background

The observatory collects information on birds which is shared through an international bird banding database (Canadian Wildlife Service Bird Banding Office and USGS Bird Banding Laboratory), Society of Yukon Bird Observatories annual station reports, and other publications. During 2015, the Yukon Bird Observatories (Teslin Lake and Albert Creek) were granted full membership status to the Canadian Migration Monitoring Network (CMMN). The CMMN is a nationwide network of 26 member stations from across Canada that collect standardized bird monitoring data and collaborate on research projects. The Yukon Bird Observatories are the northernmost stations and are located within the core of Canada's western Boreal Forest.

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

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

### 1.2 Goals of the Teslin Lake Bird Observatory

The goals of the Teslin Lake Bird Observatory are to:

- Gather baseline information on birds and bird migration in the Teslin area.

- Collect data to facilitate the long-term monitoring (*i.e.* trend analysis) of birds in the southern Yukon.
- Conduct and participate in specific studies such as feather collecting for stable isotope analysis and color banding.
- Provide a setting for the public including school groups to learn about birds and bird migration.
- Provide employment and training opportunities for students and volunteers.
- Provide a unique tourist attraction for the community of Teslin.

### **1.3 Objectives of the 2019 Season**

The objectives of the 2019 field season at the Teslin Lake Bird Observatory were to:

- Continue the fall monitoring work using previously established protocols,
- Collect an additional year of bird monitoring data to be used for future trend analysis,
- Further refine the techniques to capture and band owls,
- Collect information on the molt timing of adult passerines banded, and,
- Compare 2019 bird migration results to the previous 11 years of similarly collected data.

### **1.5 Acknowledgements**

The 2019 operation of the Teslin Lake Bird Observatory would not have been possible without financial assistance from the following organizations/groups: Environment and Climate Change Canada (Canadian Wildlife Service), Yukon Fish & Wildlife Enhancement Trust Fund, Teslin Renewable Resources Council, and EDI Environmental Dynamics Inc. Yukon Parks provided use of a space in the Teslin Lake campground for an extended period of time to allow our long-term volunteers a place to camp for the duration of the 2019 season. Jukka Jantunen's excellent bird identification skills ensured high quality data collection, particularly during the visual migration counts which are challenging to complete with a high level of accuracy and consistency. Jukka has been the Bander in Charge at TLBO since full scale fall operation of the observatory began during 2008. Ted Murphy-Kelly assisted with field operations and observatory logistics including scheduling of volunteers.

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

- more than 15 days – Ted Murphy-Kelly, Julie Bauer and Mabel Wong;
- 10 to 15 days – Ben Schonewille;
- 5 to 10 days – Lila Tauzer and Pam Sinclair;
- Less than 5 days – Cora Kelly, Anne MacLeod, Bill Carpenter, Evan Centanni, Gwen Baluss, Kristina Beckman, Zack Davis, Cameron Eckert, Cathy Flick, Dawn Hansen, Mei Kuo, Millie Hall, Monique Lafontaine, Terry Skjonsberg, Andrea Altherr, Beth Hawkings, Brenna Kelly, Cahty Koot, Hilary Cooke, Janice Sibbeston, Jim Hawkings, Lloyd Freese, Logan McLeod, Medline Piuze, Nick Guenette, Rafael Langlois and Scott Cavasin.

## 2.0 Methods

### 2.1 Study Site

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

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

### 2.2 General Methods

The methods for the operation of the bird observatory follow the Teslin Lake Bird Observatory Field Protocol and Manual<sup>2</sup>. A summary of the field protocol is described in the following sections; however, for a detailed description refer to the publications page of the Society of Yukon Bird Observatories website ([www.yukonbirdobservatories.org](http://www.yukonbirdobservatories.org)).

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

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

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





**Figure 1.** Overview of the Teslin Lake Bird Observatory (60.2319 °N, -132.9159 °W). The numbers and red lines are mist nets, each 12 m long with the exception of net 28 which is 18 m in length. There is a campground bordering the mist netting area on the south side (right hand side of the photo). The red line with the “C” is the non-standard canopy net which was not used during 2019.

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

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

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

During 2019, the operation of the Teslin Lake Bird Observatory was led by the Primary Bander in Charge Jukka Jantunen. Jukka was responsible for overseeing all activities at the observatory including the capture/banding of birds, supervising volunteers, conducting the visual migration watches, recording the daily estimated total data and entering the data. Ted Murphy-Kelly was Co-Station Manager which included station logistics, staffing and filling in for the primary bander. Ben Schonewille was also a Co-Station Manager and looked after data analysis and the preparation of this report. Board members of the Society of Yukon Bird Observatories helped administer the Yukon Bird Observatories.

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

## **2.3 Mist Netting**

The primary method of monitoring the movement of birds through the study site is the use of mist nets for the purpose of capturing and banding birds. The observatory operates with 22 standard mist nets and one non-standard mist net (Figure 1). No non-standard nets were used in 2018; note that in previous years a trial canopy net (net ID = C on Figure 1) was used. All nets are 30 mm mesh, 4 panels tall, and 12 m in length, with the exception of net 28 which is 18 m in length. The standard mist netting effort begins at official sunrise and continues for 6 hours. The full mist netting effort is achieved only on days when adequate personnel are present onsite and weather conditions are favourable. If full effort is not possible, then the number of nets operated is reduced rather than reducing the duration of effort.

## **2.4 Visual Migration Watch**

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

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

## **2.5 Lake Counts**

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

## **2.6 Incidental Observations**

Incidental observations are collected on a continuous basis at the observatory. For example, birds observed on the ground or in the vegetation while conducting mist net checks would be considered incidental observations. Birds in obvious directed migration but not during standard visual migration watches, e.g. flying overhead in flocks or raptors passing overhead, were recorded as ‘incidental migrants’.

## **2.7 Molt Scoring**

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

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

## **2.8 Public Engagement**

To attract members of the public to the observatory, we put up posters at various common buildings in Teslin including the Nisutlin Trading Post, Yukon Motel, Teslin Tlingit Council Administration Office and Post Office. We also advertised the observation through digital media including the Yukon Bird Observatories blog, Facebook page and website. Interested individuals could also find articles in the Yukon News in May and September, on the Yukon Government Wildlife viewing program calendars and media advertising.

## 3.0 Results & Discussion

### 3.1 Station Operation

The 2019 fall season included a total of 79 field days between July 25 and October 20. Standardized mist netting occurred on 63 days between July 25 and October 4 and opportunistic (non-standard) banding was done on August 18 only. After October 4, activities at the observatory were limited to visual migration counts, lake counts and incidental observations.

A total of 4,138 birds of 55 species were banded and 141 species were observed (Table 1, Table 2). The all-time total number of birds banded at Teslin Lake Bird Observatory is now 42,643 birds of 95 species and 207 species have been observed (Appendix A). New species added to the station checklist during 2019 included: Sora and Rustic Bunting. The latter of which not only provided the first TLBO report, but also the first Yukon record for this species which is typically only found in Asia. No new species were banded for the observatory during 2019; however, the capture of two Hairy Woodpeckers provided the first banding record at the current site (two were banded during 2005 when the observatory was located at a different site). Although not new banding records for the observatory, the capture of four species were rare and unusual for the site and included: Philadelphia Vireo, Black-and-white Warbler, Swamp Sparrow and Song Sparrow.

**Table 1.** Summary statistics for the 2019 fall season.

Week	Date	Days Operated <sup>1</sup>	Birds Banded				Visual Counts		Total Species Observed
			#	Species	Net Hours	#/100 Net Hours	# of Visual Migrants <sup>2</sup>	Counting Hours	
1	25 – 31 Jul	6	347	30	512.00	67.77	172	0.0	51
2	1 – 7 Aug	6	341	32	456.00	74.78	199	0.0	58
3	8 – 14 Aug	7	499	28	671.50	74.31	297	0.7	67
4	15 – 21 Aug	6	577	27	557.00	103.59	584	4.0	68
5	22 – 28 Aug	5	1041	30	621.25	167.56	6027	13.5	83
6	29 Aug – 4 Sep	7	445	26	842.00	52.85	1246	13.7	70
7	5 – 11 Sep	7	387	31	917.00	42.20	2455	24.2	75
8	12 – 18 Sep	7	302	26	682.00	44.28	3917	24.6	80
9	19 – 25 Sep	5	123	15	434.50	28.30	3139	21.4	78
10	26 Sep – 2 Oct	7	67	17	369.50	18.13	6496	27.5	68
11	3 – 9 Oct	6	9	4	138.00	6.52	16462	28.9	73
12	10 – 16 Oct	7	-	-	-	-	4964	27.8	48
13	17 – 23 Oct	3	-	-	-	-	4447	15.5	43
ALL	25 Jul – 20 Oct	79	4138	55	6200.75	66.73	50034	201.6	141

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

<sup>2</sup> Note this total includes visual migrants counted during the visual counts and incidental visual migrants observed.

**Table 2.** Birds banded during the 2019 fall season (not including special projects).

Common Name	Scientific Name	# Banded	# Banded / 1000 Net Hrs
Sharp-shinned Hawk	<i>Accipiter striatus</i>	7	1.13
Northern Harrier	<i>Circus cyaneus</i>	1	0.16
Merlin	<i>Falco columbarius</i>	3	0.48
Solitary Sandpiper	<i>Tringa solitaria</i>	1	0.16
Spotted Sandpiper	<i>Actitis macularius</i>	1	0.16
Belted Kingfisher	<i>Ceryle alcyon</i>	1	0.16
Hairy Woodpecker	<i>Luconotopicus villosus</i>	2	0.32
Downy Woodpecker	<i>Picoides pubescens</i>	2	0.32
Western Wood-Pewee	<i>Contopus sordidulus</i>	4	0.65
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	12	1.94
Alder Flycatcher	<i>Empidonax alnorum</i>	918	148.05
Hammond's Flycatcher	<i>Empidonax hammondii</i>	30	4.84
Dusky Flycatcher	<i>Empidonax oberholseri</i>	3	0.48
Northern Shrike	<i>Lanius excubitor</i>	1	0.16
Warbling Vireo	<i>Vireo gilvus</i>	10	1.61
Philadelphia Vireo	<i>Vireo philadelphicus</i>	1	0.16
Canada Jay	<i>Perisoreus canadensis</i>	4	0.65
Black-capped Chickadee	<i>Poecile atricapillus</i>	110	17.74
Mountain Chickadee	<i>Poecile gambelli</i>	1	0.16
Boreal Chickadee	<i>Poecile hudsonicus</i>	17	2.74
Red-breasted Nuthatch	<i>Sitta canadensis</i>	5	0.81
Golden-crowned Kinglet	<i>Regulus satrapa</i>	5	0.81
Ruby-crowned Kinglet	<i>Regulus calendula</i>	192	30.96
Gray-cheeked Thrush	<i>Catharus minimus</i>	9	1.45
Swainson's Thrush	<i>Catharus ustulatus</i>	122	19.68
Hermit Thrush	<i>Catharus guttatus</i>	8	1.29
American Robin	<i>Turdus migratorius</i>	25	4.03
Varied Thrush	<i>Ixoreus naevius</i>	2	0.32
Northern Waterthrush	<i>Parkesia noveboracensis</i>	58	9.35
Tennessee Warbler	<i>Oreothlypis peregrina</i>	8	1.29
Orange-crowned Warbler	<i>Oreothlypis celata</i>	243	39.19
Common Yellowthroat	<i>Geothlypis trichas</i>	146	23.55
American Redstart	<i>Setophaga ruticilla</i>	22	3.55
Yellow Warbler	<i>Setophaga petechia</i>	655	105.63
Blackpoll Warbler	<i>Setophaga striata</i>	96	15.48
Black-and-white Warbler	<i>Mniotilta varia</i>	1	0.16
Myrtle Warbler	<i>Setophaga coronata</i>	379	61.12
Townsend's Warbler	<i>Setophaga townsendi</i>	8	1.29
Wilson's Warbler	<i>Cardellina pusilla</i>	245	39.51
American Tree Sparrow	<i>Spizella arborea</i>	45	7.26
Chipping Sparrow	<i>Spizella passerina</i>	50	8.06
Brewer's Sparrow	<i>Spizella breweri</i>	1	0.16
Savannah Sparrow	<i>Passerculus sandwichensis</i>	48	7.74
Fox Sparrow	<i>Passerella iliaca</i>	15	2.42
Song Sparrow	<i>Melospiza melodia</i>	1	0.16
Lincoln's Sparrow	<i>Melospiza lincolni</i>	39	6.29
Swamp Sparrow	<i>Melospiza georgiana</i>	2	0.32
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	24	3.87
Slate-colored Junco	<i>Junco hyemalis</i>	384	61.93
Rusty Blackbird	<i>Euphagus carolinus</i>	17	2.74
Purple Finch	<i>Carpodacus purpureus</i>	1	0.16
White-winged Crossbill	<i>Loxia leucoptera</i>	62	10.00
Common Redpoll	<i>Acanthis flammea</i>	3	0.48
Hoary Redpoll	<i>Acanthis hornemanni</i>	1	0.16
Pine Siskin	<i>Spinus pinus</i>	87	14.03
TOTAL		4138	667.34

Weather conditions largely influence the activities at the observatory. Windy conditions and periods of prolonged precipitation reduce the mist netting effort. Weather conditions also influence the number of birds counted on the visual migration counts due to challenges associated with visibility and the dynamic nature of bird migration in relation to wind patterns. Wind in particular can be problematic at the observatory due to the site being directly adjacent to Teslin Lake and that a number of the nets are located in minimal cover along the shoreline/beach. The 2019 season saw temperatures which were near average compared to previous years and the amount of wind was slightly below average (Table 3, Table 4). The number of days with precipitation (15) was below the average of 23 days.

**Table 3.** Summary of weather conditions during the 2019 fall season.

Weather Parameter	Week							
	1	2	3	4	5	6	7	8
Average Opening Temperature (°C)	7.8	11.3	5.7	5.0	5.2	5.3	0.7	5.0
Average Closing Temperature (°C)	15.5	20.2	18.4	9.8	13.7	17.3	17.7	15.0
Average Opening Wind (Beaufort scale)	0.8	1.0	0.9	2.2	1.2	1.1	0.6	1.1
Average Closing Wind (Beaufort scale)	1.2	2.2	2.0	3.0	2.1	1.3		3.3
Days with Rain (during count period)	2	0	2	3	2	0	0	2
Days with Snow (during count period)	0	0	0	0	0	0	0	0
Weather Parameter	Week					Whole Season		
	9	10	11	12	13			
Average Opening Temperature (°C)	6.7	1.3	-2.5	0.4	-0.7	4.1		
Average Closing Temperature (°C)	12.1	9.1	6.0	3.7	3.0	12.9		
Average Opening Wind (Beaufort scale)	1.7	1.7	1.8	2.4	1.7	1.4		
Average Closing Wind (Beaufort scale)	2.9	2.4	2.0	2.1	1.0	1.9		
Days with Rain (during count period)	3	3	1	1	1	13		
Days with Snow (during count period)	0	0	0	2	0	2		

**Table 4.** Comparison of weather conditions during 2019 as compared to previous years.

Weather Parameter	Annual Average										2010 - 2018 Average
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Average Opening Temperature (°C)	4.4	3.5	2.6	6.0	4.7	4.4	4.8	4.7	3.5	4.1	4.3
Average Closing Temperature (°C)	13.0	10.4	10.7	14.4	11.8	10.2	12.1	12.6	14.3	12.9	12.2
Average Opening Wind (Beaufort scale)	2.3	1.7	1.7	1.5	1.4	1.3	1.6	1.6	1.4	1.4	1.6
Average Closing Wind (Beaufort scale)	2.8	2.6	2.9	2.7	2.3	2.5	2.4	2.3	2.0	1.9	2.5
Days with Rain (during count period)	20	33	17	14	32	19	16	21	14	13	20.7
Days with Snow (during count period)	3	4	6	0	5	2	1	4	1	2	2.9

### **3.2 *Patterns in Captures***

Each component of the 2019 data is summarized and presented in the following subsections; however, a summary account of the 2019 estimated total data is shown in Appendix B. Unless otherwise stated, the results presented in this report combine and summarize both standard and non-standardized data. Note that the estimated totals are derived on a daily basis by the Bander in Charge and incorporate all data collection components (mist netting captures and all observations) to estimate the number of birds of each species within or passing through the count area.

Among the top 15 species banded during 2019, all were captured in above average numbers (Table 5). There were record high banding totals for a number of species including:

- Yellow Warbler (655 banded), previous high of 556 during 2015.
- Common Yellowthroat (146 banded), previous high of 113 during 2009.
- Swainson's Thrush (122 banded), previous high of 102 during 2018.
- Black-capped Chickadee (110 banded), previous high of 92 during 2011.
- Northern Waterthrush (58 banded), previous high of 54 during 2010.
- Chipping Sparrow (50 banded), previous high of 38 during 2017.

**Table 5.** The 15 most common bird species banded in 2019 as compared to 2008–2018 totals (numbers in brackets indicate the annual ranking in birds banded). The prefix “T” indicates a tied in annual banding total

Species	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2008-2018 Average
Alder Flycatcher	918 (1)	358 (2)	548 (2)	498 (1)	1,058 (1)	506 (1)	770 (1)	827 (1)	637 (1)	620 (2)	631 (2)	811 (1)	660 (1)
Yellow Warbler	655 (2)	266 (4)	163 (6)	449 (2)	556 (2)	504 (2)	333 (3)	225 (2)	310 (3)	471 (3)	325 (4)	486 (2)	372 (3)
Slate-colored Junco	384 (3)	348 (3)	443 (4)	229 (5)	211 (7)	140 (7)	341 (2)	116 (7)	331 (2)	420 (4)	582 (3)	182 (3)	304 (4)
Myrtle Warbler	379 (4)	478 (1)	654 (1)	286 (4)	311 (5)	178 (4)	163 (4)	195 (3)	142 (5)	673 (1)	284 (5)	49 (9)	310 (4)
Wilson’s Warbler	245 (5)	164 (7)	68 (11)	172 (6)	386 (3)	164 (5)	122 (7)	134 (T5)	133 (6)	177 (7)	161 (8)	113 (5)	163 (6)
Orange-crowned Warbler	243 (6)	235 (5)	176 (5)	364 (3)	331 (4)	149 (6)	124 (6)	88 (8)	57 (14)	271 (5)	180 (6)	101 (6)	189 (6)
Ruby-crowned Kinglet	192 (7)	150 (8)	114 (8)	89 (8)	284 (6)	69 (9)	125 (5)	134 (5)	86 (8)	109 (8)	175 (7)	29 (12)	119 (14)
Common Yellowthroat	146 (8)	81 (13)	59 (12)	57 (10)	89 (11)	82 (8)	65 (9)	45 (13)	72 (12)	70 (11)	113 (9)	66 (7)	73 (10)
Swainson’s Thrush	122 (9)	102 (9)	26 (15)	82 (9)	68 (12)	49 (11)	55 (10)	41 (14)	85 (9)	53 (13)	49 (13)	19 (T13)	54 (15)
Black-capped Chickadee	110 (10)	55 (14)	95 (9)	24 (15)	31 (18)	16 (18)	31 (14)	65 (10)	92 (7)	22 (18)	26 (19)	57 (8)	47 (14)
Blackpoll Warbler	96 (11)	95 (11)	71 (10)	134 (7)	99 (10)	61 (10)	87 (8)	87 (9)	58 (13)	194 (6)	107 (10)	47 (10)	90 (15)
Pine Siskin	87 (12)	2 (T33)	151 (7)	3 (T33)	1 (T45)	303 (3)	8 (T24)	3 (T31)	10 (T27)	91 (10)	1 (T44)	1 (T34)	52 (26)
White-winged Crossbill	62 (13)	0 (-)	0 (-)	46 (11)	0 (-)	2 (T37)	5 (T31)	2 (T38)	1 (T49)	100 (9)	2 (T42)	2 (T31)	14 (36)
Northern Waterthrush	58 (14)	47 (16)	34 (14)	34 (13)	53 (15)	48 (12)	46 (12)	47 (T11)	42 (15)	54 (12)	53 (11)	46 (11)	45 (13)
Chipping Sparrow	50 (15)	18 (22)	38 (13)	31 (14)	29 (19)	15 (19)	20 (16)	17 (T18)	28 (T18)	18 (T22)	24 (20)	6 (T25)	22 (19)

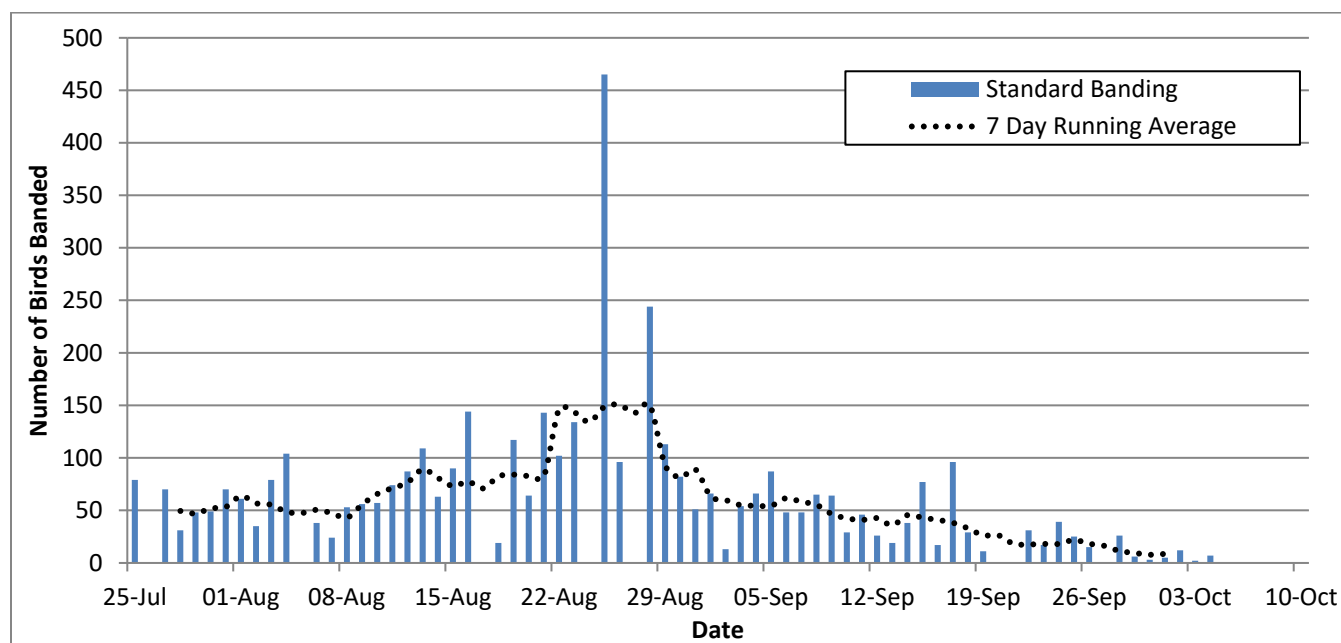


Among the top 10 species banded in 2019, the majority of birds banded across all species were hatch year individuals (Table 6) which is consistent with previous years. Numerous species show a considerable amount of year to year variability in hatch year proportions. For example, Alder Flycatchers have ranged from 41 to 90% hatch year individuals banded. Yellow Warbler is a species for which a relatively low proportion of hatch year birds are banded. This was once again the case during 2019 and this is notable given that a record high number of this species were banded. For such species banded in relatively high numbers, the proportion of hatch year birds may be able to be used to provide perspective on regional productivity.

**Table 6.** Age ratios (% hatch year) for the top 10 species banded during the fall of 2019.

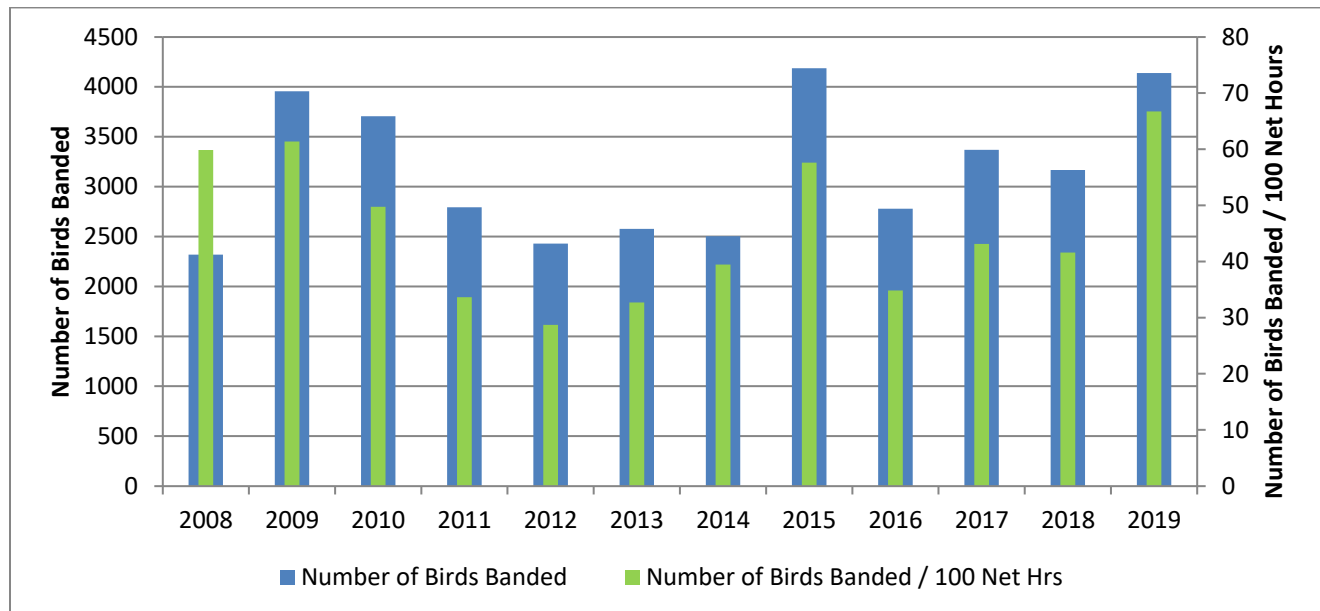
Species	2019	2018	2017	2016	2015	2014	2013	2012	2011	2011-2018 Average
Alder Flycatcher	79	81	83	41	73	85	84	81	72	75
Yellow Warbler	57	63	77	44	48	48	68	61	71	60
Slate-colored Junco	94	84	95	97	69	94	94	89	81	88
Myrtle Warbler	91	96	98	90	76	90	81	83	70	86
Wilson's Warbler	88	87	93	84	71	82	84	78	72	81
Orange-crowned Warbler	71	82	91	81	62	82	81	84	79	80
Ruby-crowned Kinglet	90	94	98	92	81	93	79	96	81	89
Common Yellowthroat	84	69	85	74	57	79	85	78	89	77
Swainson's Thrush	92	89	96	87	73	77	93	82	91	86
Black-capped Chickadee	96	100	100	78	90	100	93	94	95	93

The peak period for banding occurred during weeks 4 and 5 (August 15-21 and 22-28) when the number of birds banded was 103.59 and 167.56 birds/100 net hours; Figure 2). This period included a daily banding total of 465 birds on August 25<sup>th</sup> which nearly doubled the observatory previous high total. The birds banded on this day were dominated by Yellow Warbler (154), Alder Flycatcher (125) and Myrtle Warbler (82).



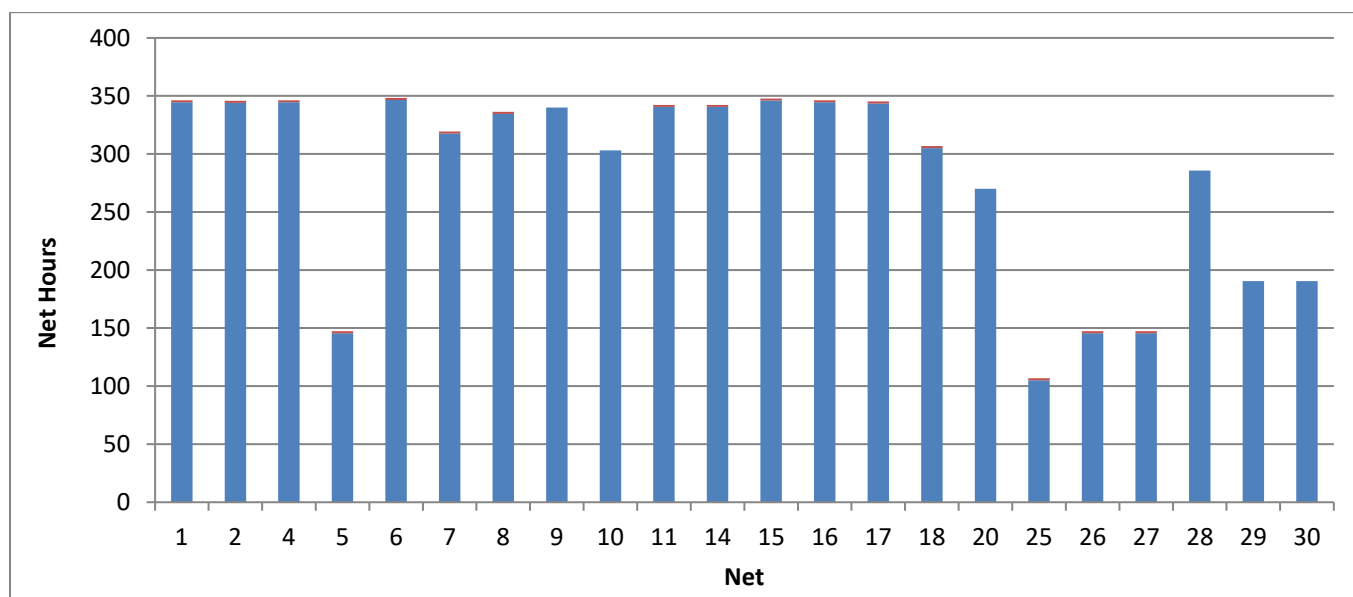
**Figure 2.** Summary of birds banded per day during the fall of 2019.

The 2019 banding total of 4,138 birds was well above the 2009 to 2018 average of 3,071 birds and only marginally less than the highest banding total of 4,186 during 2015. When the amount of mist netting effort is taken into consideration, the number of birds/100 net hours in 2019 (66.7) was the highest to date surpassing the previous high of 57.6 during 2015 (Figure 3).



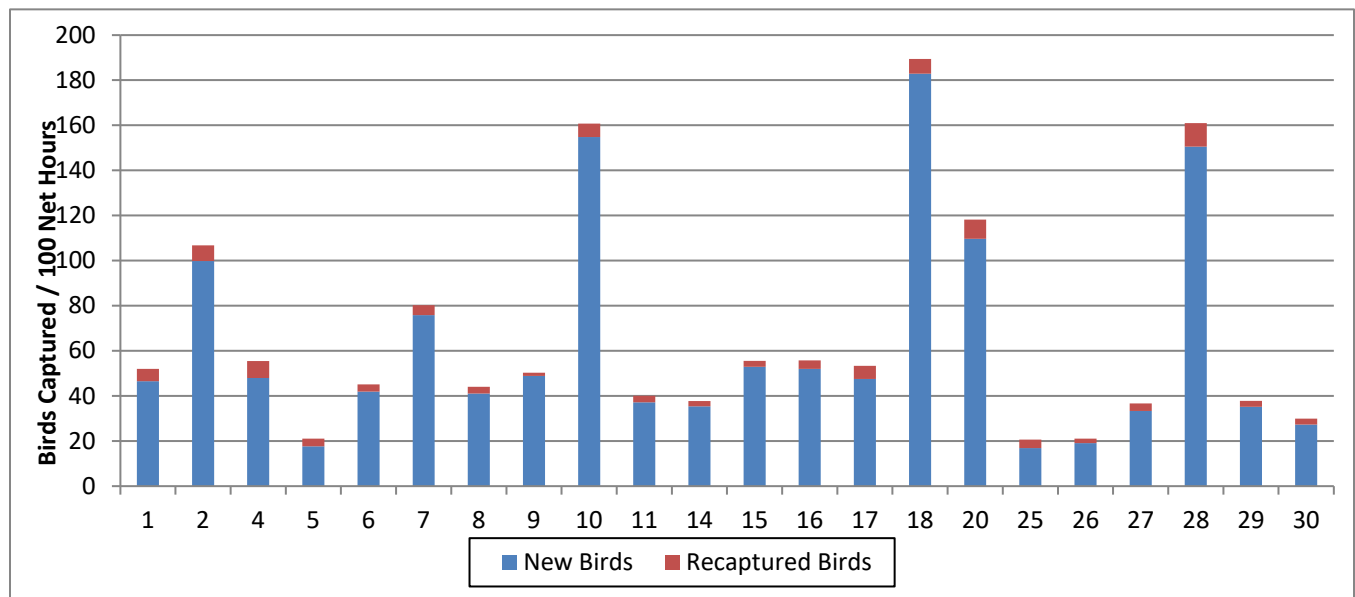
**Figure 3.** Summary of birds banded during the fall from 2008 to 2019.

The high level of consistency in effort across all standard mist nets (Figure 4) demonstrates the adherence to the observatory's monitoring protocol. Note that nets 7, 10, 18 and 20 are located on the sparsely vegetated shoreline and are more frequently closed midway through the daily count period due to wind. Nets 5, 25, 26 and 27 are located the furthest from the primary mist netting effort and are only used when adequate personnel are available on site. Net 28 stands out in Figure 4 as it is an 18 m net meaning that the effort is multiplied by 1.5; this net is also frequently closed due to wind.



**Figure 4.** Summary of hours per mist net during the fall of 2019 (note net 28 is an 18 m net whereas all other nets are 12m).

The majority of birds and species moving through the count area that are captured in the nets pass directly along the shoreline of Teslin Lake or around the small wetland with the mist netting area. We see this in the highest capture rates in mist nets 2, 7, 10, 18 and 28 (Figure 5) which are closest to the lake/wetland edge. This pattern is consistent with previous years although there seemed to be a more pronounced ‘shoreline effect’ during 2019 as nets directly on the beach (10, 18, 20 and 28) has unprecedented capture rates. Although a portion of the mist nets placed away from the lakeshore and in taller vegetation (nets 5, 25, 26 and 27) catch fewer birds per net-hour, these nets capture species such as Swainson’s Thrush and Varied Thrush which are not typically caught on the lakeshore.



**Figure 5.** Number of birds banded per mist net during the fall of 2019.

### 3.3 Band Repeats, Returns & Recoveries

The proportion of birds caught that had been previously banded at the site in 2019 (band repeats) was low (4.3%) during the 2019 season (Table 7) which is within 1-1.5% of previous years. 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 the purpose of migration monitoring, this is the preferred scenario as there is a limited amount of double counting the same individuals on consecutive days.

**Table 7.** Summary of band repeats during the fall of 2019.

Species	# of Individuals Recaptured	% of 2019 Original Bandings	Maximum # of Days From Original Banding	Average # of Days From Original Banding
Alder Flycatcher	3	0.2	5	3.7
Hammond's Flycatcher	2	6.7	5	3.5
Black-capped Chickadee	12	10.9	61	12.6
Ruby-crowned Kinglet	5	2.6	7	3.0
Swainson's Thrush	15	12.3	26	6.7
Hermit Thrush	1	12.5	2	-
American Robin	1	4.0	9	-
Northern Waterthrush	9	15.5	12	5.0
Tennessee Warbler	1	12.5	5	-
Orange-crowned Warbler	12	4.9	4	1.5
Myrtle Warbler	31	8.2	9	2.9
Yellow Warbler	17	2.6	10	3.7
Blackpoll Warbler	1	1.0	6	-
Common Yellowthroat	17	11.6	13	3.1
American Redstart	6	27.3	9	6.5
Black-and-white Warbler	1	100.0	18	-
Wilson's Warbler	5	2.0	9	3.6
American Tree Sparrow	10	22.2	19	4.2
Chipping Sparrow	4	8.0	6	3.8
Lincoln's Sparrow	5	12.8	6	3.2
Slate-colored Junco	12	3.1	48	9.0
Rusty Blackbird	2	11.8	1	1.0
White-winged Crossbill	6	9.7	26	7.5
TOTAL	178	4.3	-	-

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 2019, the observatory had 8 band returns representing 4 species (Table 8). The oldest band recoveries were a Black-capped Chickadee and Yellow Warbler banded at the site during the fall of 2016.

**Table 8.** Summary of band returns during the fall of 2019.

Species	Band Number	Banded		Recaptured
		Date	Age – Sex <sup>1</sup>	Date in 2018
Black-capped Chickadee	2810-13153	26 Jul 2016	HY – U	8 Aug 2019
Swainson's Thrush	2431-77532	12 Aug 2017	HY – U	2 Sep 2019
Yellow Warbler	2730-50104	28 Jul 2018	AHY – M	22 Aug 2019
Yellow Warbler	2810-13394	6 Aug 2016	AHY – M	2 Aug 2019
Yellow Warbler	2810-14213	3 Jun 2017	AHY – M	22 Aug 2019
Slate-colored Junco	2521-72616	6 Aug 2018	SY – F	14 Sep 2019
Slate-colored Junco	2521-72620	12 Aug 2018	HY – U	11 Aug 2019
Slate-colored Junco	2521-72799	30 Jul 2018	HY – U	15 Sep 2019

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

Foreign band **recoveries** are a very infrequent event; to date the observatory has had seven such recoveries and also recovered one bird from another SOYBO study site (Table 9). The most recent recovery was Swainson's Thrush banded at the Alaska Bird Observatory near Fairbanks, Alaska and recovered at Teslin Lake 6 days later during the fall of 2018. Another recovery reported during 2018 was an Orange-crowned Warbler banded at TLBO on August 15, 2017 and recovered near Gallup, New Mexico on May 9, 2018. The longest distance band recovery to date at TLBO is an Alder Flycatcher banded at Teslin Lake on August 24, 2009 and recaptured at Tacarcuna Nature Reserve in Colombia on April 29, 2011.

**Table 9.** Summary of foreign band returns for TLBO to date.

Species	Banded		Recovered	
	Location	Date	Location	Date
Yellow Warbler	Texas, USA	12 May 2008	Teslin Lake	9 Sep 2009
Alder Flycatcher	Teslin Lake	25 Aug 2008	SW Saskatchewan	12 Jun 2009
Sharp-shinned Hawk	Teslin Lake	14 Aug 2009	Boise, Idaho	9 Oct 2010
Alder Flycatcher	Teslin Lake	24 Aug 2009	Sapzurro, Choco, Colombia	29 Apr 2011
Myrtle Warbler	Teslin Lake	7 Sep 2010	McIntyre Marsh Bird Banding Station – Whitehorse, YT	25 May 2013
American Robin	Teslin Lake	8 Aug 2014	Dunburn, Saskatchewan	11 Apr 2015
Slate-colored Junco	Teslin Lake	5 Sep 2016	Grand Forks, North Dakota	14 Apr 2017
Orange-crowned Warbler	Teslin Lake	15 Aug 2017	Gallup, New Mexico	9 May 2018
Swainson's Thrush	Fairbanks, Alaska	12 Sep 2018	Teslin Lake	18 Sep 2018

### 3.5 Molt Scoring

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

Wing molt score is achieved by assigning each individual wing flight feather a score from zero (old feather remaining) to five (new feather fully grown) and adding them together. Note that birds symmetrically molt their wing feathers; however, the scores collected are typically on the right wing. During 2019, a total of 139 molt scores were obtained from 130 individuals of 21 species (Table 10). No additional analysis is provided here; however, additional analysis could be conducted to compare the stage of molt in comparison to timing.

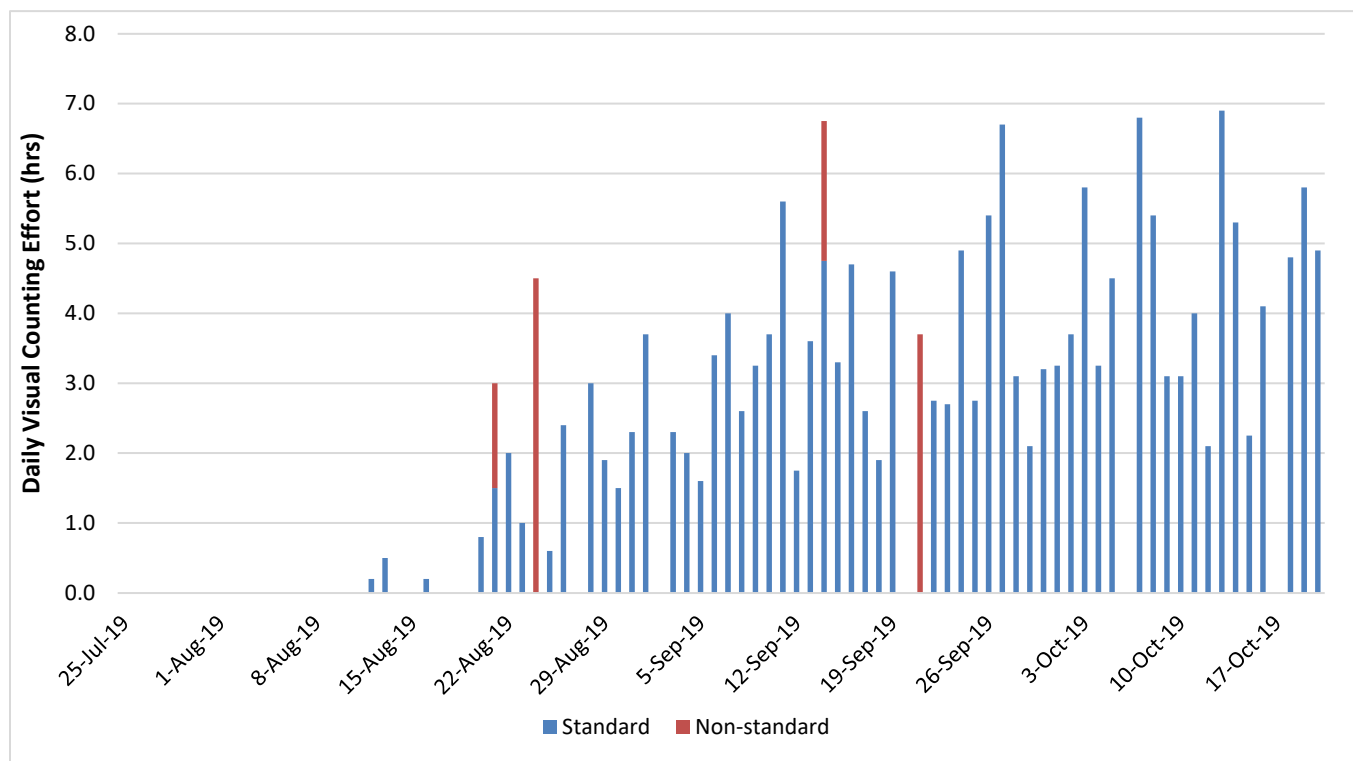
**Table 10.** Summary of wing molt scores collected from adult birds during the fall of 2018. Note that the total number of molt score is often greater than the number of individuals given that some recaptured birds are scored more than once on subsequent days.

Species	Number of Individuals Scored	Total Number of Molt Scores
Hairy Woodpecker	2	2
Philadelphia Vireo	1	1
Black-capped Chickadee	2	3
Swainson's Thrush	8	8
Ruby-crowned Kinglet	3	4
Orange-crowned Warbler	13	13
Myrtle Warbler	19	19
Yellow Warbler	34	34
Blackpoll Warbler	9	10
Common Yellowthroat	5	5
Black-and-white Warbler	1	4
American Redstart	5	6
Wilson's Warbler	6	6
American Tree Sparrow	1	1
Savannah Sparrow	1	1
Lincoln's Sparrow	1	1
Slate-colored Junco	4	5
Rusty Blackbird	2	2
White-winged Crossbill	9	10
Hoary Redpoll	1	1
Pine Siskin	3	3
TOTAL	130	139

### 3.6 Visual Migration Counts

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

During the fall 2019 season, visual migration counts (standard & nonstandard) were conducted for 201.6 hours (Figure 6). Non-standard counts were limited to days when the total amount of observing effort was insufficient to constitute standard effort and days where the allowable duration of standard effort was too high (i.e., extra effort).



**Figure 6.** Visual counting effort, in hours each day, over the duration of the 2019 season.

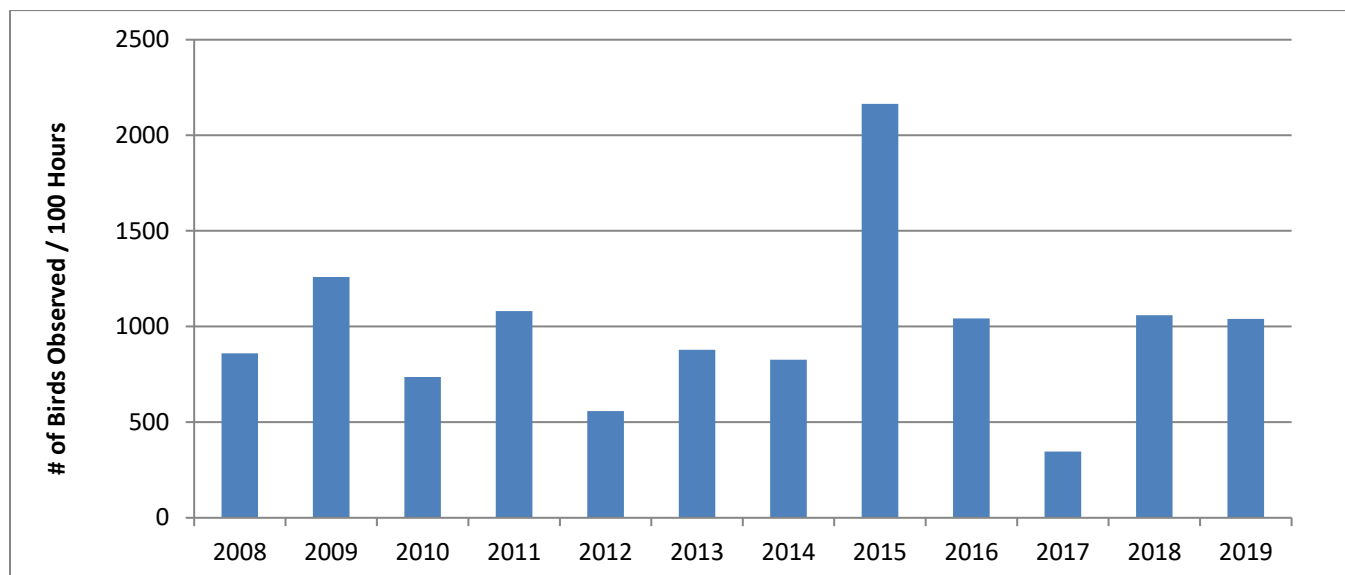
A total of 50,034 birds were observed during the 2019 visual migration counts with waterfowl accounting for the largest proportion of the birds observed (**Error! Reference source not found.**). Compared to previous years, the number of birds observed during 2019 was the highest to date, largely due to the high numbers of waterfowl (particularly Tundra Swans) observed.

**Table 11.** Summary of birds observed on the visual migration counts from 2009 to 2019.

Year	Total Birds Observed					TOTAL BIRDS OBSERVED / HR	Visual Counting Effort (hrs)
	Waterbirds & shorebirds	Waterfowl	Raptors	Passerines	ALL SPECIES		
2009	4,927	8,219	1,612	11,000	25,758	201	128.1
2010	3,491	22,258	1,710	16,277	43,736	188	232.4
2011	1,072	31,548	3,680	37,951	74,251	218	340.6
2012	1,583	35,044	1,977	21,408	60,012	169	354.8
2013	2,166	7,852	2,466	28,839	41,323	147	280.9
2014	721	28,556	2,300	23,397	54,974	197	279.0
2015	3,878	22,560	4,211	11,797	42,446	218	194.6
2016	1,043	14,885	1,946	20,182	38,056	204	186.7
2017	436	9,497	980	13,626	24,539	87	235.6
2018	1,103	11,689	1,268	2,386	16,443	138	119.5
2019	1,690	30,544	2,095	15,705	50,034	248	201.6
2009-2018 Average	2,042	19,211	2,215	18,686	42,154	177	235.2

### 3.6.1 Raptors

The number of raptors observed on the 2019 visual migration counts (2,093) was near average; the lowest total of 980 raptors was recorded during 2017 and the highest of 4,211 during 2015. The amount of watching effort was slightly below average but sufficient to thoroughly document the raptor migration. When the amount of counting effort is taken into consideration, 1039 raptors were observed per hour. This is above the long term average of 982 but considerably less than the high of 1258 during 2009 (Figure 8). All regularly occurring species were observed during 2019 and two species of owl not observed in all years were observed during 2019. The most numerous species observed were Harlan's Red-tailed Hawk (25% of all raptors), Sharp-shinned Hawk (17%), Golden Eagle (16%), Northern Harrier (12%) and Rough-legged Hawk (12%; Table 12).

**Figure 7.** Number of raptors observed per 100 watching hours during 2019.



**Table 12.** Summary of raptor visual migrants observed during 2019.

Species	Total # Counted		
	Migration Counts	Incidental Migrants	TOTAL
Bald Eagle	147	2	149
Northern Harrier	247	11	258
Sharp-shinned Hawk	354	2	356
Northern Goshawk	22	2	24
Swainson's Hawk	19	0	19
Red-tailed Hawk (unspecified)	2	0	2
Red-tailed Hawk (Harlan's)	524	0	524
Rough-legged Hawk	255	1	256
<i>Unidentified Buteo</i>	11	0	11
Golden Eagle	341	0	341
American Kestrel	68	2	70
Merlin	41	0	41
Peregrine Falcon	14	3	17
Gyr Falcon	1	0	1
Osprey	39	0	39
<i>Unidentified Raptor</i>	5	0	5
Northern Hawk Owl	1	0	1
Short-eared Owl	2	0	2
<b>TOTAL</b>	<b>2093</b>	<b>23</b>	<b>2116</b>

A breakdown of color morph data collected from 2010 to 2019 is shown in Table 13 and Table 14 for Rough-legged and Red-tailed hawks, respectively. The majority of Rough-legged Hawks observed were classified as light morph individuals. By far the most common Red-tailed Hawk was the Harlan's dark morph, while the Harlan's light morph was the second most common. These patterns have been very consistent from year to year. The observation of possible western, northern and eastern Red-tailed Hawks are also notable given the limited information on these subspecies in the Yukon.

**Table 13.** Summary of color morph data recorded for Rough-legged Hawks observed from 2010 to 2019.

Year	Dark Morph (%)	Light Morph (%)
2010	21.7	78.3
2011	13.5	86.5
2012	18.8	81.2
2013	11.1	88.9
2014	11.8	88.2
2015	8.5	91.5
2016	7.3	92.7
2017	16.7	83.3
2018	21.2	78.8
2019	7.3	92.7
Average	13.8	86.2

**Table 14.** Summary of color morph data recorded for Red-tailed Hawks observed from 2010 to 2019.

Year	Harlan's Dark Morph (%)	Harlan's Light Morph (%)	Western ( <i>calarus</i> )	Northern ( <i>abieticola</i> )	Eastern ( <i>borealis</i> )
2010	95.1	4.3	0.5 (2 birds)		
2011	95.0	4.6	0.2 (2 bird)		0.2 (2 birds)
2012	92.0	7.1	0.3 (1 bird)		0.6 (2 birds)
2013	88.4	10.3	0.6 (3 birds)		0.6 (3 birds)
2014	91.3	7.1	1.0 (7 birds)		0.5 (3 birds)
2015 <sup>1</sup>	91.0	8.6	0.3 (7 birds)		0.1 (2 birds)
2016	92.9	6.4	0.3 (2 birds)	0.3 (2 birds)	
2017	92.6	5.3	1.6 (3 birds)	0.5 (1 bird)	
2018	92.9	6.1		0.9 (3 birds)	
2019	92.3	7.3	0.4 (2 birds)		
Average	92.4	6.7	0.5	0.2	0.2

<sup>1</sup> One additional leucistic individual was observed and not included in this table.

We could reliably determine the age and sex of five species of visual migrants when viewing conditions were suitable (Table 15). Since 2010, most raptor species show consistently low proportions of juveniles and the variations in the proportion of young birds may be indicative of annual variations in reproductive output.

**Table 15.** Summary of age and sex data collected for raptors observed on visual migration counts from 2010 to 2019. Note that additional individuals with an undetermined age/sex categories are excluded.

Species	Year	Proportion of Individuals Counted (%)						
		Adult			Sub - adult	Immature	Juvenile	Female Plumaged (juv/female)
		Male	Female	Not Determined				
Bald Eagle	2010	-	-	42.3	32.1	11.6	14.1	-
	2011	-	-	14.7	37.3	33.3	14.7	-
	2012	-	-	54.3	33.7	12.0	0.0	-
	2013	-	-	28.2	58.3	6.3	7.3	-
	2014	-	-	35.6	40.2	11.5	12.6	-
	2015	-	-	14.5	60.0	14.5	10.9	-
	2016	-	-	32.0	28.0	32.0	8.0	-
	2017	-	-	19.1	34.0	27.7	19.2	-
	2018	-	-	22.7	40.9	9.1	27.3	-
	2019	-	-	28.9	49.1	17.0	5.0	-
	Avg.	-	-	29.2	41.4	17.5	11.9	-
Golden Eagle	2010	-	-	68.2	12.6	8.3	10.9	-
	2011	-	-	52.3	18.7	18.0	11.0	-
	2012	-	-	74.5	9.2	12.3	4.1	-
	2013	-	-	63.7	26.7	5.0	4.6	-
	2014	-	-	77.3	8.5	7.8	6.4	-
	2015	-	-	40.2	27.1	22.4	10.3	-
	2016	-	-	50.0	14.4	21.1	14.4	-
	2017	-	-	57.5	18.9	6.3	17.3	-
	2018	-	-	48.9	21.3	8.5	21.3	-
	2019	-	-	58.3	23.7	11.6	6.4	-
	Avg.	-	-	59.1	18.1	12.1	10.7	-
Northern Harrier	2010	11.3	12.2	-	-	-	37.1	39.3
	2011	8.9	10.7	-	-	-	26.5	53.9

Species	Year	Proportion of Individuals Counted (%)						
		Adult			Sub - adult	Immature	Juvenile	Female Plumaged (juv/female)
		Male	Female	Not Determined				
	2012	13.9	13.1	-	-	-	26.4	46.6
	2013	12.0	14.3	-	-	-	22.3	51.5
	2014	16.4	16.4	-	-	-	19.5	47.7
	2015	6.8	8.2	-	-	-	22.1	62.9
	2016	8.5	8.1	-	-	-	24.6	23.2
	2017	8.7	7.8	-	-	-	30.7	52.8
	2018	3.4	9.0	-	-	-	32.6	55.1
	2019	6.7	8.1	-	-	-	27.0	58.3
	Avg.	9.7	10.8	-	-	-	26.9	48.1
Rough-legged Hawk	2010	38.0	23.0	11.5	-	-	27.6	-
	2011	28.3	37.1	21.0	-	-	15.2	-
	2012	25.7	25.7	18.9	-	-	30.1	-
	2013	28.9	35.6	17.1	-	-	18.6	-
	2014	24.6	33.9	15.4	-	-	26.1	-
	2015	10.5	24.4	5.8	-	-	59.3	-
	2016	29.7	8.1	32.4	-	-	29.7	-
	2017	21.8	29.9	39.1	-	-	9.2	-
	2018	18.6	31.0	23.1	-	-	27.3	-
	2019	22.7	21.3	16.0	-	-	40.0	-
	Avg.	24.9	27.0	20.0	-	-	28.3	-
Harlans / Red-tailed Hawk	2013	-	-	94.0	-	-	6.0	-
	2014	-	-	89.3	-	-	10.7	-
	2015	-	-	86.9	-	-	13.1	-
	2016	-	-	92.6	-	-	7.4	-
	2017	-	-	94.5	-	-	5.5	-
	2018	-	-	93.7	-	-	6.3	-
	2019	-	-	89.3	-	-	10.7	-
	Avg.	-	-	91.5	-	-	8.5	-

### 3.7 Lake Counts

The lake counts provide monitoring data for various species of shorebirds, loons, grebes, waterfowl, and gulls/terns/ jaegers. Twelve shorebird species were observed during the lake counts with all species observed in relatively low numbers with the exception of Spotted Sandpiper. Although the total number of individuals observed was relatively low, the species diversity was modest.

The majority of loons and grebes counted at the observatory are observed on the lake counts and this was once again the case during 2019 with a total of 409 loons and 461 grebes (Table 16). Geese and swans were observed in very low numbers during the lake counts; these species are typically observed flying over the site only (i.e. are visual migrants). However, for some duck species (scoters and mergansers), the lake counts record data to supplement the visual migration counts (Table 16). Only small numbers of dabbling and diving ducks are seen mostly due to scarcity of suitable stopover and

feeding habitats near the observatory. As a group, gulls, terns and jaegers are well-monitored through the use of the lake counts; species of this group are the most commonly recorded birds using this method. A total of 9 species of gulls/terns/jaegers were observed on the 2018 lake counts.

**Table 16.** Summary of shorebirds (left), waterbirds (middle) and waterfowl (right) observed on the lake counts during 2019. One bird day represents one individual on one day; two bird days could represent single birds on two days or two birds on the same day.

Species	Total # of Bird Days	Species	Total # of Bird Days	Species	Total # of Bird Days
Semi-palmated Plover	6	Pacific Loon	85	Greater White-fronted Goose	12
Sanderling	5	Common Loon	237	Canada Goose	66
Least Sandpiper	8	Red-throated Loon	87	Trumpeter Swan	5
Baird's Sandpiper	1	Horned Grebe	87	<i>Unidentified Swan</i>	5
<i>Unidentified 'Peep'</i>	1	Red-necked Grebe	374	Mallard	46
Pectoral Sandpiper	4	Sora	5	Northern Pintail	1
Red-necked Phalarope	19	Mew Gull	99	Northern Shoveler	1
<i>Unidentified Phalarope</i>	2	Herring Gull	1715	American Wigeon	5
Spotted Sandpiper	83	Thayer's Gull	183	Surf Scoter	192
Solitary Sandpiper	12	Iceland Gull	3	White-winged Scoter	50
Lesser Yellowlegs	2	Glaucous Gull	5	Lesser Scaup	31
Wilson's Snipe	10	Sabine's Gull	3	Ring-necked Duck	1
		Bonaparte's Gull	5	Common Goldeneye	122
		Arctic Tern	67	Barrow's Goldeneye	6
		Parasitic Jaeger	32	<i>Unidentified Goldeneye</i>	4
		<i>Unidentified Gull</i>	17	Long-tailed Duck	28
				Common Merganser	401
				Red-breasted Merganser	317
				<i>Unidentified Merganser</i>	15
				<i>Unidentified Duck</i>	40
<b>TOTAL</b>	<b>153</b>	<b>TOTAL</b>	<b>3004</b>	<b>TOTAL</b>	<b>1348</b>

### 3.9 Interesting & Notable Captures / Observations

The vast majority of birds banded and observed at Teslin Lake in 2019 were species which are common and widespread north and west of the study site. These common species will be the primary focus of the long-term species 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. Notable captures and observations during 2019 included:

- Cackling Goose – a single individual observed on the October 18 visual migration count.
- Swainson's Hawk – a total of 19 individuals observed on visual migration counts, including a high count of 9 individuals on August 27.

- Glaucous Gull – single birds observed on 5 days from October 5 to 19.
- Sabine’s Gull – three individuals observed on September 4.
- Parasitic Jaeger – observed on 15 days, total of 32 bird days included a high count of 3 on numerous days.
- Philadelphia Vireo – one hatch year individual banded on August 9 provided the second record of this species at TLBO; the first occurred during the fall of 2018.
- Yellow-bellied Flycatcher – observed on 12 days (10 banded) between August 7 and 26 with a high count of 2 on August 25 and 26.
- Rustic Bunting – a single individual was observed and photographed on October 9 provided the first Yukon record of this species.
- Black-and-white Warbler – single individual banded on September 17 and recaptured on 8 days between the banding date and September 30.
- Swamp Sparrow – single individuals banded on July 30 and August 14.
- Brewer’s Sparrow – one hatch year individuals banded on August 4.
- Hoary Redpoll - a record early individual (hatch year) was banded on August 19.

### 3.9.1 Chickadees

Chickadees are considered year-round residents, but the observatory has documented Boreal Chickadee irruptions in seven of the last eleven years with variation in the magnitude of irruptions between years (Table 17). Low numbers of Boreal Chickadee were banded and observed during 2019; however, there was a record high number of Black-capped Chickadees banded and observed in 2019.

The high number of individuals banded and observed in some years indicates that a substantial number of birds are involved in these irruptions. The relative proportion of the species encountered is likely an indication of the relative abundance in the southern Yukon; however, it is possible that certain species may be more likely to stage fall irruptions. Of particular interest, nearly all chickadees banded are hatch year individuals. Also note that Black-capped Chickadee is the only chickadee species which breeds within the study site and therefore a portion of the individuals banded are probable local residents and their offspring.

**Table 17.** Summary of chickadees banded and observed at the observatory from 2008 to 2019.

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	-	1
	# of Bird Days	230	231	5	-	-
2013	# Banded	24	33	-	-	-
	# of Bird Days	40	209	1	-	-
2014	# Banded	3	16	-	-	-
	# of Bird Days	9	157	-	-	-
2015	# Banded	131	31	4	-	-
	# of Bird Days	304	169	11	-	-
2016	# Banded	40	24	-	-	-
	# of Bird Days	62	162	-	-	-
2017	# Banded	473	95	-	-	-
	# of Bird Days	1,047	330	-	-	-
2018	# Banded	234	55	2	-	-
	# of Bird Days	445	224	9	-	-
2019	# Banded	17	110	1	-	-
	# of Bird Days	20	354	2	-	-

### 3.10 Species of Conservation Concern

In conjunction with the other Yukon Bird Observatories field stations, all Rusty Blackbirds captured were fitted with a color band (light blue) in addition to the regular numbered leg band. As each observatory uses a different color, the color bands help to identify the origin of a re-sighted individual without the need to recapture it. Additionally, from 2008 to 2010 a feather was collected from each Rusty Blackbird captured. Feather samples were analyzed for stable isotopes in an effort to make linkages between breeding and wintering grounds of this species. During the fall of 2019, 17 individuals were banded including one after hatch year and 16 hatch year birds. Throughout the fall season, a total of 679 bird days were recorded for this species which was observed on 72 days from July 25 to October 20; the daily high count was 96 individuals on September 12.

### 3.11 Species Trend Analysis

During 2019, Birds Canada (formerly Bird Studies Canada) analyzed for this first time, species trend analysis for 85 species. This analysis is consistent with the methods used for species trend analysis at other members stations of the Canadian Migration Monitoring Network across Canada and utilized data collected at TLBO from 2008 to 2018.

Among the 85 species analyzed, 70 show a trend which is inclusive; for these species, the confidence intervals overlap with both positive trends. For these species, additional years of annual monitoring are expected to provide more confidence on the resulting trends. A total of 12 species show a declining trend (negative lower and upper confidence intervals) and 3 species show an increasing trend (positive lower and upper confidence intervals; Table 18). Trend analysis plots for all 85 species are included in Appendix C.

**Table 18.** Summary of trend analysis for declining and increasing species. Refer to Appendix C for data from additional species.

Species	Trend Direction	Species Trend (change per year from 2008 to 2018)	Lower Confidence Interval	Upper Confidence Interval
Barn Swallow	Declining	-32.2	-52.4	-8.8
Solitary Sandpiper		-19.0	-24.3	-13.9
Northern Pintail		-14.4	-26.7	-2.5
Pacific Loon		-13.8	-22.9	-4.4
American Robin		-11.8	-18.0	-5.3
Rusty Blackbird		-11.5	-18.0	-4.7
Canada Goose		-9.8	-18.8	-0.4
Golden Eagle		-8.3	-15.0	-1.3
American Redstart		-7.5	-13.3	-2.0
American Kestrel		-6.9	-13.3	-0.5
Northern Harrier		-6.1	-12.2	-0.1
Three-toed Woodpecker		-5.9	-11.8	-0.1
Common Merganser	Increasing	6.5	0.3	12.9
Common Loon		8.7	0.3	19.1
Trumpeter Swan		36.2	16.4	59.7

### 3.12 Visitors and Volunteers

Once again the observatory hosted numerous visitors and volunteers during 2019. On most days of operation, adequate personnel were available onsite to assist with the banding operation. This was largely due to the commitment of a number of volunteers who provide valuable assistance at the observatory. Qualified volunteers are necessary to allow for the observatory to be successful over the long term. During 2019, the observatory recorded a total of 1,203 hours of observer effort (paid and volunteer) by 35 individuals. A total of 117 individuals visited the observatory and tallied a total of 183 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 who took part in the operation of the observatory (often extensively) without being financially compensated. Paid hours were spent by individuals being paid to be at the observatory. This category includes the 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 19.** Hours spent at the observatory by volunteers and paid observers during 2019.

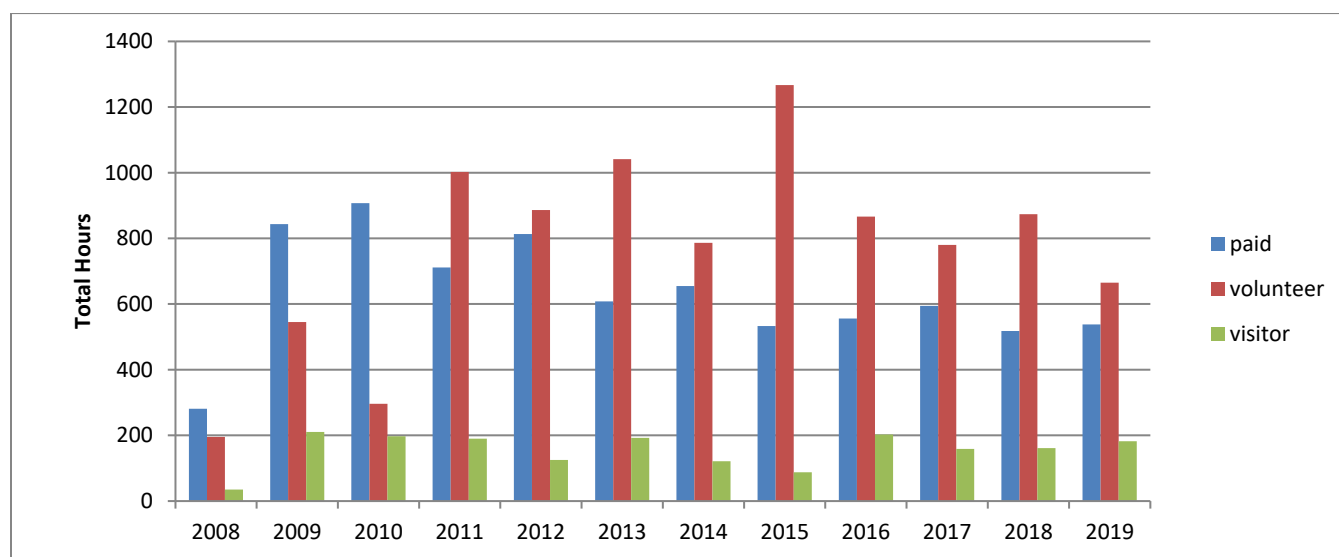
Paid		Volunteer	
# of Individuals	Hours	# of Individuals	Hours
2	538	33	665

**Table 20.** Hours spent at the observatory by visitors during 2019.

Yukon		Canada		USA		International	
#	Hours	#	Hours	#	Hours	#	Hours
72	139	30	22	8	12	7	10

In comparison to previous years, the total number of volunteer hours was slightly below average; the total visitor hours were slightly above average (Figure 8). The amount of paid hours has been declining over time and this is primarily due to having fewer paid personnel at the observatory on a daily basis. This has been possible in recent years due to the increased availability of qualified volunteers to assist with day to day activities at the observatory.





**Figure 8.** Volunteer and visitor hours at the observatory from 2008 to 2019.

## 4.0 Conclusion

The results from the operation of the Teslin Lake Bird Observatory in 2019 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 migrating landbirds are hesitant to cross, 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 twelve years of fall migration monitoring at the observatory, the ability to monitor songbirds has been well demonstrated by the large numbers of migrants observed and banded on an annual basis. The results gathered this season also confirm the previous assumption that few birds stopover at the study site for extended periods of time. The majority of birds simply pass through the site while in migration and this is supported by the low proportion of band repeats within each season.

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

Over the long term, the data collected at the observatory will be used to refine species trends first prepared during 2019 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.

The observatory continues to be successful in attracting members of the public to the observatory to learn about birds and bird migration. During 2019, numerous individuals visited the observatory and were given an introduction to birds, their migration and methods used for ornithological data collection.

## **4.1 Recommendations**

We recommend the following for the future operation of the Teslin Lake Bird Observatory:

- Continue standardized monitoring to allow for the continued refinement of species trends first developed during 2019.
- Continue to expand species specific banding projects at the observatory, particularly for species such as woodpeckers and potentially raptors which are seldom captured in the standard mist nets.
- Make efforts to attract additional qualified volunteers to assist with activities at the observatory.
- Make efforts to diversify the funding base for the bird observatory to ensure long-term operation.

## **Appendix A – Species Checklist**

**Table A1.** Birds banded and observed (✓) at Teslin Lake Bird Observatory from 2008 to 2016. Note that observations were not collected during the fall of 2005, 2006 and 2007; observatory was located at a different location on Nisutlin Bay during 2005.

SPECIES	2005		2006		2007		2008		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall			
Bean Goose										✓										-	-	-
Greater White-fronted Goose	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Snow Goose					✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Cackling Goose												✓							✓	-	-	-
Canada Goose	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Trumpeter Swan	✓		✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Tundra Swan			✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Bewick’s Tundra Swan										✓	✓									-	-	-
Gadwall	✓						✓								✓					-	-	-
American Wigeon	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Mallard	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Blue-winged Teal							✓													-	-	-
Northern Shoveler	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Northern Pintail	✓				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
American Green-winged Teal	✓		✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	-	-	-
Canvasback								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Redhead									✓	✓				✓	✓					-	-	-
Ring-necked Duck	✓						✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Greater Scaup								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Lesser Scaup							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Harlequin Duck							✓	✓		✓	✓	✓	✓	✓		✓			✓	-	-	-
Surf Scoter	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
White-winged Scoter	✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Long-tailed Duck							✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	-	-	-
Bufflehead	✓				✓					✓	✓	✓	✓	✓		✓	✓	✓	✓	-	-	-
Common Goldeneye	✓		✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Barrow’s Goldeneye							✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	-	-	-
Hooded Merganser									✓	✓		✓				✓				-	-	-
Common Merganser	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Red-breasted Merganser	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Ruffed Grouse	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Spruce Grouse	✓						✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			-	-	-
Red-throated Loon	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Pacific Loon								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Common Loon	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Yellow-billed Loon										✓	✓	✓		✓		✓	✓			-	-	-
Horned Grebe								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Red-necked Grebe	✓		✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-

SPECIES	2005		2006		2007		2008		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall			
Western Grebe											✓						✓			-	-	-
Double-crested Cormorant							✓													-	-	-
Great Blue Heron																✓				-	-	-
Turkey Vulture														✓						-	-	-
Osprey	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Golden Eagle							✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-
Northern Harrier	✓		✓		✓		1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1	1	1	2
Sharp Shinned hawk	✓		✓		2		1	10	23	14	7	13	6	14	25	10	12	10	7	3	151	154
Northern Goshawk							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Bald Eagle	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Swainson’s Hawk							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Red-tailed Hawk			✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Rough-legged Hawk							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Sora																			✓			
Sandhill Crane								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Black-bellied Plover											✓			✓						-	-	-
American Golden-Plover							✓			✓	✓		✓		✓	✓	✓			-	-	-
Semipalmated Plover	✓				✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Killdeer	✓		✓		✓		✓			✓	✓					✓				-	-	-
Upland Sandpiper													✓		✓					-	-	-
Black Turnstone												✓			✓					-	-	-
Stilt Sandpiper													✓							-	-	-
Sanderling								✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	-	-	-
Baird’s Sandpiper							✓	✓	✓		✓		✓		✓		✓		✓	-	-	-
Least Sandpiper					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	1	✓	✓	✓	-	1	1
Pectoral Sandpiper					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Semipalmated Sandpiper								✓	✓	✓	✓	✓	✓		✓	✓		✓		-	-	-
Western Sandpiper											✓					✓	✓			-	-	-
Surfbird																		✓		-	-	-
Short-billed Dowitcher							✓								✓					-	-	-
Long-billed Dowitcher								✓	✓	✓	✓	✓		✓	✓	✓	✓			-	-	-
Wilson’s Snipe	✓		✓		✓		1	1	1	✓	✓	✓	✓	1	✓	1	✓	2	✓	1	6	7
Red-necked Phalarope									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Red Phalarope																✓				-	-	-
Spotted Sandpiper	1		2		1		1	✓	✓	1	2	✓	1	✓	✓	1	✓	✓	1	5	6	11
Solitary Sandpiper	✓		✓	2	✓		✓	2	5	1	3	3	2	1	3	✓	✓	✓	1	-	23	23
Wandering Tattler										✓										-	-	-
Greater Yellowlegs			✓		✓		✓		✓		✓		✓					✓		-	-	-
Lesser Yellowlegs	✓		✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-

SPECIES	2005		2006		2007		2008		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall			
Parasitic Jaeger								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Long-tailed Jaeger													✓							-	-	-
Black-legged Kittiwake										✓				✓						-	-	-
Sabine’s Gull								✓	✓	✓	✓	✓		✓		✓	✓		✓	-	-	-
Bonaparte’s Gull	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Little Gull										✓	✓									-	-	-
Mew Gull	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Ring-billed Gull																	✓			-	-	-
California Gull										✓		✓					✓			-	-	-
Herring Gull	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Thayer’s Gull								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Iceland Gull																✓			✓	-	-	-
Glaucous-winged Gull										✓	✓									-	-	-
Glaucous Gull								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Arctic Tern	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Great Horned Owl								✓	✓	✓	✓			✓	✓	✓	✓		✓	-	-	-
Northern Hawk Owl								✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	-	-	-
Short-eared Owl			✓							✓	✓	✓							✓	-	-	-
Boreal Owl											4			40	✓	5				-	49	49
Northern Saw-whet Owl														2						-	2	2
Common Nighthawk								✓	✓	✓	✓		✓	✓	✓		✓		✓	-	-	-
Pacific Swift										✓										-	-	-
Rufous Hummingbird					✓											✓	✓	✓		-	-	-
Belted Kingfisher	✓		✓	8	✓		✓	8	6	5	6	6	2	9	6	4	3	3	1	-	67	67
Yellow-bellied Sapsucker	2		2		2		1		✓		3	1	1							7	5	12
Downy Woodpecker	✓		✓					2	1	3	7			1	1	✓	✓	4	2	4	25	29
Hairy Woodpecker	2		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	2	2	2	4
Three-toed Woodpecker	✓							✓	✓	✓	✓	✓	1	✓	✓	✓	1	1	✓	-	3	3
Black-backed Woodpecker								✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-
Northern Flicker	1		✓		1		✓	✓	✓	1	1	✓	3	✓	✓	3	1	✓	✓	2	9	11
Pileated Woodpecker	✓																			-	-	-
American Kestrel	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Merlin					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	2	2	3	-	7	7
Gyr Falcon								✓	✓		✓			✓	✓			✓	✓	-	-	-
Peregrine Falcon					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Olive-sided Flycatcher	✓		11		✓		6		✓	✓	1	✓	✓	✓	2	✓	✓	✓		17	3	20
Western Wood-pewee	3		2		2		✓	3	6	5	10	3	4	4	4	✓	1	6	4	7	50	57
Yellow-bellied Flycatcher	2	2	1		1			9	8	11	7	9	11	3	11	16	14	10	12	4	123	127
Alder Flycatcher	17	9	41	18	10	5	9	811	631	620	637	827	770	506	1058	498	548	358	918	77	8572	8649

SPECIES	2005		2006		2007		2008		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall			
Least Flycatcher	3		4		3		2	2	1	3	10	3	6	2	4	7	2	2	✓	12	42	54
Hammond’s Flycatcher	7		5		11		18	6	12	17	28	7	12	8	21	19	10	20	30	41	190	231
Dusky Flycatcher	2				2			1	6	3	6	3	3	4	2		4	6	3	4	41	45
Western Flycatcher												1				1				-	2	2
Eastern Phoebe			1																	1	-	1
Say’s Phoebe			2		2		1	1	1	1	✓	✓	✓	✓	2	2	✓	✓	✓	5	7	12
Western Kingbird																	✓			-	-	-
Northern Shrike	✓								✓	1	1	1	1	1	✓	1	2	1	1	-	10	10
Warbling Vireo	13		1	4	✓		1	9	10	19	17	15	48	12	10	24	19	17	10	15	231	246
Philadelphia Vireo																		1	1	-	2	2
Gray Jay	5		✓		1		✓		5	4	✓	✓	✓	1	1	✓	✓	4	4	6	19	25
Steller’s Jay											✓									-	-	-
Black-billed Magpie					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	4	1	✓	-	5	5
Clark’s Nutcracker																	✓					
Common Raven	✓		✓		✓		✓	✓	1	1	✓	✓	✓	✓	1	✓	✓	✓	✓	-	3	3
Horned Lark			3		✓		✓		✓	✓							✓	✓	✓	3	-	3
Northern Rough-winged Swallow																✓						
Tree Swallow	5		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	5	-	5
Violet-green Swallow	✓		✓		✓		✓	✓		✓	✓	✓			✓	✓	✓	✓	✓	-	-	-
Bank Swallow	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Barn Swallow	✓		✓		✓			✓	1	✓	✓	✓	✓	✓		✓	✓	✓	✓	-	1	1
Cliff Swallow	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Black-capped Chickadee	✓	4	4	3	2		2	57	26	22	92	65	31	16	31	24	95	55	110	8	686	694
Mountain Chickadee							2	15	11		2	1	✓		4		1	2	1	2	37	39
Chestnut-backed Chickadee								1			✓									-	1	1
Boreal Chickadee	2		3		2		8	138	831	✓	233	142	23	3	131	40	473	234	17	15	2500	2515
Hybrid Chickadee			1					1												1	1	2
Red-breasted Nuthatch	✓				✓		1	3	2	2	5	12	6	3	9	3	4	4	5	1	58	59
Brown Creeper											✓									-	-	-
Winter Wren	1										✓			1						1	1	2
American Dipper														✓						-	-	-
Golden-crowned Kinglet		1					✓		10	2	1	3	1		2	3	4	7	5	-	39	39
Ruby-crowned Kinglet	25	7	51	3	27		72	29	175	109	86	134	125	69	284	89	114	150	192	175	1716	1891
Mountain Bluebird	✓				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Townsend's Solitaire								✓	1	✓	1	1	✓	✓	✓	2	✓	✓	✓	-	5	5
Gray-cheeked Thrush	4	2	2		5		1	1	2	8	2	4	2	10	11	8	4	30	9	12	93	105
Swainson's Thrush	99	7	39	10	48		21	19	49	53	85	41	55	49	68	82	26	102	122	207	768	853
Hermit Thrush	1		1		✓		1	1	7	12	12	3	2	1	8	7	2	14	8	3	77	80
American Robin	27	1	36	5	17		4	✓	27	9	11	✓	4	9	3	✓	1	16	25	84	111	195



SPECIES	2005		2006		2007		2008		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall			
Varied Thrush	✓		1		2		✓	3	12	5	2	2	5	3	2	✓	5	5	2	3	46	49
European Starling							✓													-	-	-
American Pipit	✓		2		✓		1	1	3	✓	2	✓	2	✓	6	2	✓	✓	✓	3	16	19
Bohemian Waxwing	✓		40		✓		23	✓	✓	✓	1	✓	✓	✓	✓	✓	✓	✓	✓	63	1	64
Cedar Waxwing									✓	2			8	✓			✓			-	10	10
Lapland Longspur	✓		✓		✓		5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1	✓	5	1	6
Smith's Longspur									✓				✓				✓			-	-	-
Snow Bunting										✓	✓	✓	✓	✓			✓	✓	✓	-	-	-
Rustic Bunting																			✓	-	-	-
Northern Waterthrush	4	1	14	10	11		4	46	53	54	42	47	46	48	53	34	34	47	58	33	620	653
Black-and-white Warbler															1				1	-	2	2
Tennessee Warbler	4		4		6		2		9	40	4	1	1	1	8	13	17	16	8	16	126	134
Orange-crowned Warbler	16	6	26	1	47		61	101	180	271	57	88	124	149	331	364	176	235	243	150	2561	2711
Nashville Warbler								1				1								-	2	2
MacGillivray's Warbler	1		1					1	3	2		1	1							2	8	10
Common Yellowthroat	1		17	4	11	6	21	66	113	70	72	45	65	82	89	57	59	81	146	50	1036	1086
American Redstart			6	4	1			10	43	30	39	21	33	25	47	15	23	28	22	7	368	375
Cape May Warbler							1					1								1	1	2
Magnolia Warbler	1							1			✓	1	1				1			1	4	5
Blackburnian Warbler															1					-	1	1
Yellow Warbler	10	6	50	19	37	3	31	486	325	471	310	225	333	504	556	449	163	266	655	128	5037	5165
Blackpoll Warbler	3	2	21	4	10		5	47	107	194	58	87	87	61	99	134	71	95	96	39	1237	1276
Yellow-rumped Warbler							1	1												1	1	2
Yellow-rumped Warbler (Myrtle)	60	3	63	5	29		78	49	284	673	142	195	163	178	311	286	654	478	379	230	4278	4508
Yellow-rumped Warbler (Audubon's)										✓	1									-	1	1
Townsend's Warbler			✓				1	✓	8	10	6	6	7	10	2	2	16	10	8	1	85	86
Wilson's Warbler	116	8	54	5	63		151	113	161	177	133	134	122	164	386	172	68	164	245	384	2192	2600
American-tree Sparrow	220		13	1	72		41	19	54	21	77	17	19	22	137	20	27	88	45	346	635	981
Chipping Sparrow	28		4	1	6		3	6	24	18	28	17	20	15	29	31	38	18	50	41	296	337
Brewer's Sparrow				1					1		2						1	3	1	-	9	9
Fox Sparrow	106		3		17		26	11	28	28	17	6	7	17	42	10	13	99	15	152	293	445
Dark-eyed Junco					9		31	11	✓	✓	✓	✓			2					40	13	53
Dark-eyed Junco (Slate-colored)	165	12	139	5	135		224	182	582	420	331	116	341	140	209	229	443	348	384	663	4092	4755
White-crowned Sparrow	86	3	13		579		311	1	33	36	34	22	16	15	23	15	20	31	24	989	304	1293
Golden-crowned Sparrow	1				16		9						1	1	2			✓		26	4	30
White-throated Sparrow			✓		1													1		1	1	2
Savannah Sparrow	11	2	2	2	24		10	14	18	18	23	25	18	17	55	17	12	25	48	47	294	341
Song Sparrow										1						1			1	-	3	3
Lincoln's Sparrow	9	1	6		39		21	5	16	15	27	9	9	9	65	13	14	54	39	75	330	405

SPECIES	2005		2006		2007		2008		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	SPRING TOTAL	FALL TOTAL	ALL TIME TOTAL
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall			
Swamp Sparrow										1									2	-	3	3
Western Tanager			1						1		✓	✓						✓		1	1	2
Red-winged Blackbird	✓		1		1		✓		✓		✓	✓	✓			✓		✓	✓	2	-	2
Rusty Blackbird	19		3		2	1	✓	11	30	20	16	9	14	10	18	6	14	3	17	24	169	193
Brown-headed Cowbird	1		✓		✓		✓			✓	1		✓	2	1			✓		1	4	5
Pine Grosbeak			2					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	2	-	2
Purple Finch	27		3		6		1	✓	✓	10	1	2	1	3	✓	✓	✓	3	1	37	21	58
Red Crossbill	3						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			3	-	3
White-winged Crossbill			5					2	2	100	1	2	5	2	✓	46	✓	✓	62	5	222	227
Common Redpoll	✓		107		1		22	✓	6	1	75	47	✓	1	8	3	2	4	3	130	150	280
Hoary Redpoll					3						2			✓					1	3	3	6
Pine Siskin	28		1				✓	1	1	91	10	3	8	303	1	3	151	2	87	29	661	688
Evening Grosbeak														✓						-	-	-
TOTAL SPECIES BANDED	43	18	48	21	43	4	45	48	53	52	57	51	51	48	51	51	47	52	55	70	89	95
TOTAL BIRDS BANDED	1142	77	814	115	1267	15	1238	2319	3956	3706	2793	2429	2,577	2,510	4,186	2,780	3,369	3,167	4,138	4,461	40,884	45,361

## **Appendix B – Daily Species Total Summary**

Species	First Date	ALL OBS		Last Date	HIGH COUNT	
		# of Days	Bird Days		#	Date
Greater White-fronted Goose	9-Aug	28	7651	20-Oct	4330	24-Aug
Snow Goose	24-Sep	6	2693	18-Oct	2574	06-Oct
Canada Goose	11-Aug	19	535	27-Sep	121	16-Sep
Cackling Goose	18-Oct	1	1	-	1	18-Oct
Unidentified Goose	27-Aug	7	265	3-Oct	160	3-Oct
Trumpeter Swan	8-Sep	24	1737	20-Oct	280	18-Oct
Tundra Swan	19-Sep	11	16371	20-Oct	5283	06-Oct
Unidentified Swan	11-Sep	19	747	19-Oct	423	13-Oct
American Wigeon	12-Sep	5	129	02-Oct	90	13-Sep
Mallard	6-Aug	20	97	20-Oct	26	07-Oct
American Green-winged Teal	22-Sep	2	2	09-Oct	1	both days
Northern Shoveler	24-Sep	2	6	07-Oct	5	07-Oct
Northern Pintail	12-Sep	5	37	07-Oct	13	19-Sep
Canvasback	20-Sep	6	154	09-Oct	64	07-Oct
Ring-necked Duck	24-Sep	4	10	11-Oct	5	07-Oct
Greater Scaup	12-Sep	11	88	16-Oct	30	06-Oct
Lesser Scaup	31-Aug	25	973	11-Oct	518	24-Sep
Harlequin Duck	12-Sep	3	6	22-Sep	3	19-Sep
Long-tailed Duck	21-Sep	3	28	13-Oct	19	08-Oct
Surf Scoter	7-Aug	22	615	02-Oct	310	26-Sep
White-winged Scoter	9-Aug	13	74	20-Oct	17	23-Sep
Bufflehead	13-Aug	3	13	10-Oct	4	10-Oct
Common Goldeneye	30-Jul	13	204	20-Oct	38	11-Oct
Barrow's Goldeneye	11-Aug	7	23	12-Oct	5	18-Sep
Unidentified Goldeneye	26-Sep	6	45	14-Oct	12	26-Sep
Common Merganser	13-Aug	42	681	20-Oct	87	14-Sep
Red-breasted Merganser	25-Jul	48	351	16-Oct	25	14-Oct
Unidentified Merganser	28-Aug	1	15	-	15	28-Aug
Unidentified Duck	27-Aug	5	54	30-Sep	30	24-Sep
Ruffed Grouse	28-Jul	44	88	14-Oct	6	03-Sep

Species	First Date	ALL OBS		Last Date	HIGH COUNT	
		# of Days	Bird Days		#	Date
Red-throated Loon	23-Aug	34	94	05-Oct	8	1/4 Sep
Pacific Loon	4-Aug	37	101	20-Oct	10	24-Aug
Common Loon	25-Jul	66	258	20-Oct	13	07-Sep
Yellow-billed Loon	7-Oct	2	2	15-Oct	1	both days
Unidentified Loon	31-Aug	11	49	20-Oct	17	24-Sep
Horned Grebe	9-Aug	40	87	20-Oct	5	03-Sep
Red-necked Grebe	31-Jul	54	385	20-Oct	33	08-Aug
Common Nighthawk	18-Aug	5	25	27-Aug	14	27-Aug
Osprey	7-Aug	36	61	06-Oct	11	24-Sep
Golden Eagle	21-Aug	30	363	20-Oct	140	03-Oct
Northern Harrier	21-Aug	44	265	20-Oct	46	26-Sep
Sharp-shinned Hawk	28-Jul	59	383	20-Oct	52	26-Sep
Northern Goshawk	1-Sep	34	71	20-Oct	8	07-Oct
Bald Eagle	27-Jul	66	248	20-Oct	58	14-Sep
Unidentified Eagle	5-Oct	1	1	-	1	05-Oct
Swainson's Hawk	21-Aug	6	19	24-Sep	9	27-Aug
Red-tailed Hawk	7-Oct	1	2	-	2	07-Oct
Red-tailed Hawk (Harlan's)	21-Aug	46	532	20-Oct	89	21-Aug
Rough-legged Hawk	24-Sep	23	282	20-Oct	47	06-Oct
Unidentified Buteo	28-Sep	4	11	13-Oct	6	3-Oct
Unidentified Raptor	16-Sep	5	5	7-Oct	1	all days
Great Horned Owl	11-Sep	2	3	12-Sep	2	11-Sep
Northern Hawk Owl	8-Sep	1	1	-	1	08-Sep
Short-eared Owl	27-Sep	1	2	-	2	27-Sep
Sora	6-Aug	6	6	13-Aug	1	all days
Sandhill Crane	18-Sep	7	1438	14-Oct	676	26-Sep
Semipalmated Plover	4-Aug	6	7	29-Aug	2	04-Aug
Sanderling	22-Aug	3	5	06-Sep	3	22-Aug
Baird's Sandpiper	21-Aug	1	1	-	1	21-Aug
Least Sandpiper	25-Jul	3	9	06-Aug	7	04-Aug

Species	First Date	ALL OBS		Last Date	HIGH COUNT	
		# of Days	Bird Days		#	Date
Pectoral Sandpiper	20-Aug	4	17	25-Aug	12	22-Aug
Unidentified Peep	19-Sep	1	1	-	1	19-Sep
Wilson's Snipe	6-Aug	13	14	13-Sep	2	31-Aug
Red-necked Phalarope	22-Aug	3	19	28-Aug	10	28-Aug
Unidentified Phalarope	6-Sep	1	2	-	2	6-Sep
Spotted Sandpiper	25-Jul	41	83	13-Sep	6	13-Aug
Solitary Sandpiper	28-Jul	10	12	26-Aug	2	28-Jul/26-Aug
Lesser Yellowlegs	4-Aug	2	3	09-Aug	2	04-Aug
Unidentified Shorebird	6-Sep	1	2	-	2	6-Sep
Parasitic Jaeger	24-Aug	15	32	14-Sep	3	many days
Bonaparte's Gull	29-Jul	3	5	24-Aug	3	29-Jul
Sabine's Gull	4-Sep	1	3	-	3	04-Sep
Mew Gull	28-Jul	34	104	16-Sep	9	22-Aug
Herring Gull	25-Jul	73	1715	12-Oct	110	11-Aug
Thayer's Gull	9-Sep	38	331	20-Oct	48	10-Sep
Iceland Gull	19-Sep	3	3	02-Oct	1	all days
Glaucous Gull	5-Oct	5	5	19-Oct	1	all days
Arctic Tern	27-Jul	11	88	22-Sep	23	07-Aug
Unidentified Gull	7-Sep	3	17	13-Oct	11	7-Sep
Belted Kingfisher	25-Jul	33	39	06-Sep	2	many days
Downy Woodpecker	26-Aug	10	10	19-Oct	1	all days
Hairy Woodpecker	31-Aug	14	16	16-Oct	2	31-Aug, 3-Oct
American Three-toed Woodpecker	13-Aug	21	26	20-Oct	2	many days
Black-backed Woodpecker	3-Oct	1	1	-	1	03-Oct
Unidentified Woodpecker	6-Sep	3	4	9-Sep	2	6-Sep
Northern Flicker	25-Jul	10	10	24-Sep	1	all days
American Kestrel	6-Aug	25	71	20-Oct	15	24-Sep
Merlin	25-Jul	31	62	20-Oct	14	26-Sep
Gyr Falcon	8-Oct	1	1	-	1	08-Oct

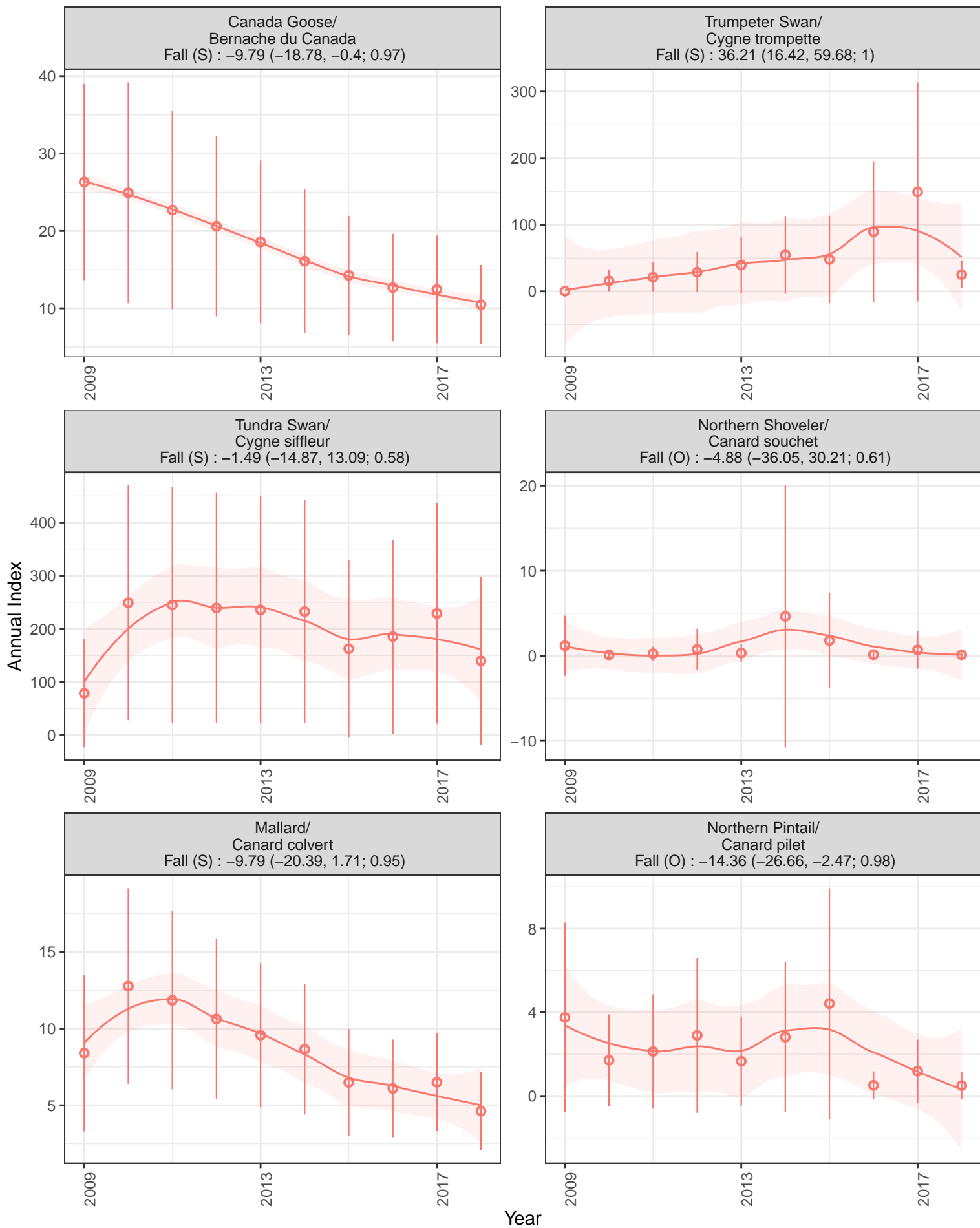
Species	First Date	ALL OBS		Last Date	HIGH COUNT	
		# of Days	Bird Days		#	Date
Peregrine Falcon	27-Aug	13	17	03-Oct	5	24-Sep
Unidentified Falcon	19-Sep	1	1	-	1	19-Sep
Western Wood-Pewee	29-Jul	12	17	06-Sep	4	27-Aug
Yellow-bellied Flycatcher	7-Aug	10	12	26-Aug	2	25/26 Aug
Alder Flycatcher	27-Jul	46	1000	15-Sep	135	25-Aug
Least Flycatcher	11-Aug	1	1	-	1	11-Aug
Hammond's Flycatcher	25-Jul	18	36	15-Sep	4	30-Jul
Dusky Flycatcher	28-Jul	2	3	23-Aug	2	23-Aug
Say's Phoebe	16-Aug	9	14	05-Sep	4	27-Aug
Unidentified Flycatcher	24-Aug	3	23	29-Aug	11	27-Aug
Northern Shrike	15-Sep	9	11	20-Oct	2	7/8 Oct
Warbling Vireo	25-Jul	12	17	23-Aug	2	many days
Philadelphia Vireo	9-Aug	1	1	-	1	09-Aug
Gray Jay	4-Aug	11	16	20-Oct	4	20-Oct
Black-billed Magpie	1-Sep	37	47	20-Oct	3	03-Oct
Common Raven	27-Jul	80	335	20-Oct	15	14-Oct
Horned Lark	7-Oct	3	3	16-Oct	1	all days
Tree Swallow	25-Jul	1	1	-	1	25-Jul
Violet-green Swallow	21-Aug	2	2	22-Aug	1	both days
Bank Swallow	14-Aug	11	611	20-Sep	200	21-Aug
Barn Swallow	6-Aug	8	13	24-Sep	2	22/23 Aug
Cliff Swallow	27-Jul	6	20	26-Aug	10	21-Aug
Unidentified Swallow	12-Aug	7	78	22-Sep	37	22-Aug
Black-capped Chickadee	25-Jul	74	354	20-Oct	30	30-Aug
Mountain Chickadee	4-Aug	2	2	09-Sep	1	both days
Boreal Chickadee	25-Jul	12	20	27-Sep	4	06-Sep
Red-breasted Nuthatch	28-Jul	21	25	14-Sep	2	many days
Golden-crowned Kinglet	13-Aug	4	15	01-Oct	6	13-Aug
Ruby-crowned Kinglet	25-Jul	60	254	08-Oct	19	24-Sep
Mountain Bluebird	3-Oct	2	3	07-Oct	2	07-Oct

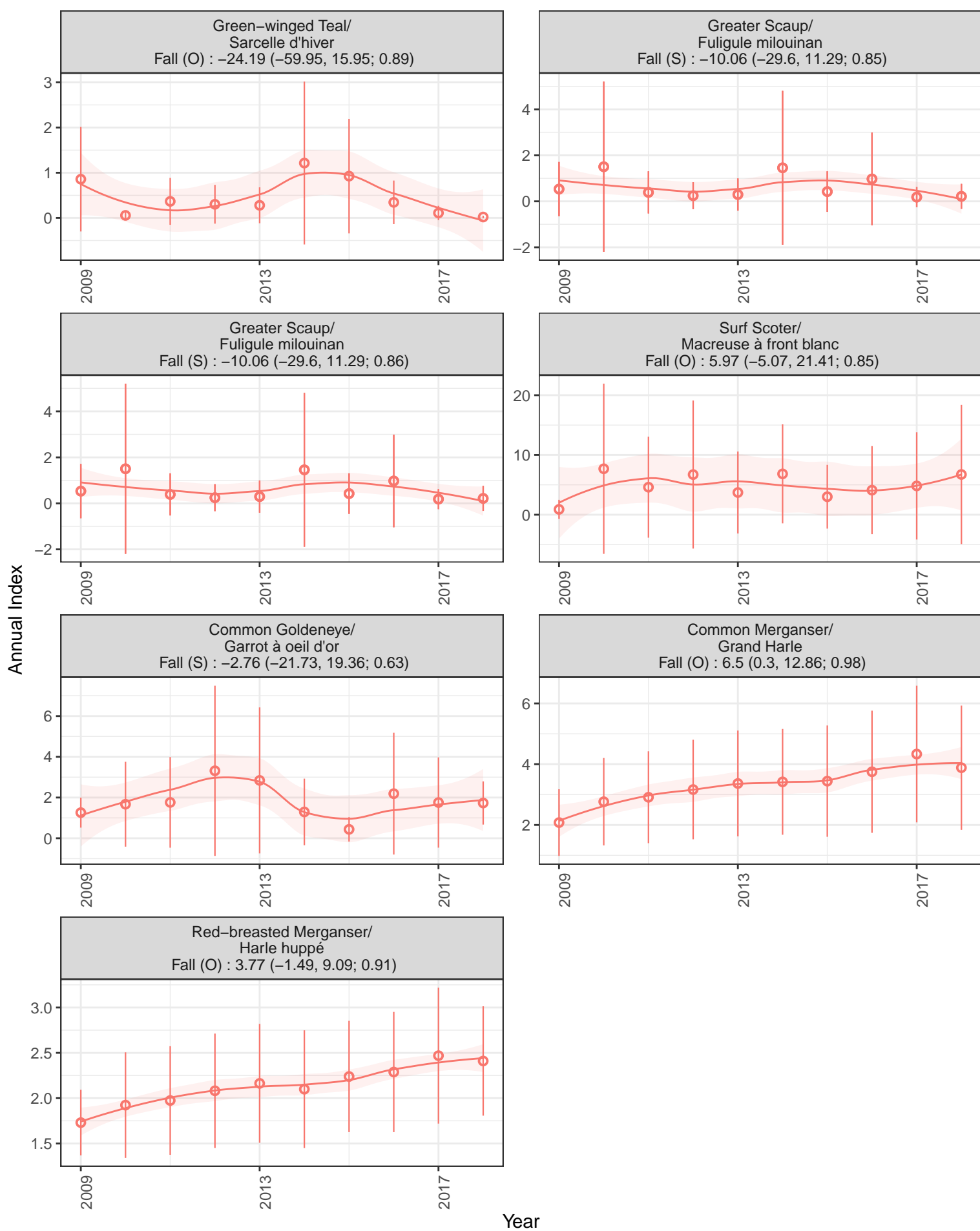
Species	First Date	ALL OBS		Last Date	HIGH COUNT	
		# of Days	Bird Days		#	Date
Townsend's Solitaire	22-Aug	13	29	19-Oct	8	13-Sep
Gray-cheeked Thrush	28-Jul	9	9	26-Sep	1	all days
Swainson's Thrush	25-Jul	40	168	17-Sep	20	19-Aug
Hermit Thrush	29-Aug	11	16	09-Oct	5	15-Sep
American Robin	25-Jul	61	1182	20-Oct	344	11-Sep
Varied Thrush	1-Aug	39	294	03-Oct	35	25-Sep
Unidentified Large Thrush	6-Sep	15	165	28-Sep	32	27-Sep
Unidentified Thrush	25-Aug	2	2	11-Sep	1	both days
American Pipit	7-Aug	58	349	18-Oct	38	25-Aug
Bohemian Waxwing	25-Jul	18	572	20-Oct	130	18-Oct
Unidentified Waxwing	1-Sep	1	3	-	3	1-Sep
Lapland Longspur	13-Aug	32	84	19-Oct	13	16-Sep
Snow Bunting	13-Oct	8	114	20-Oct	66	18-Oct
Rustic Bunting	9-Oct	1	1	-	1	09-Oct
Northern Waterthrush	25-Jul	34	80	15-Sep	6	3/19 Aug
Tennessee Warbler	28-Jul	7	9	28-Sep	2	2/3 Aug
Orange-crowned Warbler	27-Jul	51	326	02-Oct	42	25-Aug
Common Yellowthroat	25-Jul	61	206	03-Oct	15	29-Aug
American Redstart	25-Jul	23	36	24-Sep	4	30-Jul
Yellow Warbler	25-Jul	53	925	26-Sep	170	25-Aug
Blackpoll Warbler	25-Jul	37	126	24-Sep	11	25-Aug
Yellow-rumped Warbler (Myrtle)	25-Jul	73	1102	09-Oct	130	25-Aug
Townsend's Warbler	25-Jul	7	8	28-Aug	2	04-Aug
Wilson's Warbler	27-Jul	56	299	03-Oct	60	04-Aug
Black-and-white Warbler	17-Sep	8	8	30-Sep	1	all days
Unidentified Warbler	9-Aug	11	31	16-Sep	7	1-Sep
American Tree Sparrow	25-Jul	55	111	20-Oct	11	28-Sep
Chipping Sparrow	25-Jul	25	84	28-Aug	12	04-Aug
Brewer's Sparrow	4-Aug	1	1	-	1	04-Aug
Fox Sparrow	21-Aug	14	22	03-Oct	5	29-Aug

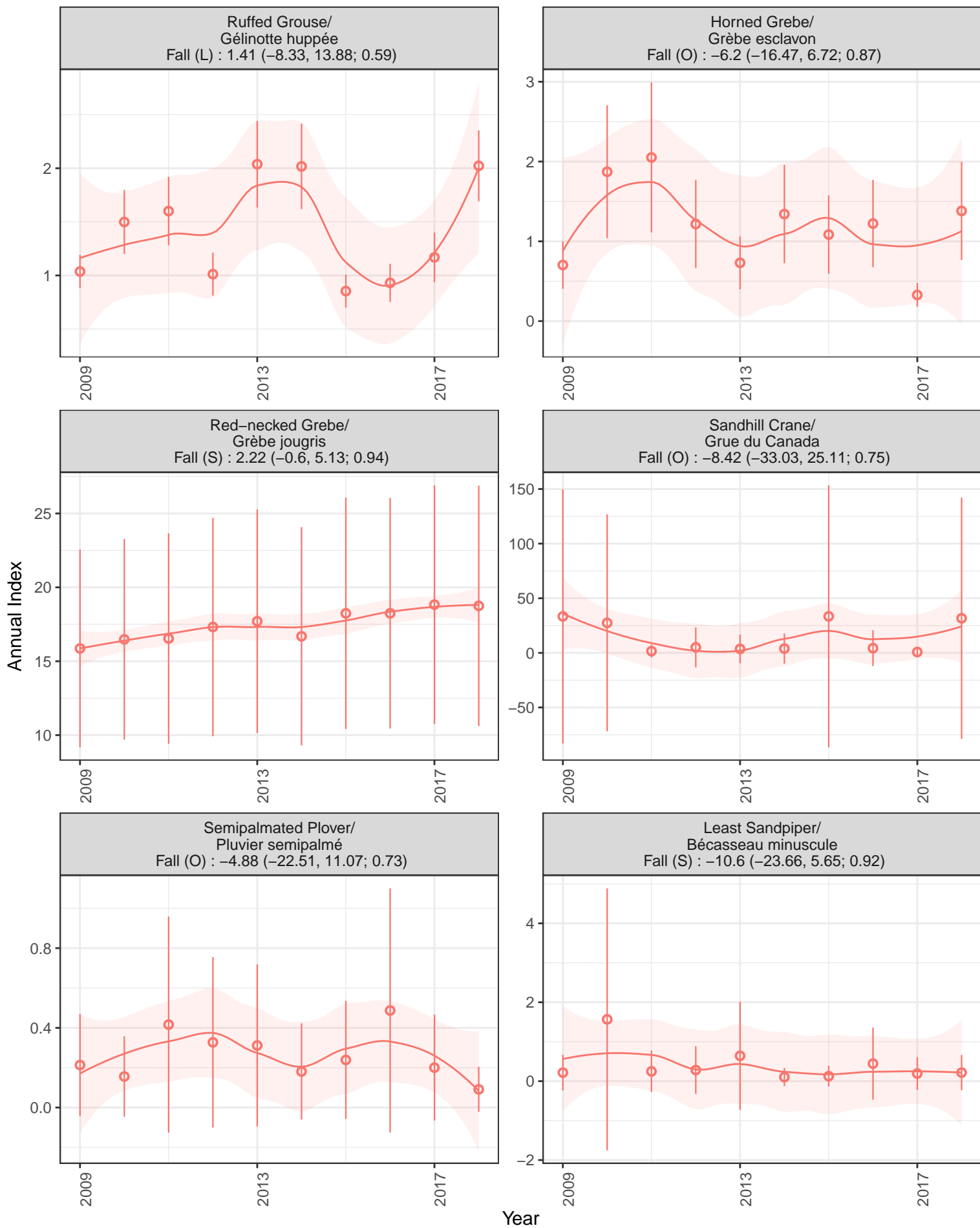


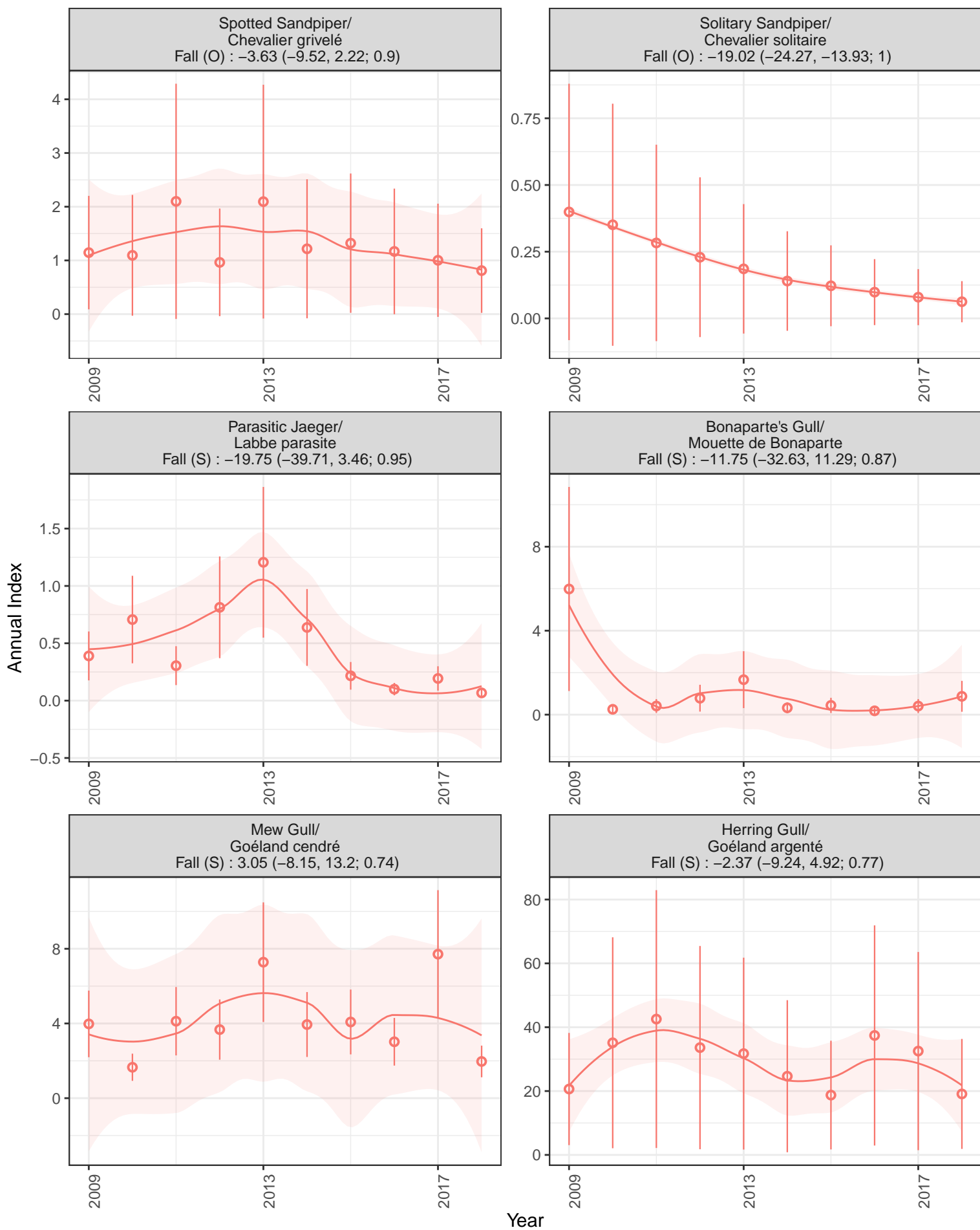
Species	First Date	ALL OBS		Last Date	HIGH COUNT	
		# of Days	Bird Days		#	Date
Dark-eyed Junco (Slate-colored)	25-Jul	63	650	13-Oct	45	5/8 Sep
White-crowned Sparrow	11-Aug	19	31	28-Sep	6	28-Aug
Savannah Sparrow	1-Aug	50	167	03-Oct	13	27-Aug
Song Sparrow	26-Aug	1	1	-	1	26-Aug
Lincoln's Sparrow	25-Jul	29	51	28-Sep	5	28-Aug
Swamp Sparrow	30-Jul	2	2	14-Aug	1	both days
Unidentified Sparrow	17-Sep	1	3	-	3	17-Sep
Rusty Blackbird	25-Jul	72	679	20-Oct	96	12-Sep
Red-winged Blackbird						
Pine Grosbeak	4-Oct	8	83	20-Oct	29	13-Oct
Purple Finch	4-Aug	9	16	21-Aug	3	many days
White-winged Crossbill	25-Jul	81	3892	20-Oct	285	24-Sep
Common Redpoll	20-Aug	49	4953	20-Oct	956	20-Oct
Hoary Redpoll	19-Aug	1	1	-	1	19-Aug
Pine Siskin	25-Jul	58	1067	19-Oct	80	03-Sep
Unidentified Small Finch	25-Sep	4	54	3-Oct	25	3-Oct
Unidentified Finch	3-Sep	37	873	19-Oct	70	3-Sep
Unidentified Passerine	9-Aug	60	3869	18-Oct	450	27-Aug

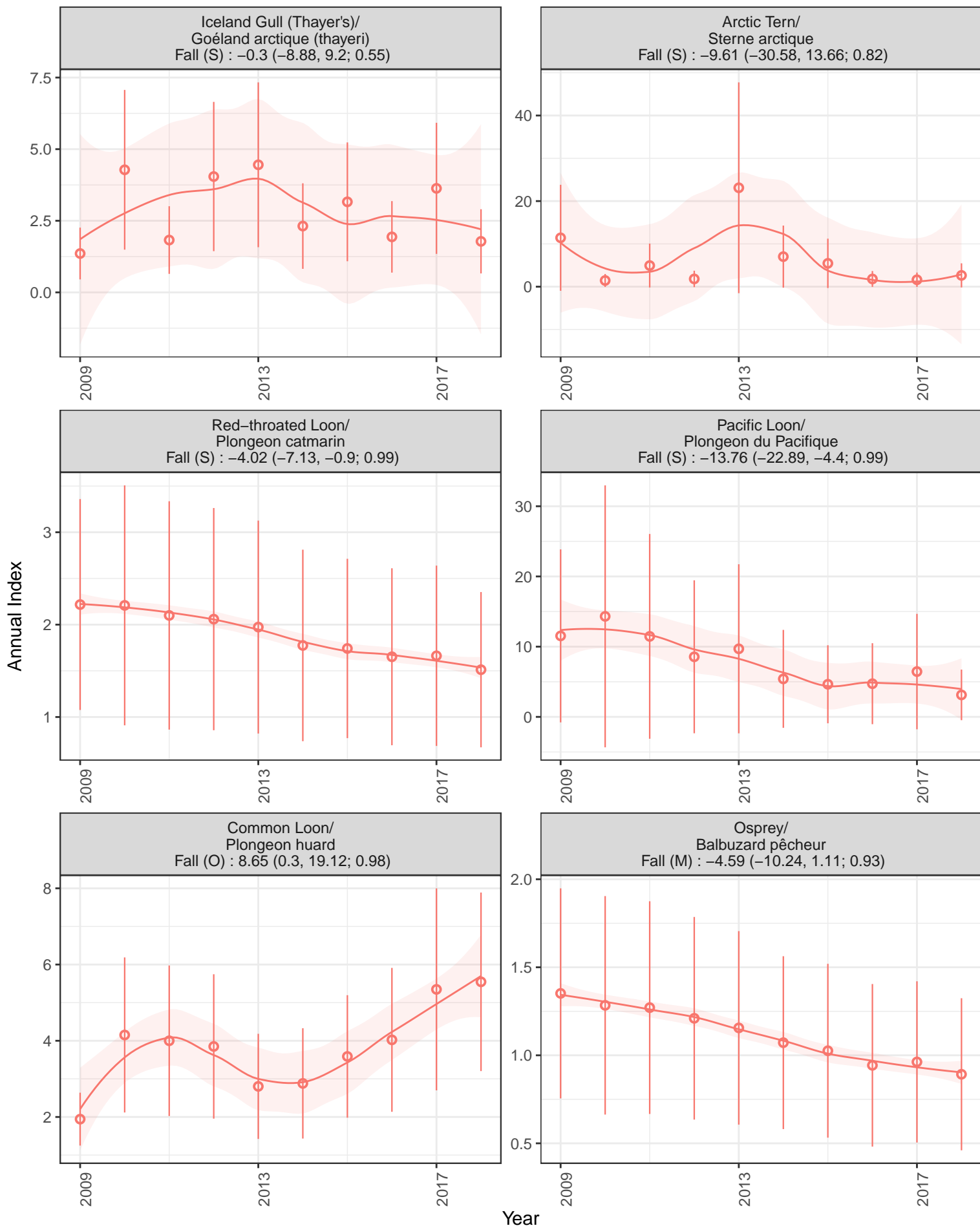
## **Appendix C – Species Trend Analysis Plots**

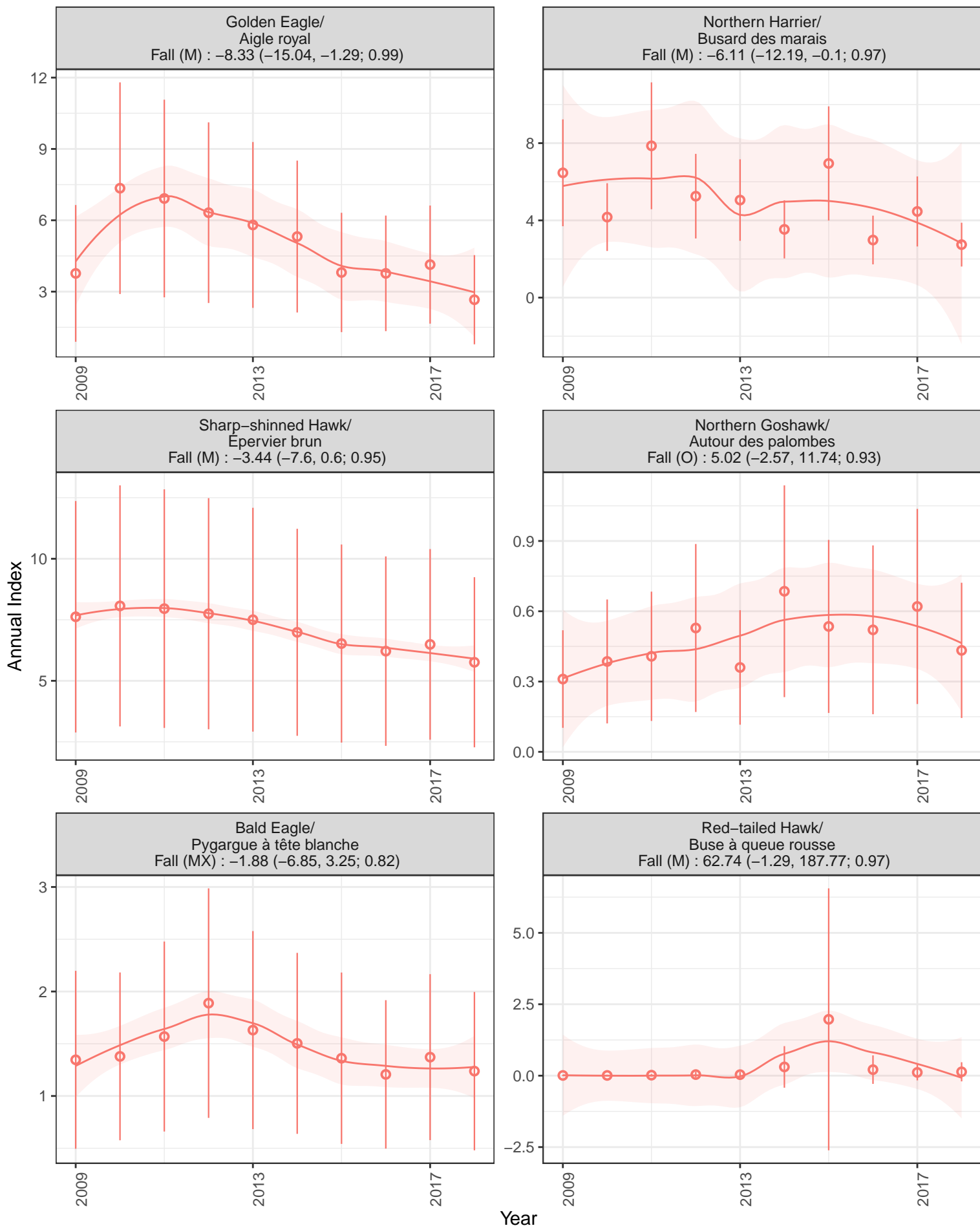




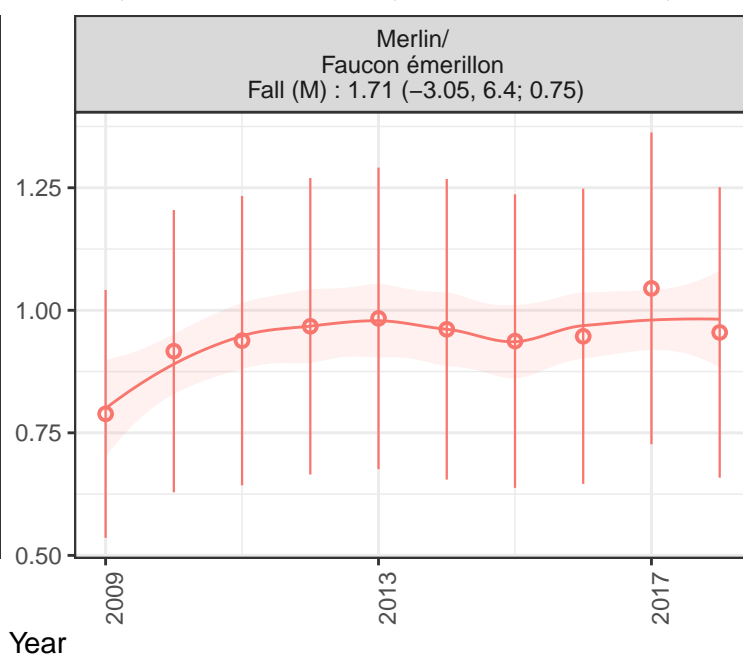
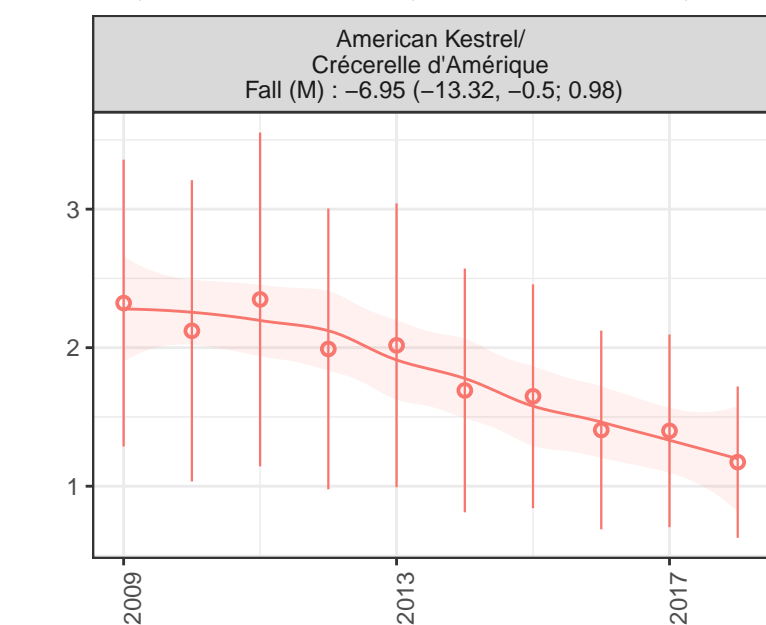
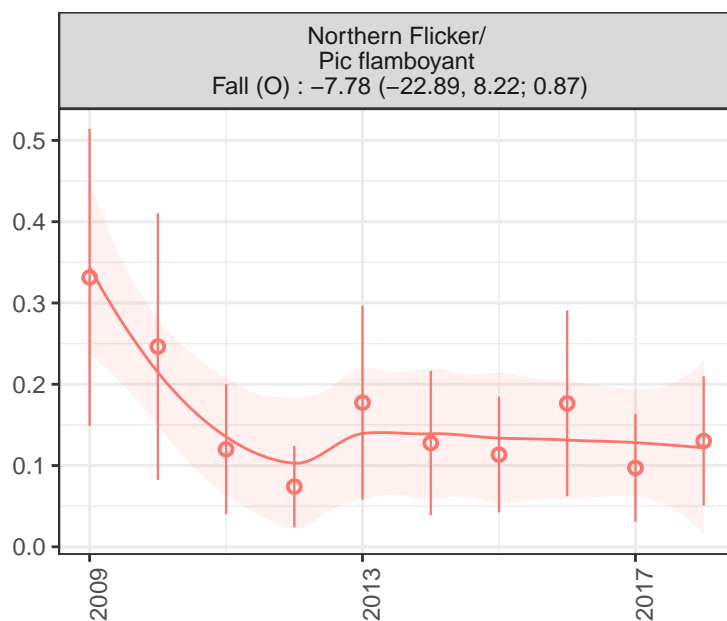
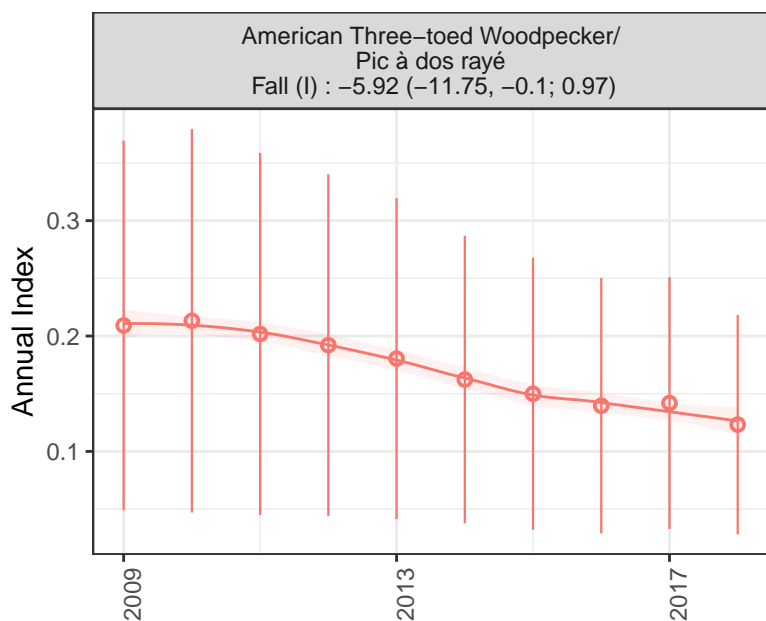
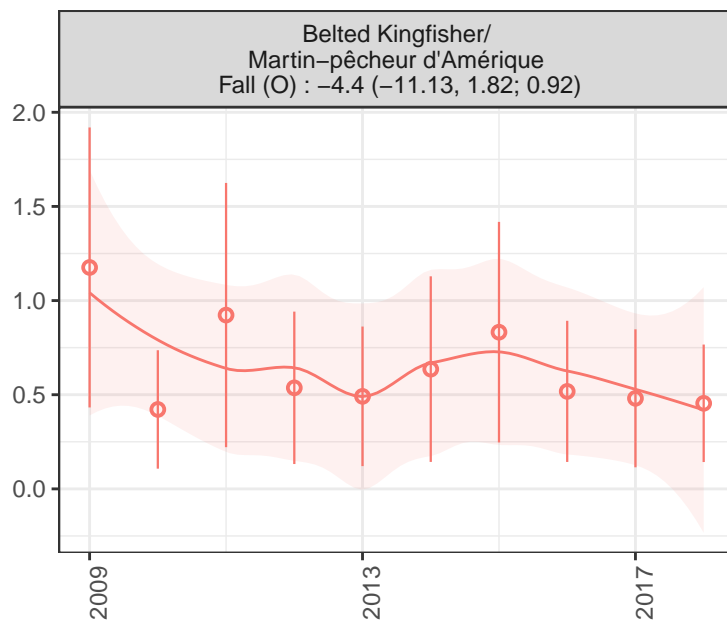
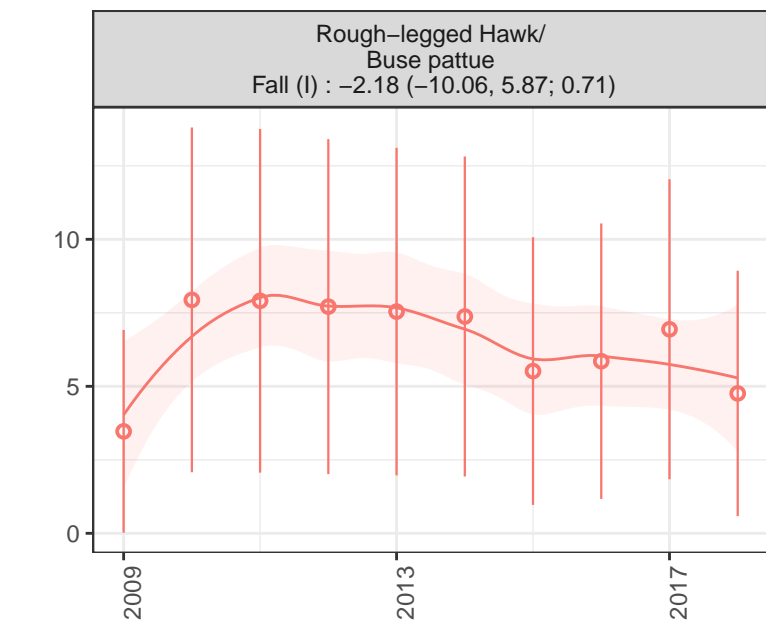




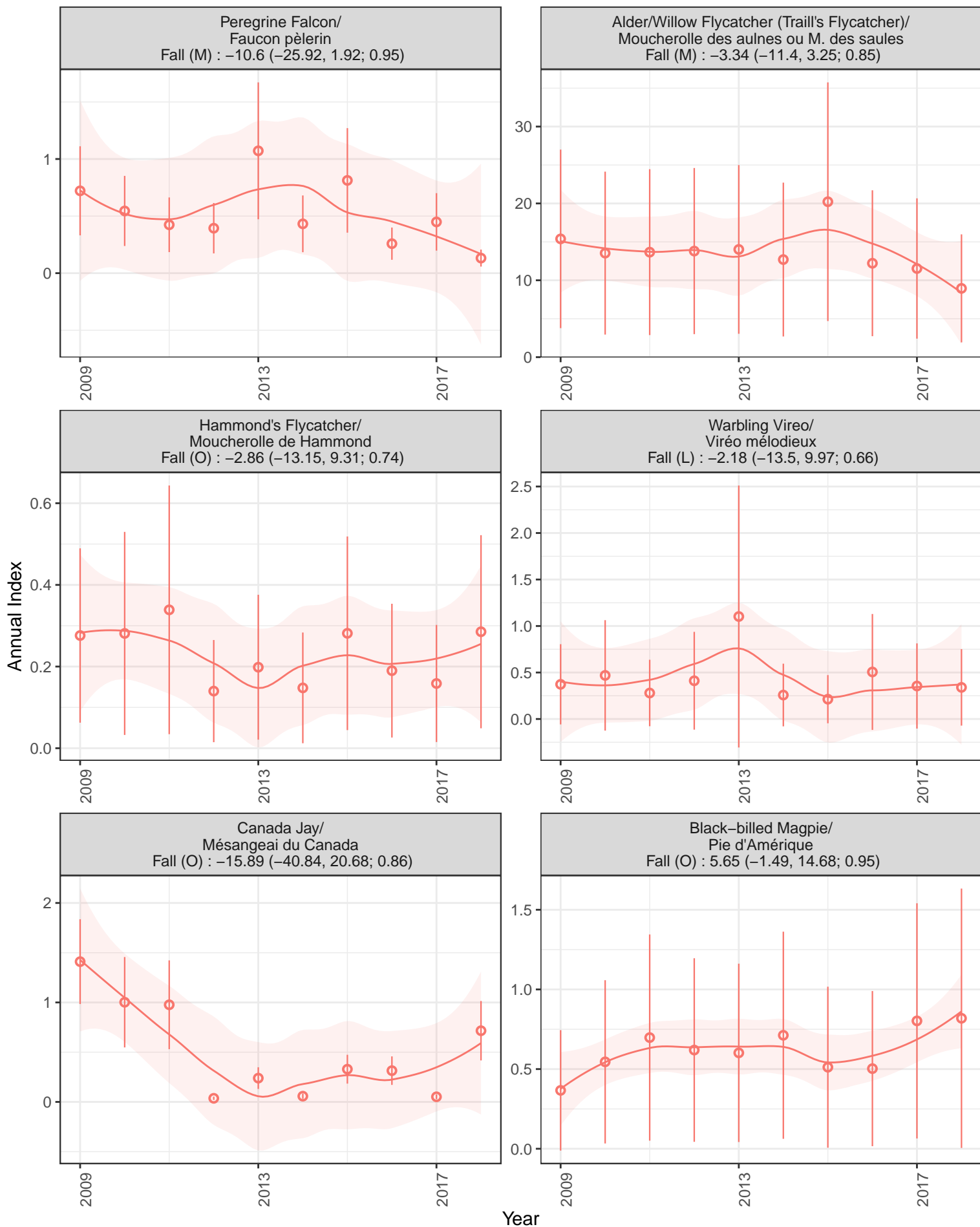


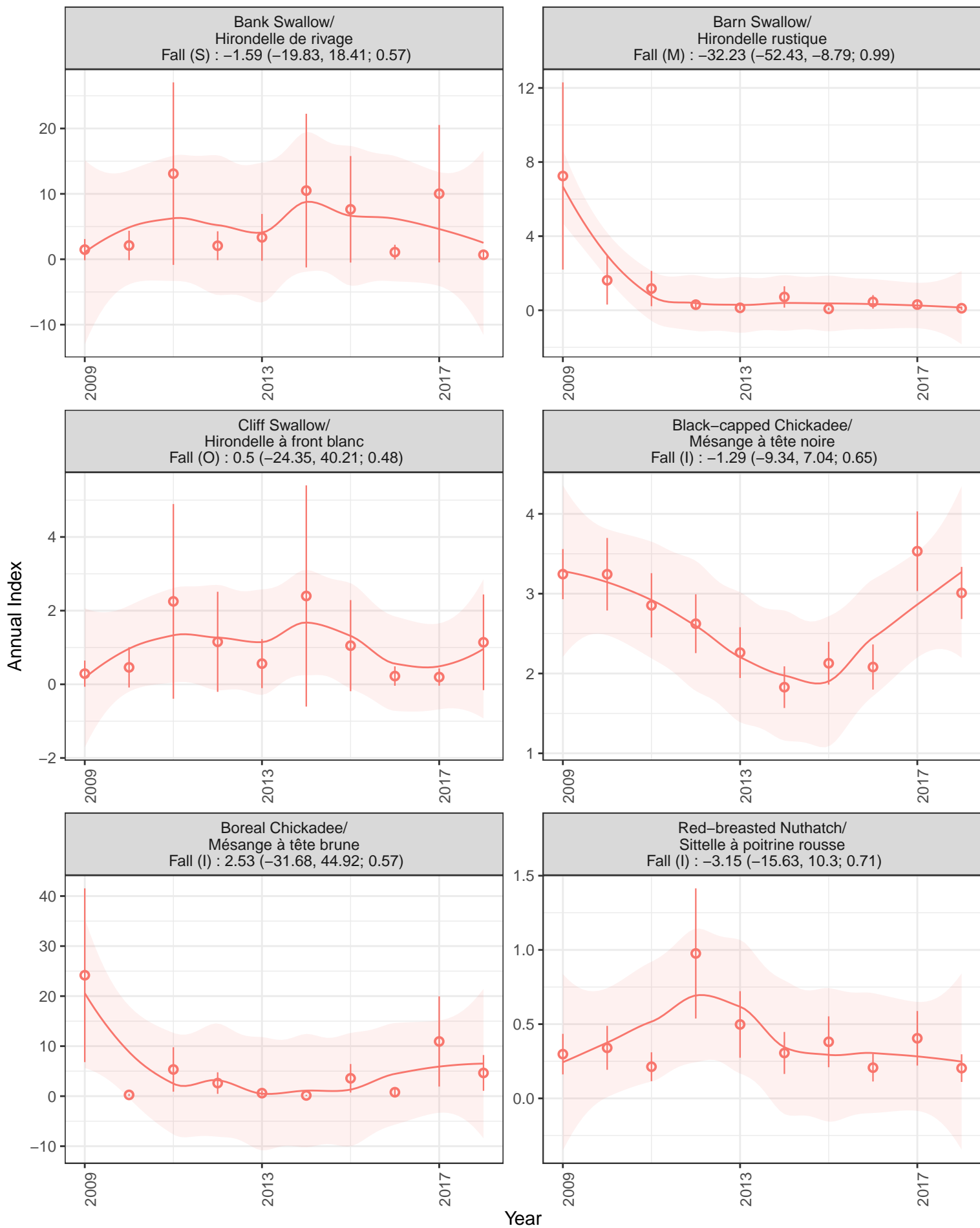


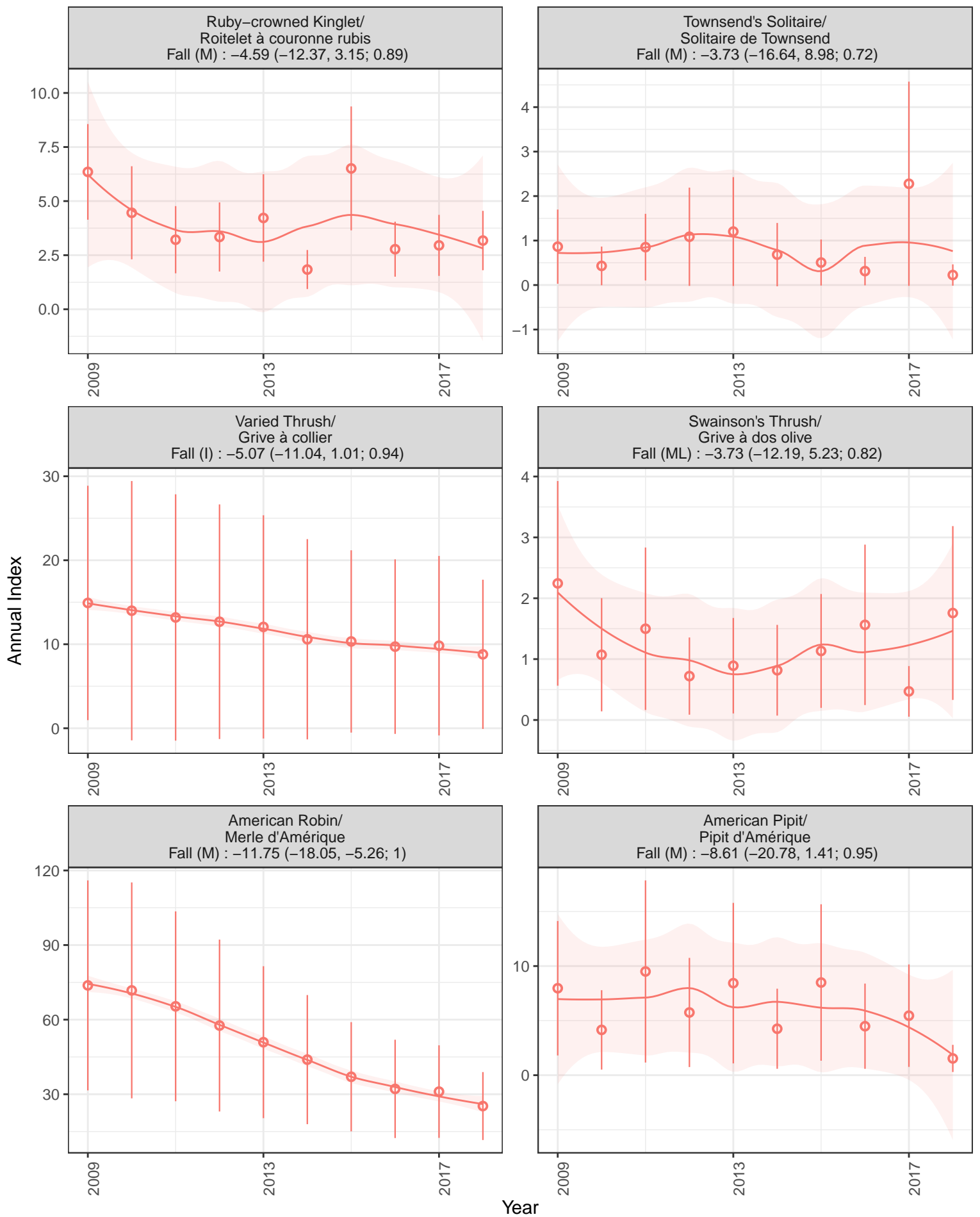


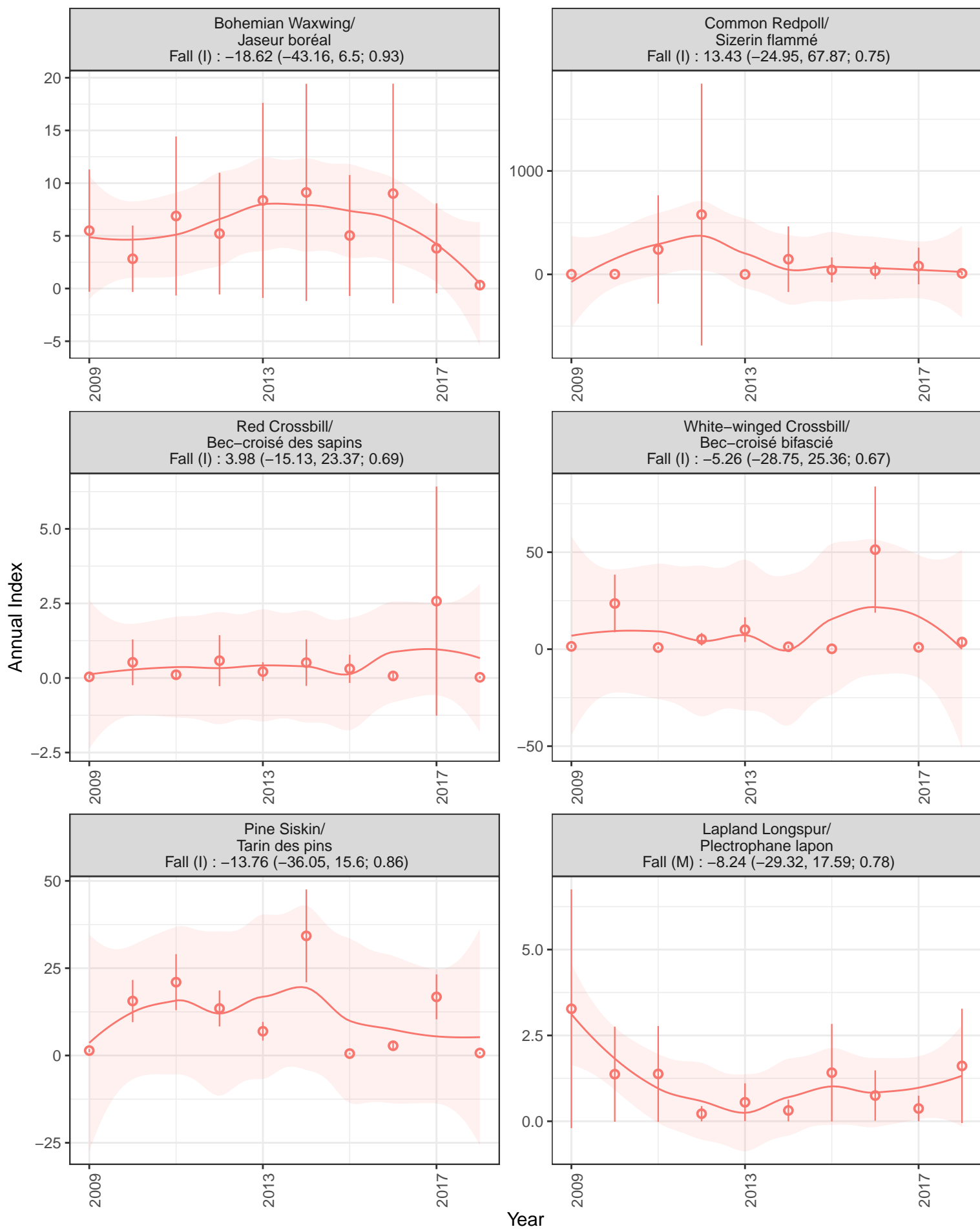


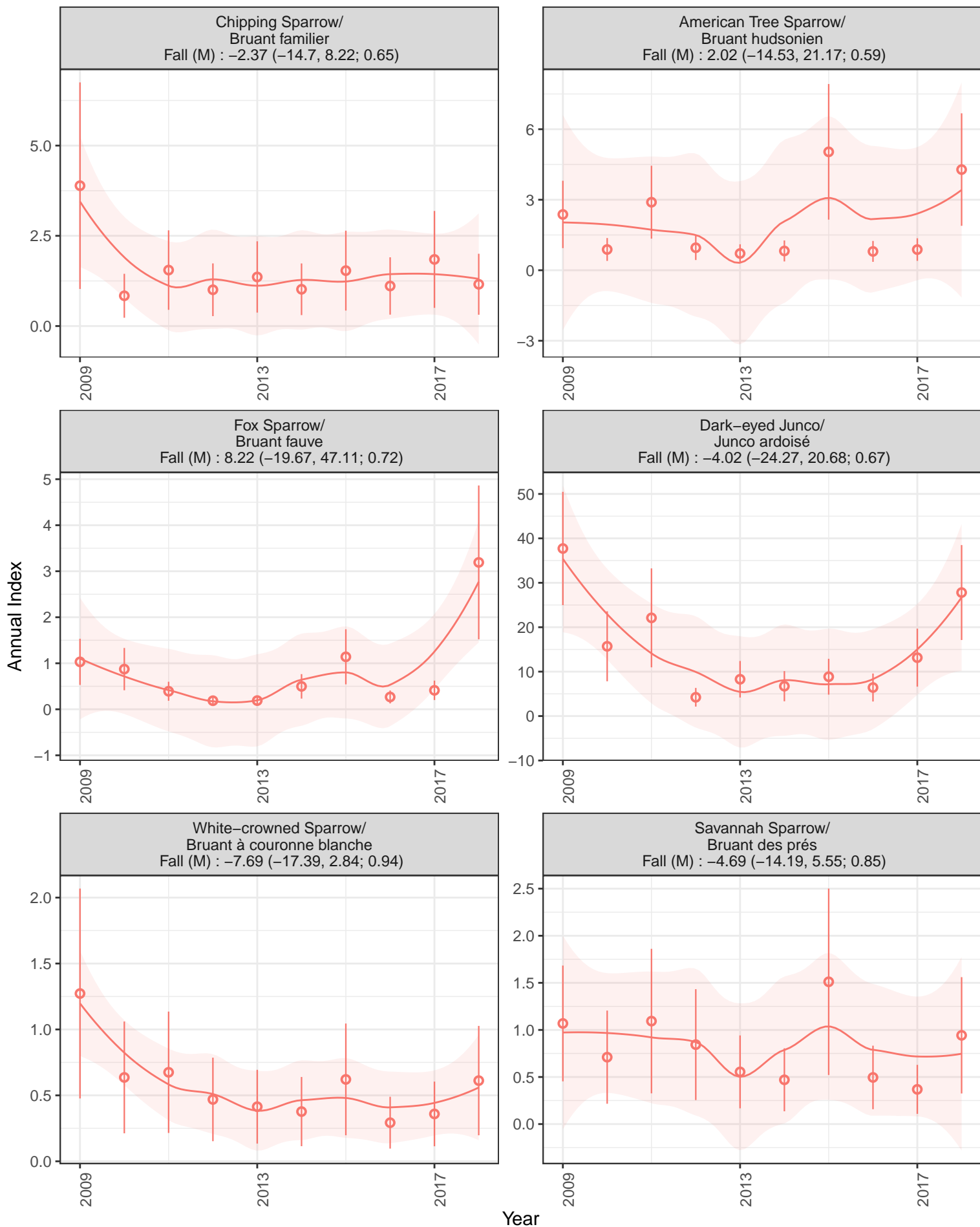
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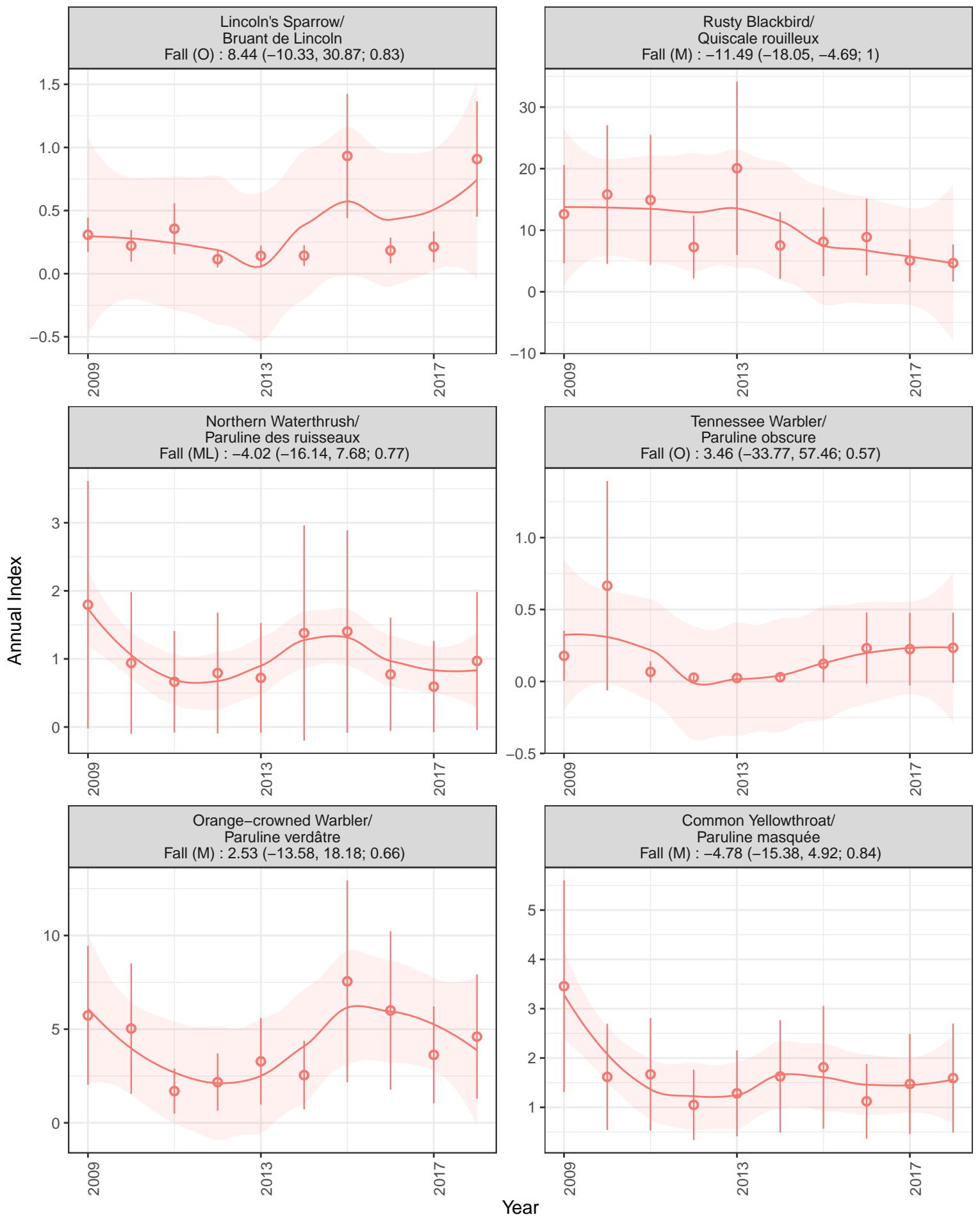


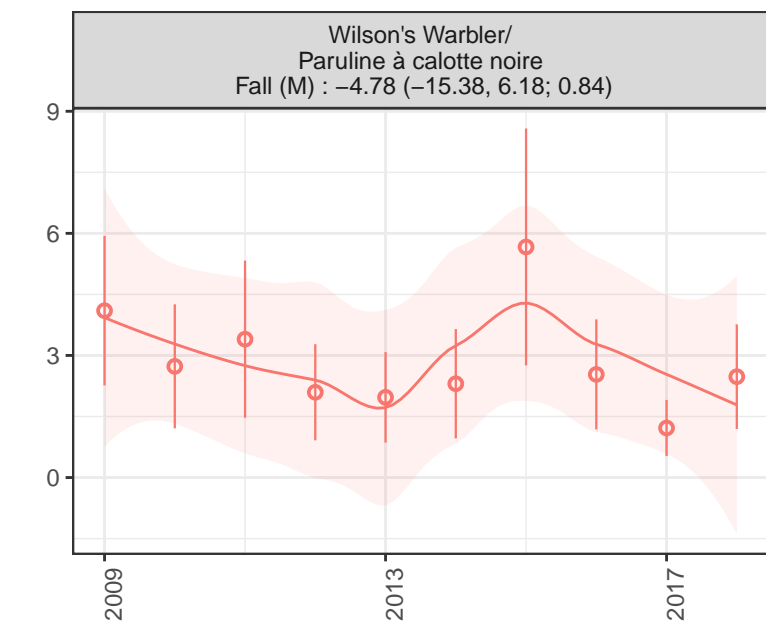
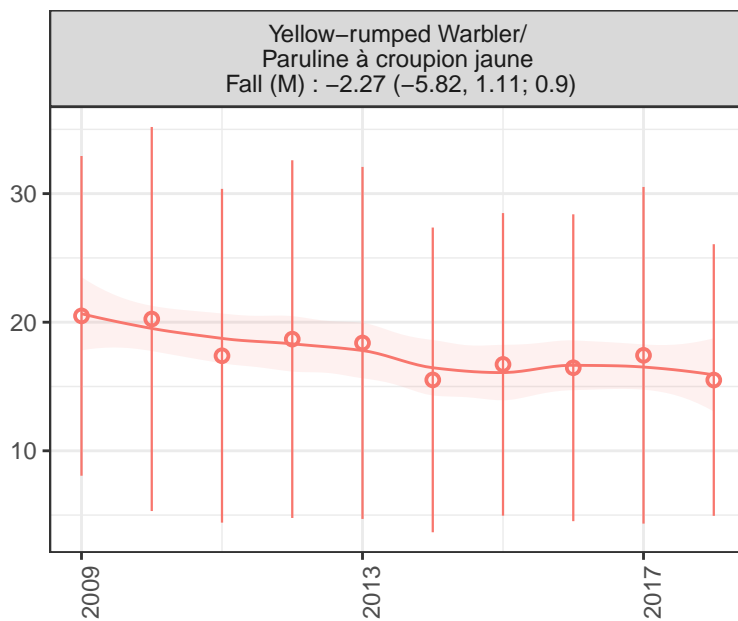
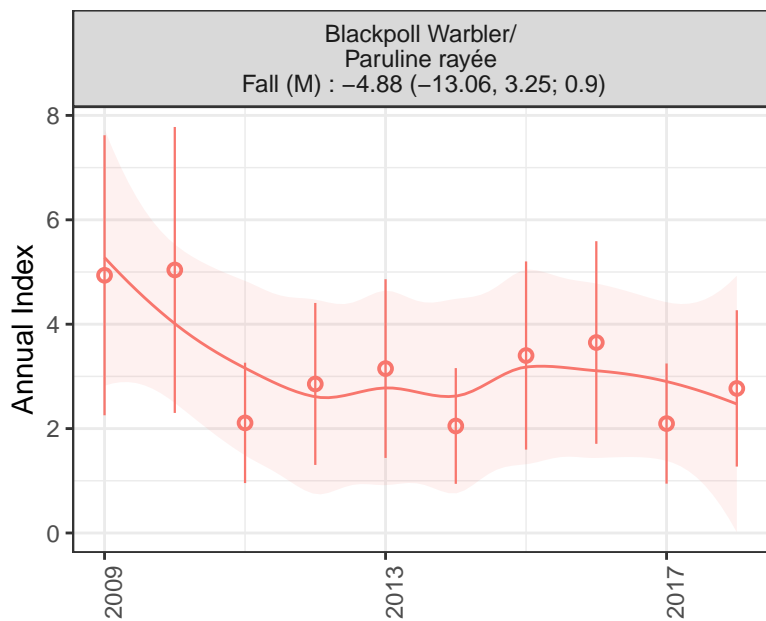
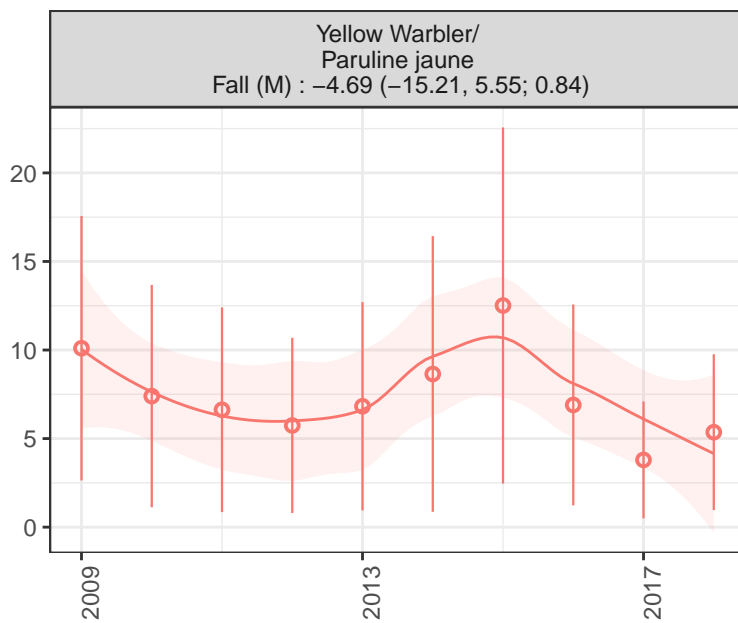
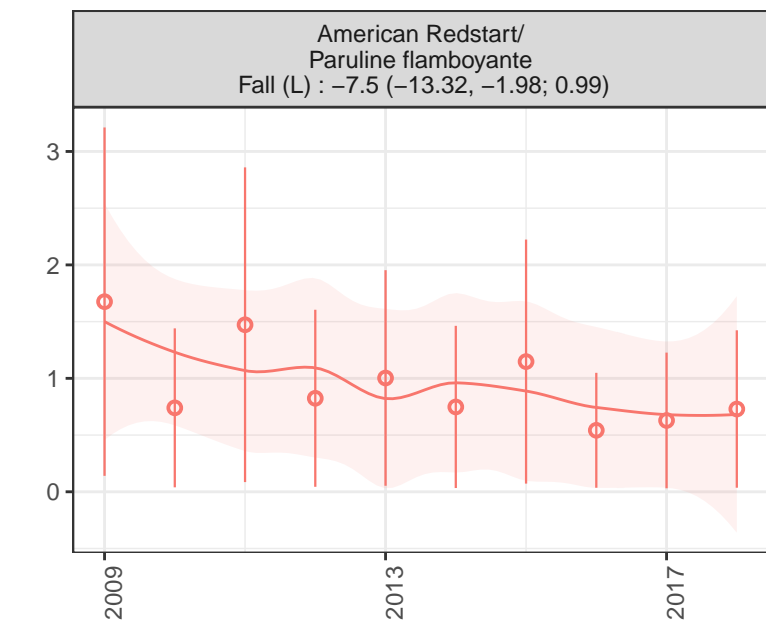












Year