BOREAL
Partners in Flight

Alaska
Raptor
Group

2025 Summary of Landbird Projects

Compiled by Rachel Gingras and Rachel M. Richardson
Edited and formatted by Rachel M. Richardson

April 2026

Contents

Editor's Note

This year marked the 34th anniversary of Boreal Partners in Flight (BPIF). This annual summary report highlights some of the important work led by BPIF members on landbirds across Alaska and boreal Canada and aims to foster communication and collaboration among educators, researchers, managers, and conservationists. If you would like additional information about a project, please contact the individuals listed at the end of each summary.

Thank you to everyone who voluntarily contributed a summary for this report. Your dedication, hard work, and expertise are invaluable to our mission. We encourage you to visit the Alaska Landbird Resource Information System, the official BPIF web page, and join the BPIF listserv to stay updated on landbird topics across Alaska and boreal Canada. To subscribe, please email rrichardson@usgs.gov.

Sincerely,

Rachel M. Richardson
U.S. Geological Survey
Alaska Science Center

Cover: Logo artwork of McKay's Bunting (*Plectrophenax hyperboreus*), American Goshawk (*Accipiter atricapillus*), and Willow Ptarmigan (*Lagopus lagopus*) illustrated by Bryce W. Robinson.

2025 Project Summaries by Bird Conservation Region (BCR)

(BCR 2) Tree Swallow nest box monitoring and community outreach in Bethel, Alaska, 2025

Randall J. Friendly and Bryan L. Daniels, U.S. Fish and Wildlife Service, Yukon Delta National Wildlife Refuge

In 2017, the Yukon Delta National Wildlife Refuge (YDNWR) established a Tree Swallow nest box monitoring program to collect baseline data to provide more information into the larger monitoring network across Alaska to better understand the challenges that aerial insectivores face. An additional objective of the project was to engage the community for outreach and educational purposes. The program continued for two years (2017–2018) but was discontinued due to staff turnover and limited available staff, preventing monitoring from 2019 through 2022. The project was restarted in 2023; however, it did not continue in 2024. In 2025, the YDNWR resumed the nest box monitoring program to continue data collection and encourage community involvement.

In 2025, YDNWR monitored 35 nest boxes from early April to end of July. Of the 35 monitored nest boxes, 26 were occupied (74.3%). Mean initiation, hatch, and fledge dates were 27 May, 17 June, and 8 July, respectively (Figure 1). Mean clutch size was 5.89 eggs. Of the 26 active boxes, 22 successfully fledged their nestlings (84.6%). We successfully captured and banded 26 new adults and 118 chicks for future survival analyses and recaptured an additional 6 previously banded Tree Swallows for survival analyses and nest box fidelity questions. Prior to the field season, the staff from YDNWR assisted the Migrant Education program at Lower Kuskokwim School District with building Tree Swallow nest boxes for students to put up at their residences, provided information and outreach regarding Tree Swallows and this nest box monitoring project. During the field season, we hosted 19 students from the ANSEP and Migrant Education programs while capturing and banding tree swallows as part of the outreach and community involvement objective of this project.

Acknowledgments: We would like to thank Trica Blake from the Alaska Songbird Institute for passing along the Tree Swallow monitoring manual and Laurel Devaney from Alaska Songbird Institute for coming out to Bethel to assist with banding. Thank you to John Lavalle for inviting us to the Migrant Education workshop and assisting with coordination of outreach.

Contact: Randall Friendly, P.O. Box 346, Bethel, AK 99559, Email: randall_friendly@fws.gov

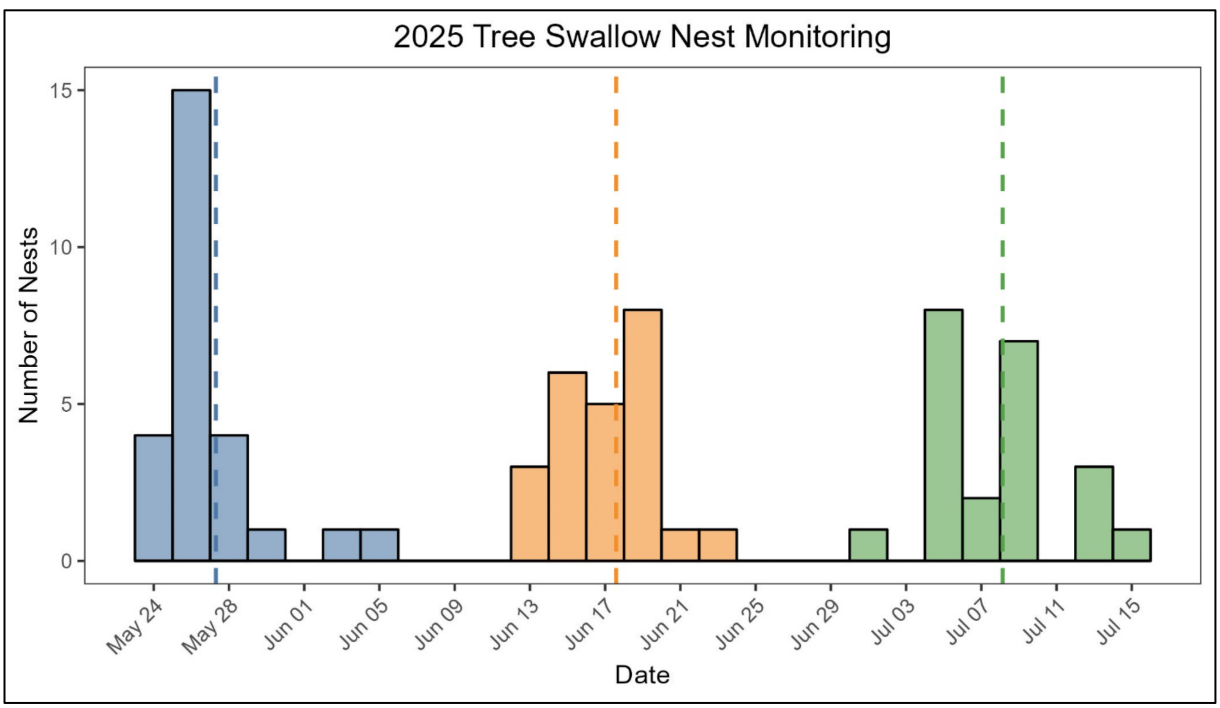


Figure 1. Frequency distribution of tree swallow initiation dates (blue), hatch dates (orange), and fledge dates (green) in Bethel, Alaska 2025. Dashed lines indicate the mean values.

(BCR 2) Willow Ptarmigan density on the Alaska Peninsula

Jaime Welfelt[1] and Leslie Skora[2]

[1]Alaska Peninsula and Becharof National Wildlife Refuges, [2]Katmai National Park

Alaska Peninsula and Becharof National Wildlife Refuges began pilot studies to investigate Willow Ptarmigan (*Lagopus lagopus*) populations on the Alaska Peninsula beginning in 2011. In 2015, we established 19 4-km line transect surveys and finalized the monitoring protocol for ptarmigan density estimates. Beginning in May 2021, Katmai National Park joined the efforts and adopted the U.S. Fish and Wildlife Service protocol so that the data could be combined across a larger area of the upper Alaska Peninsula. This multiagency effort includes staffing support from the local King Salmon Alaska Department of Fish and Game office.

In May 2025, the Alaska Peninsula and Becharof National Wildlife Refuges conducted 2 line transect surveys at two sites within road access of Naknek and King Salmon (Figure 1). Katmai completed 4 line transects at 2 different locations within the Katmai National Park boundaries. Through our combined efforts, we completed 6 Willow Ptarmigan line transects in 2025. Though not specifically targeted for ptarmigan, we also detected very high numbers of Willow Ptarmigan on our 2025 Alaska Landbird Monitoring Survey routes. In the future, we hope to add a few higher elevation transects to gather data on Rock Ptarmigan (*Lagopus muta*).

Contact: Jaime Welfelt, U.S. Fish and Wildlife Service, Alaska Peninsula and Becharof NWRs, King Salmon, AK, Email: jaime_welfelt@fws.gov

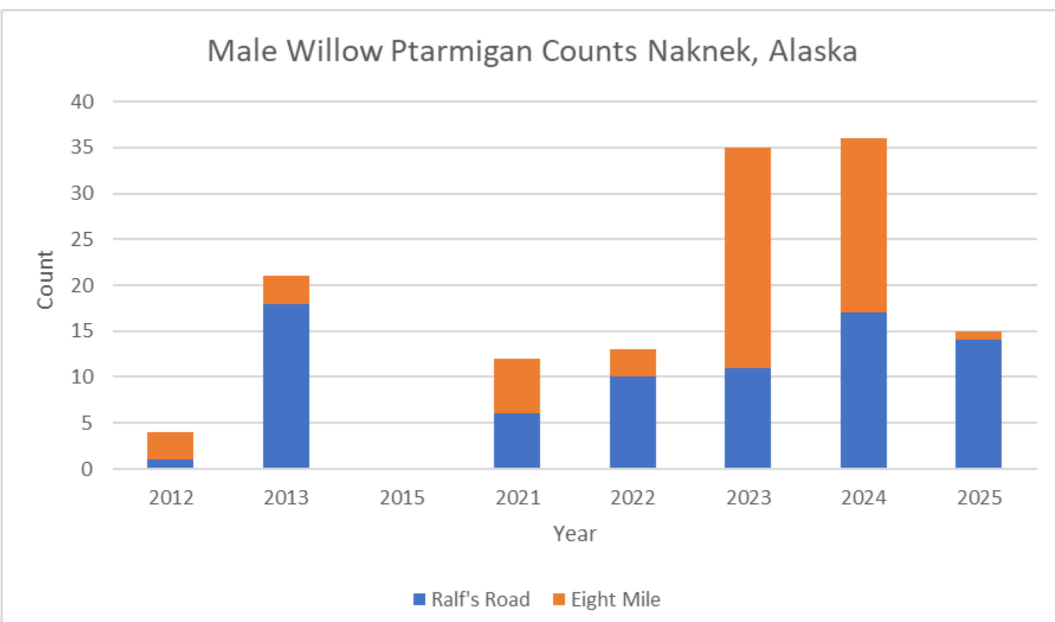


Figure 1. Male Willow Ptarmigan counts by survey year and site, Naknek, Alaska.

(BCR 2) Willow Ptarmigan distribution and movement study in Southcentral Alaska, 2025 update

Tim Spivey and Cameron Carroll, Alaska Department of Fish and Game

A Willow Ptarmigan research project is currently ongoing on the Yukon-Kuskokwim (YK) Delta. This study was originally initiated in 2022 to assess the movements and habitat use of willow ptarmigan at several locations on the YK Delta. However, due to low capture success during the breeding season in 2022 and turnover within the department during 2023, a renewed effort to deploy GPS transmitters again occurred in 2024 and 2025 with capture efforts focused around the community of Bethel. Three GPS transmitters were deployed in March of 2024 and 23 were deployed again in March of 2025, with most captures taking place within ~5 miles of Bethel. Preliminary data from collared individuals yielded an average movement distance of 46 miles (range: 0.2–123 miles) from location of capture during the months of April and early May, as birds captured near Bethel departed to breeding habitat across the YK Delta (Figure 1). Additional captures and GPS transmitter deployments are scheduled for March of 2026 with the hope of obtaining movement data from birds at several locations on the YK Delta.

Contact: Cameron Carroll, Alaska Department of Fish and Game, Division of Wildlife Conservation, 1300 College Road, Fairbanks, AK 99701, Phone: (907) 459-7237, Email: cameron.carroll@alaska.gov or Timothy Spivey, Alaska Department of Fish and Game, Division of Wildlife Conservation, 333 Raspberry Road, Anchorage, AK 99518, Phone: (907) 267-2897, Email: timothy.spivey@alaska.gov

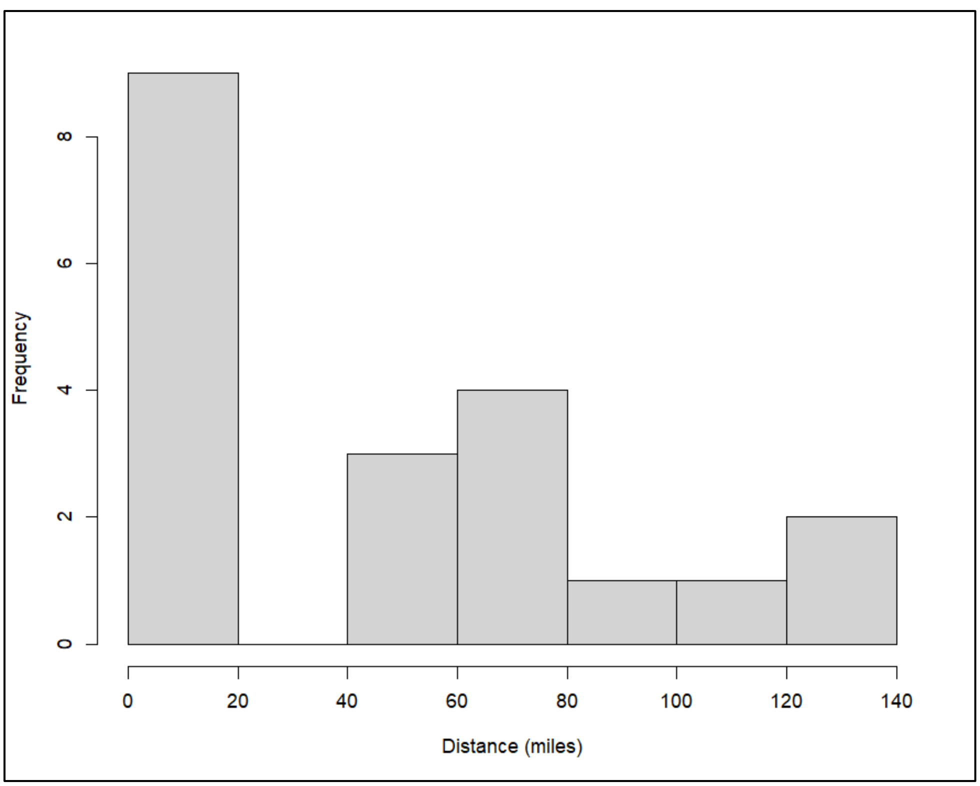


Figure 1. Distribution of Willow Ptarmigan movement distances (miles) from initial capture location near Bethel, AK to most recent GPS location as of 5/7/2025.

(BCR 2) Avian monitoring and educational efforts on the Alaska Peninsula
Jaime Welfelt, Alaska Peninsula and Becharof National Wildlife Refuges

Winterfest Community Carnival: Refuge staff hosted an informational booth at the local community festival in Naknek, handing out winter bird identification flyers and supplies to make a pinecone suet feeder.

Willow Ptarmigan Surveys: Refuge staff completed 2 line transect surveys, and Katmai National Park completed 4 line transect surveys in 2025.

World Migratory Bird Day: Refuge staff hosted an annual community bird count and took the Bristol Bay School 4-5 graders on a bird identification field trip.

Katmai National Park Bird Identification Class: 25 Katmai National Park employees joined Jaime Welfelt for a bird identification class focusing on the birds of Brooks Camp and encouraging staff to submit eBird checklists.

Breeding Bird Surveys: Refuge staff completed the King Salmon/Naknek and the Katmai National Park routes this year.

Alaska Landbird Monitoring Surveys: Refuge staff completed 3 ALMS plots on the Kejulik River, Dog Salmon River, and Kanatak Trail.

Ptarmigan Science and Culture Camp: Bristol Bay School students, staff, and local elders joined refuge staff for a 3-day remote camp in the Becharof Wilderness. Refuge staff taught lessons on bird identification and ecology.

Christmas Bird Count: Refuge staff hosted the 39th annual King Salmon CBC. Exciting sightings included 2 Northern Hawk Owls and 35 Bohemian Waxwings!

Contact: Jaime Welfelt, U.S. Fish and Wildlife Service, Alaska Peninsula and Becharof NWRs, King Salmon, AK, Email: jaime_welfelt@fws.gov

(BCR 3) Assessing global population trends for the Snowy Owl
Rebecca McCabe, Hawk Mountain Sanctuary Association

The Snowy Owl (*Bubo scandiacus*) has a circumpolar breeding distribution which spans across seven Arctic countries. Because of their remote distribution, it can be challenging to not only monitor Snowy Owls but to also assess their populations because individuals display variable movements including nomadic and irruptive behavior, have low philopatry, and range widely throughout their annual cycle. In 2017, the International Union for Conservation of Nature (IUCN) uplisted the Snowy Owl to "Vulnerable". This change was due to the suggested population estimates from a 2012 study which appeared considerably lower than historical estimates. The IUCN recommended actions for researchers to clarify the population size, structure, and trends. The International Snowy Owl Working Group (ISOWG) and researchers from around the globe came together to quantitatively assess population trends and compile an updated global status review for the species. Using nest data from long-term monitoring sites in Canada, USA, Fennoscandia, Greenland and Russia (Figure 1, McCabe et al. 2024), we modelled population trends, using Bayesian hierarchical generalized linear models, and found overall negative trends for population growth rates. Our study concluded that breeding populations of Snowy Owls in the Arctic have decreased by more than 30% over the past three generations (roughly 15–24 years), meeting the IUCN criteria for Vulnerable (A2).

Contact: Rebecca McCabe, Hawk Mountain Sanctuary Association, 410 Summer Valley Rd, Orwigsburg, PA 17961, Email: mccabe@hawkmountain.org

Literature cited:

McCabe, R. A., T. Aarvak, A. Aebischer, et al. 2024. Status assessment and conservation priorities for a circumpolar raptor: the Snowy Owl (*Bubo scandiacus*). Bird Conservation International 34:e41. https://doi.org/10.1017/S0959270924000248

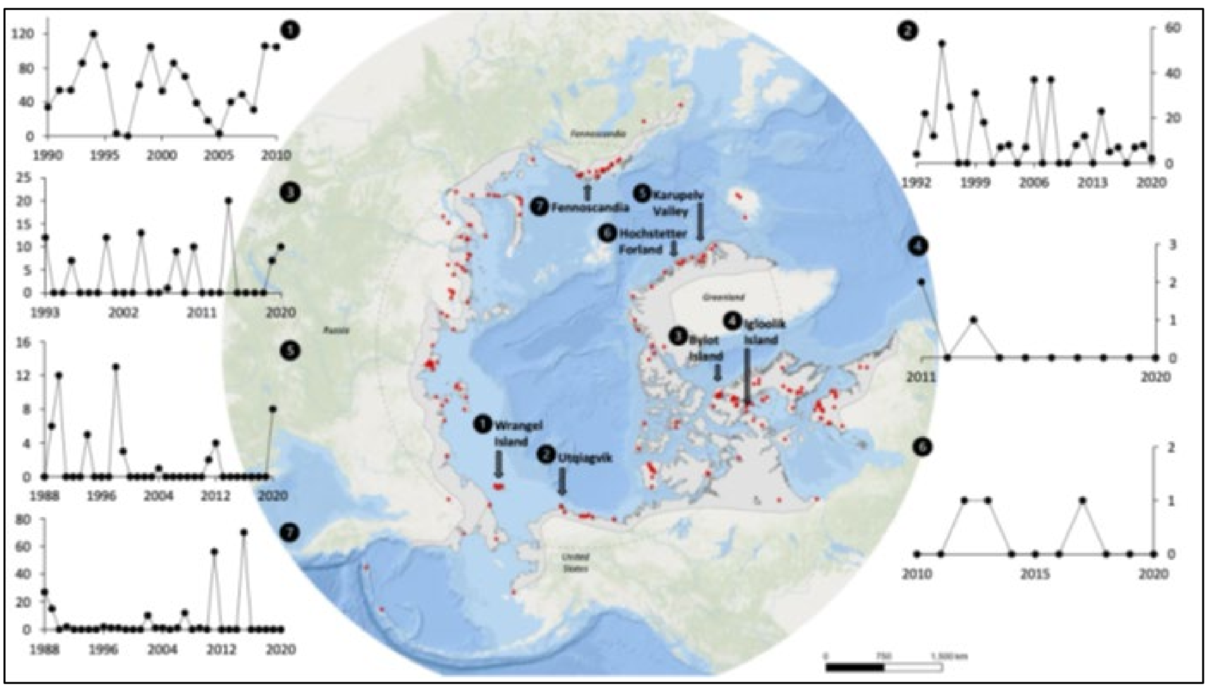


Figure 1. Known active Snowy Owl (*Bubo scandiacus*) nest sites across the circumpolar Arctic over the last 50 years. We compiled data from the Arctic Monitoring and Assessment Program (1990–2018; n = 150 nests), eBird (1971–2022; n = 75 nests), GPS-tagged owls (2016–2021; n = 19 nests), and nest locations from collaborators at seven long-term monitoring sites (1987–2020; n = 560 nests). Figure from McCabe et al. 2024.

(BCR 4) Mitigating bird-aircraft collisions at Ted Stevens Anchorage International Airport, Anchorage, Alaska

Caroline Olson, USDA Wildlife Services

Collisions between wildlife and aircraft have been occurring since the earliest days of aviation history. Since planes first took to the air in 1905, hundreds of people have lost their lives, 126 aircraft have been destroyed, and approximately $437 million has been lost annually to wildlife strikes. Here in Alaska, 24 airmen were killed when their aircraft struck a flock of Canada geese upon takeoff from Joint Base Richardson-Elmendorf in September of 1995. The collision took out both jet engines on one side and caused the plane to crash just a mile from the runway.

While wildlife strikes can have devastating effects on people, they are even more devastating to the wildlife involved. Humans have a good chance of walking away from it, but birds and other wildlife rarely do. Based on the FAA Wildlife Strike Database, a minimum of 313,716 birds have been killed since 1990. This number is a low estimate. Sometimes more than one bird is stuck per incident, but that number cannot be accurately determined due to the condition of the remains. Additionally, not all wildlife strikes are reported. The actual number is likely much higher.

At Ted Stevens Anchorage International Airport, USDA Wildlife Services uses a variety of tools and techniques to reduce wildlife strike risk:

1. Habitat modification: altering the airfield environment so wildlife don't have a reason to be there in the first place. Includes mowing, tree cutting, and standing water mitigation.
2. Exclusion: when an attractant can't be removed, but it can be covered or made otherwise inaccessible to wildlife. An example is hard covers to keep ravens out of cargo pallets staged outside.
3. Dispersal: loud noises, flashing lights, vehicles; anything that triggers a flight response and teaches wildlife that the airfield is not a safe place.
4. Removal: final option when the other three are not possible/effective. Some species, including porcupines, waterfowl, and all species of raptors other than eagles can be captured and translocated to a safer place.

USDA Wildlife Services applies USGS bands to all translocated birds. Starting in 2022, select species were also fitted with backpack satellite transmitters. This is being done as part of a study between Joint Base Elmendorf-Richardson, U.S. Fish and Wildlife Service, USDA Wildlife Services, and the University of Alaska Anchorage graduate program. Jonah Rothleder, the graduate student carrying out this study, is hoping to gain insights into what happens to raptors after translocation: Do they survive? Do they stay where they were released? Do they go to other airports? And more.

Contact: Caroline Olson, USDA Wildlife Services, 9001 E Frontage Road, Palmer, AK 99645, Phone: (907) 795-3092, Email: caroline.s.olson@usda.gov

(BCR 4) Creamer's Field Migration Station, Fairbanks, Alaska, 2025 update

Robert Snowden and Tricia Blake, Alaska Songbird Institute

Overview: Creamer's Field Migration Station (CFMS) is a long-term avian migration monitoring program established in 1992 on Creamer's Field Migratory Waterfowl Refuge in Fairbanks, Alaska. CFMS is operated by the Alaska Songbird Institute (ASI), a 501(c)(3) whose mission is to conserve boreal songbirds through education and research. CFMS has contributed to numerous publications over its 30-year history, on topics ranging from avian pathogen transmission to fat deposition strategies during migration.

Season summary: The 2025 CFMS spring banding season ran weekdays from April 25 – June 5, operating 18 net arrays (6m and 12m nets, 30mm mesh) 5 days/week for a total of 1,471.3 net hours. Our fall season operated 25 net arrays 5-6 days/week from July 30 – September 24 for a total of 3,327.0 net hours. Our efforts were supported by a seasonal educator and approximately 1,380 volunteer hours contributed by 35 volunteers and two fall interns. We offered 71 education programs—including K-12 field trips and guided walks—for approximately 1,700 individuals and received approximately 380 additional drop-in visitors at our station.

During the spring season, we recorded 194 total captures of 16 species. These totals consist of 118 newly-banded individuals and 75 recaptures, and 1 bird left unbanded (unbanded totals included escapes or species not able to be banded under our permit). For the fall, we recorded 745 total captures of 30 species. These totals consist of 627 newly-banded individuals, 115 recaptures, and 3 birds left unbanded. Detailed capture summaries for the spring and fall are presented in Tables 1 and 2, respectively. During banding efforts, we collected 41 rectrix samples from 11 species to contribute to two partners: the Bird Genoscape Project in Ft. Collins, CO, and a University of Alaska Fairbanks undergraduate student study of stable isotope analyses.

Capture activity in the spring was similar to the long-term seasonal trend, while our fall capture totals were historic lows for the station. The 194 captures in spring matched 2024's totals, and the capture rate of 13.2 birds/100 net hours was slightly above the historical average of 11.5 birds/100 net hours. The spring species diversity was on the low end for the season historically; between 19–24 species were captured over the prior four springs as a comparison.

Meanwhile, this was the first fall in station history with fewer than 1,000 total captures. The low numbers were in part due to compromised netting effort; we missed several banding days due to rainfall during peak migration periods in August, and extensive flooding in wetland portions of our banding station limited our ability to operate some of our most productive nets. But even accounting for net effort, the fall capture rates (22.4 birds/100 net hours) were still lower than any prior season (long-term average = 30.5 birds/100 net hours). We observed a notable lack of 'moderately busy' days: from 2021-2024 the median number of fall daily captures was 30 birds, but in 2025 the median was only 14 birds. Punctuating the numerous low-volume days were two high-volume days (100+ birds) that ultimately accounted for nearly 30% of the season's captures! Despite the overall low totals, the 30 species captured bested 2024's fall richness by one species.

We enjoyed a few notable capture events in 2025. The most prominent were the station's first-ever capture of a Common Yellowthroat—a hatch-year male that was banded on August 21—and a returning Hammond's Flycatcher female on May 12 that unofficially set the longevity record for the species (pending Bird Banding Lab verification). This latter individual was first captured as an adult in 2018. Other highlights included the station's second-ever American Kestrel capture on

September 15, and the first Arctic Warbler since 2014 on August 12.

Acknowledgments: We thank the Alaska Department of Fish and Game for allowing us to conduct our research on Creamer's Field Migratory Waterfowl Refuge and our volunteers for their hard work. CFMS is funded through a combination of grants, revenue, fundraising, and donations– including ASI's members and our Adopt-a-Net sponsors.

Contact: Robert Snowden, Alaska Songbird Institute, P.O. Box 80235, Fairbanks, AK 99708, Phone: (907) 888-2121, Email: asi.science@aksongbird.org

Table 1. Spring Captures at Creamer's Field Migration Station in 2025.

	Newly Banded						
Species	**HY/ SY**[1]	**ASY**[2]	**AHY**[3]	**Subtotal**[4]	**Returns**[5]	**Total**[6]	**Return Rate**[7]
American Robin	8	2	7	**17**	2	**19**	0.105
American Three-toed Woodpecker	0	0	0	**0**	1	**1**	1
Black-capped Chickadee	1	0	1	**2**	7	**9**	0.778
Downy Woodpecker	1	0	1	**2**	0	**2**	0
Fox Sparrow	1	0	0	**1**	0	**1**	0
Gray-Cheeked Thrush	2	2	6	**10**	0	**10**	0
Hammond's Flycatcher	0	1	3	**4**	3	**7**	0.429
Lincoln's Sparrow	0	0	2	**2**	1	**3**	0.333
Northern Waterthrush	0	0	1	**1**	0	**1**	0
Redpoll	12	7	12	**31**	0	**31**	0
Savannah Sparrow	1	2	3	**6**	0	**6**	0
Slate-colored Junco	5	0	1	**6**	2	**8**	0.25
Swainson's Thrush	10	6	7	**23**	5	**28**	0.179
White-crowned Sparrow (Gambel's)	2	0	2	**4**	0	**4**	0
Wilson's Warbler	1	0	1	**2**	0	**2**	0
Yellow-rumped Warbler (Myrtle)	4	3	0	**7**	2	**9**	0.222
TOTAL[8]	**48**	**23**	**14**	**118**	**23**	**141**	**0.195**

[1]Newly banded birds aged as Second Year (hatched in current or previous calendar year).
[2]Newly banded birds aged as After Second Year (hatched at least two calendar years prior).
[3]Newly banded birds aged as After Hatch Year (hatched in a previous calendar year).
[4]Combined total of all newly banded birds.
[5]Birds banded in a previous year and recaptured in spring 2025 (repeat recaptures of individuals not included).
[6]Represents total number of unique individuals for each species.
[7]Return Rate = Returns / Total.
[8]Includes Average Return Rate across species.

Table 2. Fall Captures at Creamer's Field Migration Station in 2025.

	Newly Banded							
Species	**HY[1]**	**AHY[2]**	**U[3]**	**Subtotal**	**Returns[4]**	**Total**	**AHY Rate[5]**	**Return Rate[6]**
American Kestrel	0	1	0	**1**	0	**1**	1	0
American Robin	4	1	0	**5**	0	**5**	0.2	0
American Tree Sparrow	3	4	0	**7**	0	**7**	0.571	0
Arctic Warbler	1	0	0	**1**	0	**1**	0	0
Black-capped Chickadee	23	1	0	**24**	10	**34**	0.324	0.294
Blackpoll Warbler	3	0	0	**3**	0	**3**	0	0
Boreal Chickadee	9	0	0	**9**	1	**10**	0.1	0.1
Common Yellowthroat	1	0	0	**1**	0	**1**	0	0
Downy Woodpecker	0	0	0	**0**	1	**1**	1	1
Fox Sparrow	9	5	0	**14**	0	**14**	0.357	0
Gray-Cheeked Thrush	23	3	0	**26**	0	**26**	0.115	0
Hairy Woodpecker	1	1	0	**2**	0	**2**	0.5	0
Hammond's Flycatcher	3	2	0	**5**	0	**5**	0.4	0
Hermit Thrush	7	0	0	**7**	0	**7**	0	0
Lincoln's Sparrow	65	8	0	**73**	0	**73**	0.11	0
Northern Waterthrush	14	1	0	**15**	0	**15**	0.067	0
Orange-crowned Warbler	119	9	0	**128**	0	**128**	0.07	0
Ruby-crowned Kinglet	15	2	0	**17**	0	**17**	0.118	0
Rusty Blackbird	4	3	0	**7**	0	**7**	0.429	0
Savannah Sparrow	15	0	0	**15**	0	**15**	0	0
Sharp-Shinned Hawk	1	0	0	**1**	0	**1**	0	0
Slate-colored Junco	55	15	0	**70**	2	**72**	0.236	0.028
Swainson's Thrush	93	3	0	**96**	3	**99**	0.061	0.03
Townsend's Warbler	4	0	0	**4**	0	**4**	0	0
Varied Thrush	4	0	0	**4**	0	**4**	0	0
White-crowned Sparrow (Gambel's)	3	2	0	**5**	0	**5**	0.4	0
Wilson's Warbler	14	3	0	**17**	0	**17**	0.176	0
Yellow Warbler	7	1	0	**8**	0	**8**	0.125	0
TOTAL[7]	**562**	**65**	**0**	**627**	**16**	**643**	**0.131**	**0.027**

[1]Newly banded birds aged as Hatch Year (hatched in current calendar year).
[2]Newly banded birds aged as After Hatch Year (hatched in a previous calendar year).
[3]Newly banded birds of unknown age.
[4]Birds banded in a previous season (including spring 2025) and recaptured in fall 2025; repeat recaptures of individuals not included.
[5]AHY Rate = (New AHYs + Returns) / (New AHYs + New HYs + Returns).
[6]Return Rate = Returns / Total.
[7]Includes Average AHY Rate and Return Rate across species.

(BCR 4) Fairbanks *Tachycineta* swallow monitoring, banding, and education project
Tricia Blake and Shelby Morgan, Alaska Songbird Institute

Overview: The Alaska Songbird Institute has been gathering data on the phenology, productivity, and success of Tree Swallows using artificial nest boxes at two locations in Fairbanks since 2013. Nesting data on the species in these locations dates back to 1994. ASI continues to follow the standardized field methods for monitoring and banding this species developed by the Alaska Swallow Monitoring Network first implemented in 2016.

ASI's project has dual objectives. Research/monitoring objectives include: (1) compile a long-term record of chronology (lay, hatch, & fledge), occupancy, success, and productivity of nesting *Tachycineta* swallows in Interior Alaska (primarily Tree Swallows); (2) monitor vital rates with the potential to be demographic drivers of local population decline in Tree Swallows (clutch size, reproductive attempts, return rates, hatch rates, fledge rates, and juvenile recruitment rates; (3) examine site and mate fidelity by banding breeding adults and nestlings; (4) monitor aspects of the ecosystem that are important indicators of bird habitat quality and sensitive to climate change; and (5) contribute data to large-scale projects and collaborative efforts.

Education/outreach objectives include: (1) provide students primarily ages 10-18 with engaging and authentic experiences with scientific research in their home community; (2) provide science and conservation-based volunteer opportunities for Fairbanks area youth and teens; and (3) build public awareness of aerial insectivore ecology, migration, and conservation in Interior Alaska.

Season Summary: Tree Swallows arrived on in Fairbanks on May 2, once again skewing later than their historical average arrival date of April 29. The season began with unseasonable cold temperatures during laying and incubation. Fairbanks recorded the latest first 70-degree Fahrenheit day of the year since 1930. Weather shifted rapidly to a hot, dry pattern around mean hatch. The rest of the nestling period was characterized by hot temperatures (80 degrees Fahrenheit or warmer). This trend changed when thunderstorms and subsequent wildfires and smoke arrived July

6–8. The mean fledge date at both sites was July 2, so this shift impacted only the late nestling stage of later nests.

Data Summary:

Table 1. 2025 summary of *Tachycineta bicolor* using artificial nest boxes at two sites in Fairbanks.

	Creamer's Field	University of Alaska, Fbks
# Available Nest Boxes	89	54
# Active Boxes	50	22
# Nesting Attempts	50	22
Occupancy Rate[1]	56.2%	40.7%
Mean Lay Date	5/24	5/25
Mean Hatch date	6/12	6/12
Mean Fledge Date	7/2	7/2
Total # Eggs Laid	301	131
# Eggs Hatched	273	110
# Adults Banded New	46	20
# Adults Returns[2]	47	20
# Nestlings Banded	260	110
# of Nests that Fledged[3]	47	20
Nest Success[3]	94.0%	90.9%

[1]Occupancy rate: # of boxes occupied / # of available nest boxes.
[2]Birds banded in a previous year, returned in 2025.
[3]Fledged: fledged at least one nestling; Success: At least one nestling fledged.

Education & Outreach: With support from the Environmental Protection Agency Environmental Education Grants program, ASI had a tremendous year for education and outreach on this project. We trained 23 youth (ages 8-14) and 8 high school interns (ages 14-17) for a total of 31 students who volunteered at least 1,328 hours on nest monitoring, bird capture & banding, and data entry on this year's Tree Swallow Project. Five adult volunteers contributed at least 80.5 additional hours. This year's cohort also included students from the Fairbanks Boys & Girls Club who participated in a 6-week program with ASI that included weekly trips to Creamer's Field to assist with nest monitoring and banding, paired with new learning modules at their Clubhouse. Our team also offered nine additional public programs for 74 people, including training sessions for the Bonanza Creek Leaders in Training program and field visits from the Bonanza Creek Science Adventure Camp. ASI banders traveled to Bethel and Juneau in June to train volunteers and provide banding support to community-based Tree Swallow monitoring projects in those communities. Finally, our high school interns participated in a science/art program focused on observation and nature journaling offered in collaboration with Calypso Farm & Ecology Center. They also continued to maintain and add to a project website. The website is linked to QR codes on nest boxes that can be scanned by trail users at Creamer's Field allowing them to learn about the project and follow the progress of the nest in that box. We estimate that many thousands of Alaskans and visitors were reached by scanning these QR codes, as well as via numerous informal presentations at trailside boxes, signage on trails, and through an interpretive display in the Creamer's Refuge Visitor Center.

Contact: Tricia Blake, Alaska Songbird Institute, P.O. Box 80235, Fairbanks, AK 99708, Phone: (907) 888-2121; Email: Tricia.Blake@aksongbird.org or programs@aksongbird.org

(BCR 4) Tracking fall migration of Bank Swallows (*Riparia riparia*) from across North America with automated radio telemetry

Eva Allaby[1], Julie Hagelin[1], Sarah Endenburg[2], Christina Davy[2], Gregory Mitchell[3], Jim Johnson[4], and Callie Gesmundo[4]
[1]Threatened, Endangered and Diversity Program, Alaska Department of Fish and Game, [2]Carleton University, [3]Environment and Climate Change Canada, [4]U.S. Fish and Wildlife Service

Bank Swallows (*Riparia riparia*) show long-term declines of 89% in North America and 98% in Canada, where they are currently listed as Threatened (PIF 2016, Handel and Sauer 2017). Environment and Climate Change Canada recently used the Motus Wildlife Tracking System to characterize migration routes and departure timing of Bank Swallows from breeding sites across Canada and Alaska, in collaboration with Alaska Department of Fish and Game and other partners. The goal of this summary is to provide an overview of the results of the project, specifically highlighting results of birds from Alaska, Yukon Territory, and British Columbia. The Bank Swallow analysis was led by Carleton University master's student Sarah Endenburg. We encourage readers to find additional details in Sarah Endenburg's master's thesis (Endenburg 2024).

Over two seasons (2022–2023), 890 birds (99 in Alaska in 2023 only) were radio tagged at 13 sites across Canada and central Alaska. In total there were 7,479,336 detections of 610 birds (68.5%) from 235 Motus receivers. Of the 610 birds, 245 individuals (27.5%) were detected departing on fall migration. Departure was defined as detections on receivers more than 50 km away from a breeding site. Data from the 245 individuals were used in a migration analysis. Detections of birds lasted from mid-June through mid-December, indicating that some tags remained functional for at least six months.

Migration analysis revealed three distinct migratory pathways of Bank Swallows: Western, Central, and Eastern (Figure 1). Individuals tagged in southern British Columbia primarily followed the Western migration route, whereas birds tagged in Alaska (AK), Yukon (YT), northern British Columbia (nBC), and Saskatchewan (SK) predominantly used the Central route. Swallows tagged in Québec, New Brunswick, Nova Scotia, and Prince Edward Island followed the Eastern migration route. Bank Swallows using the Central migration route (from AK, YT, nBC and SK) generally followed a southeasterly trajectory, with a mean bearing of 108.92 ± 12.72 degrees. Stationary non-breeding locations provided little data. The southernmost detections of the study were recorded in Colombia for two SK birds only on December 16, 2023.

Birds using the Central route largely represented the northern-most breeding latitudes (AK, YT, nBC and SK; Figure 1). Estimated mean departure date for these birds was 20 July, which fell between 2 to 12 days later than the Western and Eastern routes, depending on the year (Figure 2).

Mean fall departure dates overall, however, were quite variable (Figure 2). Only in 2022 did the mean departure dates differ significantly between birds using the Central and Eastern migratory routes, with Central-route birds departing on average 12.04 ± 3.49 days later. (Figure 2).

Migration pace varied among the three routes. Birds following the Central route (n = 33) migrated the fastest, averaging 325 ± 108 km per day, whereas those using the Eastern route (n = 26) traveled more slowly at 77 ± 59 km per day. After accounting for these route-specific differences, later departing birds migrated at higher speeds, increasing by an estimated 1 km per day for each additional day of delayed departure. Endenburg (2024, p. 68) further explores potential mechanisms that may explain why some individuals selected the Central route rather than the Western route.

Many birds following the Central migration route (from AK, YT, nBC and SK) were detected in Manitoba (n = 60), just north of the Canada–US border, between July 17–August 8, 2022, and July 19–August 7, 2023 (Table 1). Additional detection locations and timing for birds originating in Alaska and western Canada are summarized in Table 1, which outlines southward movements during the early phase of migration, and three Alaska birds in Paraguay spanning mid-September to November. Paraguay birds were excluded from analysis, as it was unclear whether they were true or erroneous detections.

Despite originating from geographically distant breeding regions across AK, YT, nBC, and the Canadian prairies, Bank Swallows that collectively used the Central migration route appeared to funnel through the Prairie Pothole Region. Temporal overlap among individual Bank Swallows within each migration route was also high, indicating that birds following the same route tended to migrate during similar time periods. Other aerial insectivores, including Tree Swallows (*Tachycineta bicolor*) are known to use this region (Knight et al. 2018). Both agricultural intensification and wetland drying are associated with losses of aerial insectivores and many other birds (e.g. Leroy et al. 2026).

The migration period for many songbirds results in high levels of adult mortality (e.g., Newton 2025). Multiple migratory routes in Bank Swallows can help us reveal how different breeding populations may be exposed to different threats. The findings above are an initial step toward providing spatially-explicit hypotheses aimed at informing and prioritizing conservation actions aimed at reversing or mitigating population decline. In addition, the fall departure dates collected at breeding sites provide a useful timeline for minimizing disturbance to nesting Bank Swallows. Activities near colonies should be limited from April (mid-May at higher latitudes) through the end of July, when most tagged birds had departed. Keeping dogs leashed and reducing outdoor cat activity during this period may also help lower nest predation risk.

Contact: Eva Allaby, Threatened, Endangered and Diversity Program, Alaska Department of Fish and Game, 1300 College Road, Fairbanks, Alaska 99701, Email: eva.allaby@alaska.gov

Literature cited:

Endenburg, S. C. 2024. The fall migration of a declining aerial insectivore, the Bank Swallow (*Riparia riparia*). Master’s thesis, Carleton University, Ottawa, Ontario, Canada. https://carleton.scholaris.ca/server/api/core/bitstreams/9c0e60c4-704f-461a-a5e1986901f0ae68/content

Handel, C. M. and J. R. Sauer. 2017. Combined analysis of roadside and off-road breeding bird survey data

to assess population change in Alaska. The Condor: Ornithological Applications, 119:557–575.
Knight, S. M., Bradley, D. W., Clark, R. G., et al. 2018. Constructing and evaluating a continent-wide migratory songbird network across the annual cycle. Ecological Monographs 88(3), 445–460.
Leroy, F., Jarzyna, M. A., and P. Keil. 2026. Acceleration hotspots of North American birds' decline are associated with agriculture. Science 391(6788), 917–921.
Newton, I. 2025. Migration mortality in birds. Ibis 167(1), 106–123.
Partners in Flight. 2016. Species conservation profile: Bank Swallow. https://partnersinflight.org/species/bank-swallow/

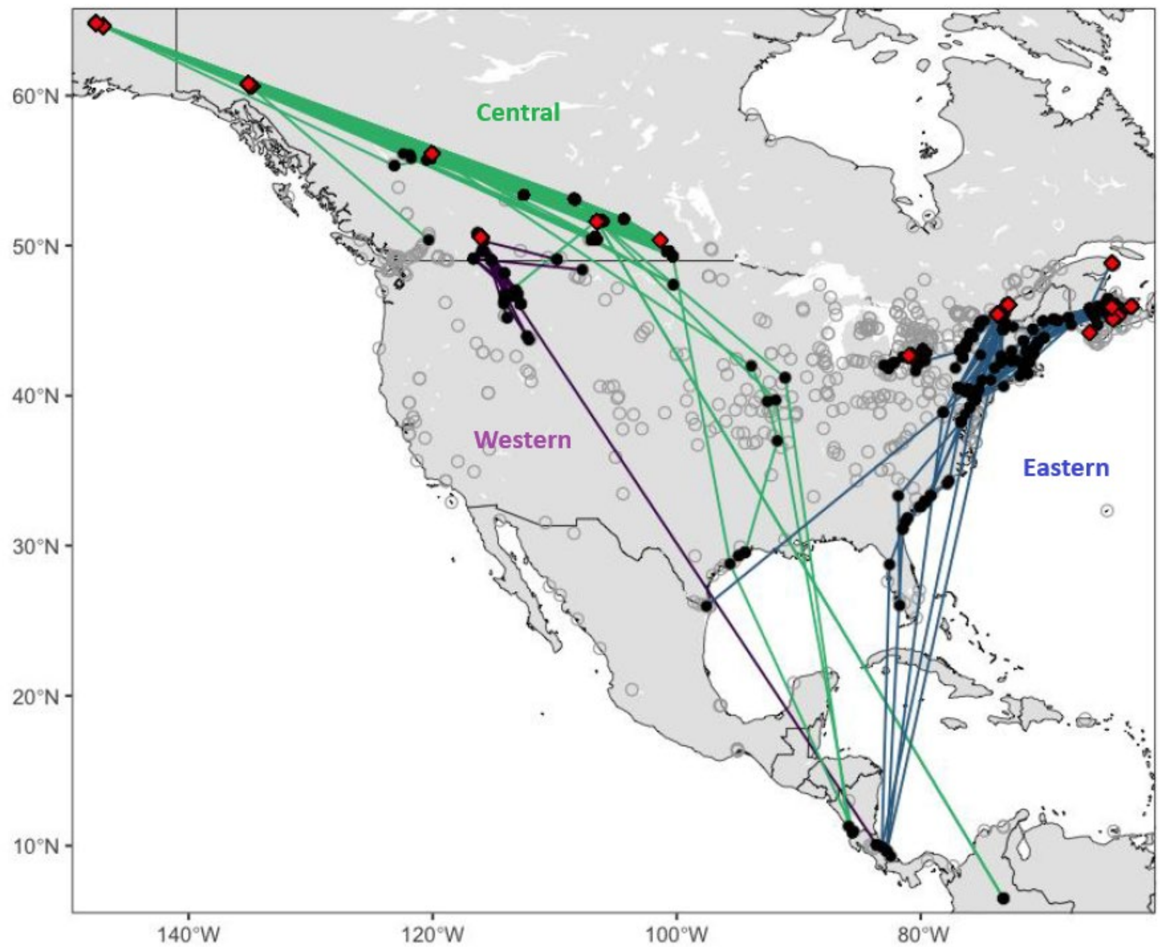


Figure 1. Three migratory routes (Western, Central and Eastern) of Bank Swallows (*Riparia riparia;* n=245) tagged on the breeding grounds in 2022 and 2023. Red diamonds represent breeding locations, black filled circles represent receivers with detections, and grey open circles represent active receivers without detections. The lines join consecutive detections for an individual but do not necessarily represent the route the individual would have travelled. Line color represents each migration route, as indicated. Adapted from Figure 2.3.1 in Endenburg (2024).

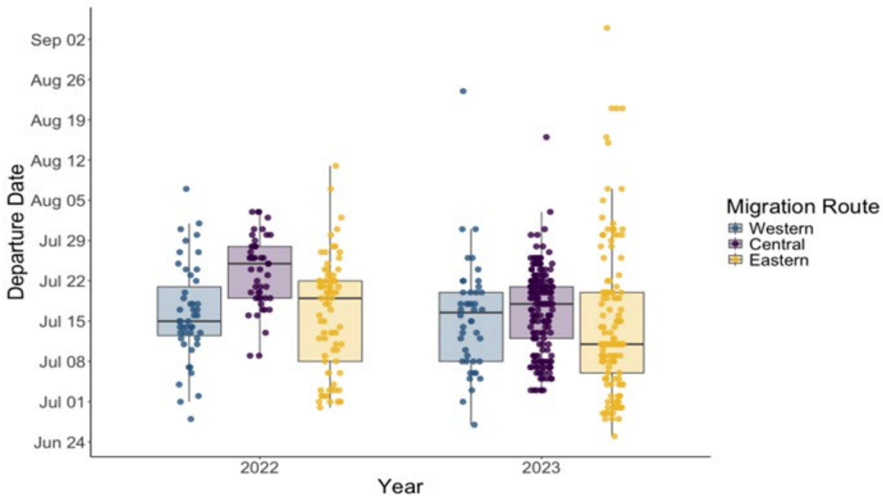


Figure 2. Bank Swallow (*Riparia riparia*) fall departure dates from breeding colonies (n = 589 birds) grouped by year and migration route. $n_{Western} = 93$, $n_{Central} = 257$, $n_{Eastern} = 239$ (one departure date per individual). The horizontal lines in each box represent the first quartile (Q1), median (Q2) and third quartile (Q3). The vertical lines on the top and bottom of each box plot represent Q1 - 1.5*(Q3-Q1) and Q3 + 1.5*(Q3-Q1). Adapted from Figure 2.3.2 in Endenburg (2024).

Table 1. Additional detection locations and timing for Bank Swallows breeding in Alaska (AK), Yukon Territory (YT), British Columbia (northern BC [nBC], southern BC) and Saskatchewan (SK). Birds from these locations collectively represent the Central and Western migration routes of this species, as indicated below.

Breeding origin	Migratory route	Birds detected at final location / total tagged at breeding origin	Enroute detection	Final detection location
AK, YT, nBC, SK	Central	n = 60/284	BC → Alberta → Saskatchewan →	Manitoba, July 17–August 8
Northern BC	Central	n = 1/35	Iowa → Missouri →	Texas, August 29, 2023
Saskatchewan	Central	n = 1/50	Iowa →	Nicaragua, September 18
Saskatchewan	Central	n = 1/50	Texas →	Costa Rica, September 14
Saskatchewan	Central	n = 1/50	Missouri →	Costa Rica, September 29
Saskatchewan	Central	n = 2/50	Colombia	Colombia, November 9–December 4
Southern BC	Western	n = 51/100	Montana →	Idaho
Southern BC	Western	n = 2/50	Alberta → Montana →	Costa Rica, October 30–December 16
Alaska*	Central	n = 3/95	Saskatchewan → Manitoba →	Paraguay, September 1–November 14

*Not used in analyses of Endenburg (2024). Provided as information only, as these represent the farthest south detections. It is presently unclear, however, whether these birds represented true movements or erroneous detections.

(BCR 4) 2025 update on population monitoring of Golden Eagles in Denali National Park and Preserve, Alaska

Carol McIntyre, Far Flung Studies – Alaska

Golden Eagles (*Aquila chrysaetos*) are a relatively long-lived apex predator with breeding populations occurring across many portions of the Northern Hemisphere (Katzner et al. 2020). One of the highest reported densities of nesting Golden Eagles in northwestern North America is in the northern foothills of the Alaska Range in Denali NPP (Katzner et al. 2020). This area was designated an Important Bird Area by the National Audubon Society specifically because of the large nesting population of Golden Eagles.

A program to monitor territory occupancy and breeding activities of Golden Eagles in this area was started in 1988. The program is based on an occupancy-based survey framework that uses a repeatable sampling approach to document occupancy of nesting territories and reproductive success that was originally developed in the Snake River Birds of Prey National Conservation Area for monitoring nesting Golden Eagles and other raptors (McIntyre et al. 2006).

Documenting territory occupancy and breeding activities in 2025: We conducted aerial and ground-based surveys in late April 2025 to document nesting territory occupancy and breeding activities. This survey is conducted after most clutches are completed but before eggs hatch. We made observations at 85 Golden Eagle nesting territories in 2025. Of those, 79 (93%) were occupied including 56 (71%) with an occupied nest (a nest that contained at least one egg). The percentage of territories that were occupied in 2025 was higher than the long-term average (86%, range = 76 to 98%). The percentage of territories with an occupied nest in 2025 was higher than the long-term average (53%, range = 4% to 88%). We hypothesized that the availability of Willow Ptarmigan (*Lagopus lagopus*) early in the breeding season provided eagles with a buffer against the lack of snowshoe hares (*Lepus americanus*) and resulted in a relatively high number of occupied nests despite the lack of hares. This dynamic was also documented in 2023, when hares were near the bottom phase of their population cycle, but ptarmigan were abundant.

Documenting breeding success, fledgling production, and nesting phenology in 2025: We conducted aerial surveys on 22 July 2025 to document breeding success, count the number of fledglings, and estimate the age of nestlings. This survey is conducted after most nestlings reach 7 weeks of age but before many fledge. We documented 37 successful nests (66% of occupied nests; defined as an occupied nest with at least one fledgling) and counted 49 fledglings, including 25 nests with 1 fledgling and 12 nests with 2 fledglings. Nesting success, calculated as the number of successful nests per occupied nests, was 66%, and similar to the long-term average (63%, range = 30 to 88%). Mean brood size, calculated as the number of fledglings per successful nest, was 1.32 and similar to the long-term average (1.35, range = 0.92 to 1.66). Overall population productivity, calculated as the number of fledglings produced per occupied territory, was 0.62, slightly higher than the long-term average (0.52, range = 0.02 to 1.20).

All nestlings observed during the July survey ranged in age from 7 to 9 weeks old. We estimated that eggs were laid between 5 and 19 April, that eggs hatched between 20 May and 3 June, and that fledging events occurred between 29 July and 12 August. Nesting phenology in 2025 was similar to nestling phenology measured since 1988.

Long-term trends: This marked the 37th year for monitoring the nesting territory occupancy, breeding activities, and nesting phenology of Golden Eagles in Denali NPP. Since 1988, nesting territory occupancy has remained stable, suggesting that over the study period there was a sufficient number of eagles available to enter the territorial population when opportunities to do so occurred. Over this time, we have noted the apparent abandonment of some territories and the establishment of new ones. These spatial shifts of nesting territories are not surprising because our study spans across multiple generations of territorial eagles and during this time many individuals have died and many individuals have entered the territorial population. Our survey protocol of searching for new nest structures and territories each year, rather than restricting our observations to known nests in known territories, is the key to identifying these shifts.

Between 1988 and 2023, the probability of a female Golden Eagle laying an egg and the probability of a pair of eagles raising a fledgling decreased by 26% and 19%, respectively (McIntyre and Schmidt, *in prep*). Thus, while most territories continued to be occupied each year, the likelihood of eagles laying eggs and raising fledglings has decreased over the study period. This raises concerns about the long-term stability of the nesting population in this area, and we are currently investigating the potential drivers of these declines.

Conclusions: On a continental scale, the Denali NPP data set is particularly relevant as various analyses indicate that several nesting populations of Golden Eagles in the western contiguous United States are declining largely as a result of high rates of mortality due to anthropogenic activities (Watson et al. 2020, Millsap et al. 2022, Golden et al. 2025). The Golden Eagles in our study area are migratory, and their wintering ranges overlap the breeding range for many of these declining nesting populations. Because we have documented a decline in breeding success of Golden Eagles in Denali NPP, we are expanding our efforts to better understand how conditions on their winter ranges may be carrying-over to affect their reproductive success.

Because anthropogenic activities are expected to increase in the western contiguous United States, management actions to address the declines will become more important over time, and data from long-term monitoring will be crucial for developing sound management strategies and for assessing their effectiveness (B. Millsap, personal communication; Wiens et al. 2022). Furthermore, the Denali NPP data set is one of the most comprehensive and long-term for nesting migratory Golden Eagles in the World and provides critical information on how individuals nesting near the northern periphery of their breeding range in western North America will respond to climatic changes that are well underway (B. Millsap, personal communication). As such, this monitoring effort will continue in 2026 and beyond.

Acknowledgments: Thanks to the NPS Central Alaska Monitoring Network for continuing to provide essential support for this program, Pat Owen for helping with surveys, NPS contracting staff for their efficiency on aviation contracting, and Denali NPP staff for providing housing, vehicles, and aviation fuel that facilitated our 2025 field efforts. Special thanks to Troy Cambier for providing exceptional service.

Contact: Carol McIntyre, Far Flung Studies – Alaska, Email: carol.mcintyre97@gmail.com, https://orcid.org/0000-0003-0444-4437

Literature cited:

Golden, J. E., J. G. Barnes, and P. J. Williams. 2025. Estimating survival and population trajectories of golden eagles in Nevada. Journal of Raptor Research 59:1–15. https://doi.org/10.3356/jrr2521

Katzner, T. E., M. N. Kochert, K. Steenhof, C. L. McIntyre, E. H. Craig, and T. A. Miller. 2020. Golden Eagle (*Aquila chrysaetos*), version 2.0. In Birds of the World (P. G. Rodewald and B. K. Keeney, eds.). Cornell Lab of Ornithology, Ithaca, NY, USA. http://doi.org/10.2173/bow.goleag.02

McIntyre, C., K. Steenhof, M. N. Kochert and M. W. Collopy. 2006. Long-term Golden Eagle studies in Denali National Park and Preserve. Alaska Park Science 5:42–45. https://www.nps.gov/articles/aps-v5-i1-c11.htm

Millsap, B. A., G. S. Zimmerman, W. L. Kendall, et al. 2022. Age-specific survival rates, causes of death, and allowable take of golden eagles in the western United States. Ecological Applications 32(3):e2544. https://doi.org/10.1002/eap.2544

Watson, J. W., G. E. Hayes, I. N. Keren, and T. E. Owens. 2020. Evidence for depressed reproduction of golden eagles in Washington. Journal of Wildlife Management 84:1002–1011. https://doi.org/10.1002/jwmg.21860

Wiens, J. D., P. H. Bloom, M. C. Madden, P. S. Kolar, J. A. Tracey, and R. N. Fisher. 2022. Golden Eagle occupancy surveys and monitoring strategy in coastal southern California, United States. Frontiers in Ecology and Evolution 9:665792. https://doi.org/10.3389/fevo.2021.665792

(BCR 4) American Goshawk inventory and monitoring on Joint Base Elmendorf-Richardson

Kinkela Vicich[1], Emily Schmeltz[1], Stephen B. Lewis[1], and Cayley Elsik[2]
[1]U.S. Fish and Wildlife Service, Migratory Bird Management, [2]U.S Air Force 673rd Civil Engineering Squadron

Bird–aircraft strike hazards (BASH) are a persistent safety and wildlife-management concern on Joint Base Elmendorf-Richardson (JBER), where large raptors can pose elevated risk to aircraft operations. Despite this importance, long-term monitoring and consistent nest records are limited for most raptor species on the installation. A 2007 raptor assessment documented multiple species using the airfield and adjacent exclusion zones and recommended annual monitoring of nesting American Goshawks (*Astur atricapillus*) to track trends and inform management. Because goshawks are an apex forest predator and a widely recognized indicator of forest ecosystem condition, understanding their abundance, distribution, and habitat use on JBER also supports broader conservation objectives while helping the Department of Defense meet responsibilities under the Migratory Bird Treaty Act and the JBER Integrated Natural Resource Management Plan (INRMP).

In response to JBER requests, the U.S. Fish and Wildlife Service initiated a two-year goshawk ecology study on JBER (field seasons 2024–2025) to (1) locate nesting areas on or near the installation, (2) determine occupancy and reproductive output, (3) characterize nesting habitat, and (4) provide management recommendations relevant to BASH and INRMP objectives. Surveys were conducted across JBER's boreal forest mosaic using established broadcast-call protocols, with follow-up searches for nests and evidence of use. Nest sites were mapped and described, and vegetation/physiographic measurements were collected at multiple spatial scales. Historical nest and sighting information from prior reports, staff observations, and eBird records were compiled to guide field effort, and comparative nest observations were also collected at sites outside JBER (Far North Bicentennial Park and Chugach National Forest near Girdwood).

Across both years, surveys documented continued goshawk presence on JBER but with uneven distribution and substantial nest turnover. In 2024, 19 confirmed or suspected nests were recorded, with two nests occupied; in 2025, 46 confirmed or suspected nests were recorded, with four occupied nests on JBER. Nest success was 100% in 2024 (2.5 fledglings per territorial pair) and 75% on JBER in 2025 (1.25 fledglings per territorial pair), and occupied territories typically included multiple alternate nests within ~1 km, and nearest-neighbor spacing (~3.5 km) was greater than in more contiguous forests, consistent with fragmentation effects on territory placement. All confirmed JBER nests occurred in birch-dominated stands characterized by high canopy closure and relatively open midstory structure, underscoring the importance of protecting mature birch/mixed birch–spruce patches and integrating annual monitoring, access coordination, prey assessments, and disturbance timing (training, burns, and development) into ongoing BASH and INRMP implementation.

Contact: Stephen B. Lewis, Email: steve_b_lewis@fws.gov

(BCR 4) Raptor surveys on Joint Base Elmendorf-Richardson

Stephen B. Lewis[1] and Cayley Elsik[2]
[1]U.S. Fish and Wildlife Service, Migratory Bird Management, [2]673 CES/CEIEC, Joint Base Elmendorf-Richardson

Large-bodied soaring birds pose a serious airfield risk on Joint Base Elmendorf-Richardson (JBER). Documenting their distribution, relative abundance, and nest success is necessary to support future airfield actions and adhere to regulatory guidance requirements (e.g., Bald and Golden Eagle Protection Act). Starting in 2011, annual aerial surveys were initiated to identify occupied nests and document productivity of large-bodied birds of prey and corvids with an emphasis on Bald Eagles (*Haliaeetus leucocephalus*) and Golden Eagles (*Aquila chrysaetos*). This emphasis was placed on eagles due to the BGEPA which provides protective measures for nesting eagles. We conducted an occupancy survey in late April and productivity survey in mid-July. For Bald Eagles, we found 40% of nests were occupied; nest success rate was 67% with productivity of 1.6 young/successful nest. All other raptors only have a few nests on JBER, including one Golden Eagle nest (unoccupied), four Red-tailed Hawk nests (1 successful nest produced 2 fledglings), and one Osprey nest (successfully produced 1 fledgling). In addition, we checked locations of two gps-tagged Bald Eagles north of JBER across Knik Arm and found two occupied nests.

Contact: Stephen Lewis, Email: steve_b_lewis@fws.gov

(BCR 4) Red-tailed Hawk and Short-eared Owl summer habitat use

Jonah Rothleder[1], Stephen Lewis[2], Cassandra Schoofs, Amy Bishop[1], and Douglas Causey[1]
[1]Department of Biology, University of Alaska Anchorage, [2]U.S. Fish and Wildlife Service

Red-tailed Hawks (*Buteo jamaicensis*) and Short-eared Owls (*Asio flammeus*) are migratory raptors that breed widely across Alaska, with peak occurrence during the summer season. Red-tailed Hawks occupy forested habitats from coastal regions to the Brooks Range, whereas Short-eared Owls are associated primarily with open habitats throughout the state. Despite these wide ranges, recent data indicates Red-tailed Hawk numbers from northern latitudes have experienced a decline and Short-eared Owl populations have declined across North America and Europe. Little is known about either species' space use or habitat selection during the Alaskan breeding season. Given ongoing population declines and rapid climate change in northern ecosystems, establishing baseline information on habitat relationships is critical. We are analyzing GPS telemetry data from breeding individuals in Alaska, captured in the Anchorage area and supplemented with additional tracking datasets, to evaluate summer habitat selection. Using resource selection functions integrated with remote sensed covariates, including land cover and vegetation structure, we are quantifying patterns of habitat use at multiple spatial scales. Analyses are ongoing, and results will provide foundational information to inform monitoring and conservation strategies for these species in Alaska.

Acknowledgments: Additional telemetry data for Red-tailed Hawks were provided by Bryce Robinson through the Red-tailed Hawk Project (Cornell University) and for Short-eared Owls by Travis Booms (Alaska Department of Fish and Game) and Jim Johnson (U.S. Fish and Wildlife Service). Access and technical support for the Continuous Foliar Cover models were provided by Timm Nawrocki and Amanda Droghini (Alaska Center for Conservation Science, University of Alaska Anchorage).

Contact: Jonah Rothleder, Email: jnrothleder@alaska.edu

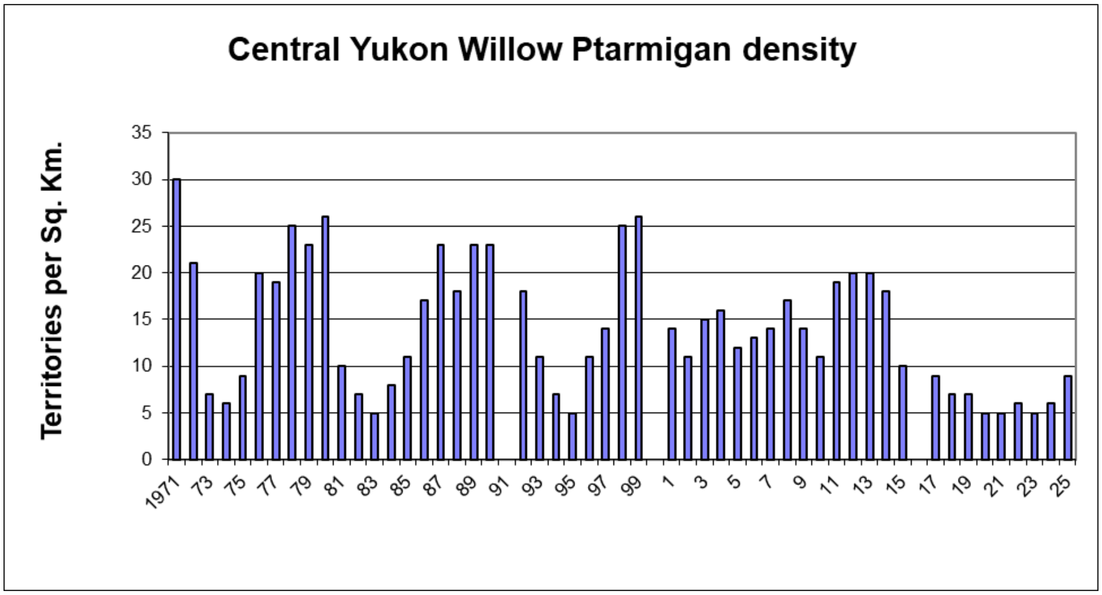
(BCR 4) Biodiversity Project, Yukon Research Center, Yukon Territory: Summary of landbird research, 2025 update

Dave Mossop, Yukon Research Center, Yukon University

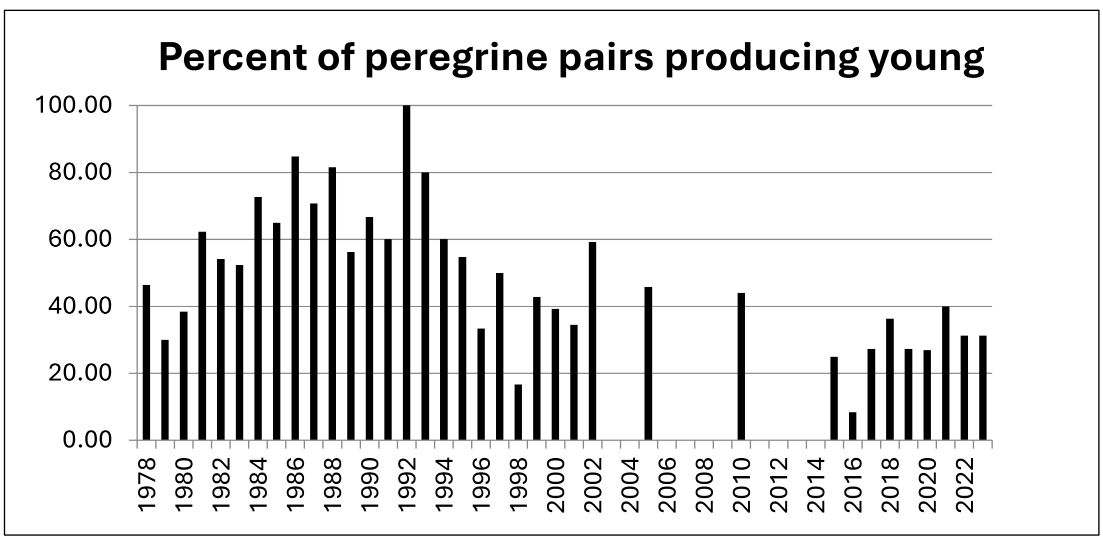
Overview: In 2025, I carried out a much-reduced population monitoring of the key bird species populations as indicators of ecosystem health. Databases are maintained tracking key demographic parameters of selected focal species. Some of these studies now contain well over 40 years of data; 2025 was the 28th year this initiative has been based at the Yukon Research Center. In part, the vision has been to contribute toward Yukon's commitment under the Canadian Biodiversity Strategy (1993), and to foster partnership between the Yukon Research Center and the various management authorities, First Nations, and conservation organizations interested in Yukon wildlife.

Tundra Ecosystem Monitoring: This work is part of a circumpolar partnership feeding into various ecological monitoring groups around the northern hemisphere: (CAFF, POLAR, CBMP). It recognizes Willow Ptarmigan as a keystone tundra species plus Gyrfalcon and Peregrine Falcons as top predators in the system. Tracking the demographics of these 'sentinel' species gives a sensitive indication of ecological integrity of this key northern natural system.

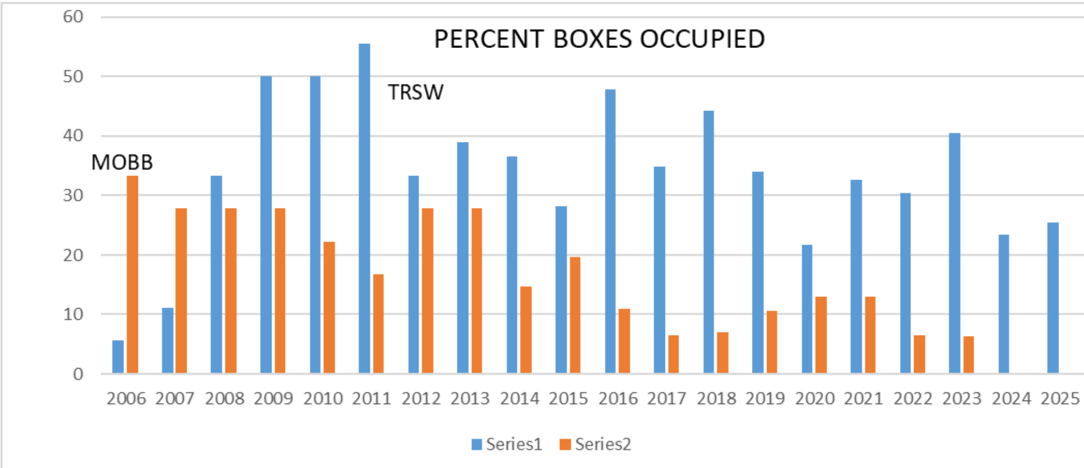
Willow Ptarmigan annual survey: Ogilvie Mountains, Coast Range, and North Slope: I got to two of the 5 long-term study plots to survey territorial pairs: the Chilkat pass plot at the 60th parallel, and the North Fork Pass plot at 65 parallel north. 13 territories per km^2 were recorded at the southern site, and 5 at the mid-Yukon site. This was the 62^{nd} year of annual population monitoring by this effort. Interestingly, numbers have continued to fluctuate erratically since 2010–2011. If this persists, it may be signaling one of the most serious disruptions to the Yukon's tundra ecology.



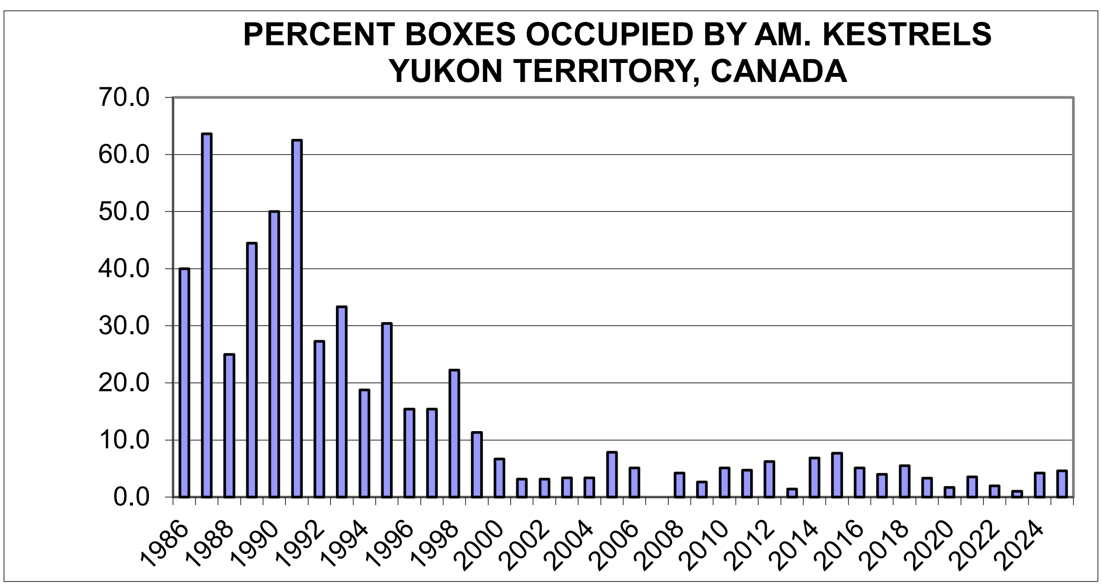
Peregrine Falcon productivity study, Yukon Wide: I was able to survey only a single-visit sample in late summer of 40 nest sites in the Yukon River valley. In the last decade, less than 30% of known pairs visited have been producing young and the breeding adult numbers are declining. In the sample of sites visited this year, 30% were productive and less than half of sites were attended by adults.



Tree Swallow and Mountain Bluebird nest box monitoring: This project is an initiative to establish a 'citizen science' suite of databases that would track the progress of various indicator species at the Yukon Wildlife Preserve near Whitehorse. College students have used Northern Research Institute grants to do most of the field work and used the work for credit in directed studies courses at the college. The monitoring of cavity nesting birds at the preserve has developed as the most valuable over time. 44 artificial cavities are involved. The data set is being maintained at YRC. The apparent decline in bluebird occupancy is significant. Tree Swallow occupancy has fluctuated widely. Observations of an alarming number of dead adults in boxes in early spring are probably a result of unusual swings in spring temperatures. This is being monitored as a possible consequence of climate change in the north.



Breeding status of American Kestrel, Yukon wide: In the current year we re-checked 119 nest boxes for use, 88 were 'acceptable'. Four breeding pairs were observed (zero in 2007, one pair in 2013). Occupancy hovers at about 90% decline from the early 1990's. This project uses artificial cavities to track the status of the species. Breeding numbers of American Kestrel have collapsed alarmingly across the Yukon in the last decade. The work is part of a larger partnership effort examining the status of American Kestrels across North America. Boreal Owls and other larger cavity nesters are also involved with an overall objective of understanding these species' interrelationships with 'true old growth' trees.



Contact: Dave Mossop, Yukon Research Center, Yukon University, Box 2799, Whitehorse, YT Y1A 5K4, Email: dmossop@yukonu.ca

(BCR 5) Tongass National Forest, Landbird Program, 2025 season update

Gwen Baluss and Greg Dunn, U.S. Forest Service, Alaska Region, Tongass National Forest

Inventory and Monitoring

Breeding Bird Surveys: Tongass personnel surveyed or assisted with BBS routes throughout Southeast Alaska. These surveys help inform Tongass, regional, and national bird population trends and conservation needs.

Alaska Landbird Monitoring Survey: No ALMS surveys were completed this year. We participated in a multi-agency working group to plan future landbird survey efforts.

Bird Genoscape Project: Juneau Ranger District Staff conducted targeted mist netting on NFS and adjacent lands to collect feather samples for the Bird Genoscape Project at Colorado State University. Genetic analysis may help clarify migratory connectivity for the conservation of Alaska bird populations. Species sampled in 2025: Song Sparrow, Dark-eyed Junco, Lincoln's Sparrow, Fox Sparrow, Western Warbling Vireo, Tennessee Warbler, Northern Waterthrush, Golden-crowned Kinglet, Ruby-crowned Kinglet, Brown Creeper, Pine Siskin, and Rufous Hummingbird.

Bald Eagle Nest Surveys: Bald Eagle nest surveys are implemented where Tongass activities may affect nests to support conservation efforts and regulatory requirements with the U.S. Fish and Wildlife Service.

Queen Charlotte (American) Goshawk Surveys: Tongass staff survey for goshawks in areas where activities are likely to affect nesting habitat, generally using a standardized Broadcast Acoustical Survey method. Wildlife personnel catalog all surveys and key findings in the agency's spatial database Natural Resource Manager (NRM) Wildlife. Other raptors, including Sharp-shinned Hawk nests, are also cataloged. The 2025 season was active with multiple goshawk and sharp-shinned nests found.

Christmas Bird Count: FS Staff assisted with community counts in multiple Alaskan Communities.

Outreach and Education

Yakutat Tern Festival: Yakutat hosts a multi-day festival celebrating terns and other birds, including local landbirds, with field trips, arts, youth activities and lectures annually. This year's activities included songbird banding demonstrations and bird walks led by FS personnel.

Alaska Hummingbird Festival: The USFS Southeast Alaska Discovery Center helps host this annual, month-long celebration in Ketchikan. FS Staff led bird walks or gave bird-themed evening presentations.

Stikine River Birding Festival: The Stikine River Birding Festival is celebrated in April in Wrangell at the peak of spring migration. FS personnel assist in organizing bird-themed events. Passerine banding at the elementary school reached nearly all students aged kindergarten to 5th grade.

World Migratory Bird Day: Juneau Ranger District hosts a celebration annually in partnership with local organizations. In 2025, the public was invited for a bird-banding demonstration and discussion of the annual conservation theme: bird-friendly communities.

Mendenhall Glacier Visitor Center Interpreter Training: MGVC Staff receive training annually about local birds and conservation that includes information about prominent Naturewatch species including American Dippers and Barn Swallows. This becomes part of the information provided to over 500,000 visitors annually.

Contact: Gregg Dunn, Forest Biologist, Tongass National Forest, 2108 Halibut Point Road, Sitka AK 99835, Phone: (907) 747-4360, Email: gregory.dunn@usda.gov

Figure 1. Female and young American Goshawks. Photo: Gwen Baluss.

(BCR 5) Tongass Hummingbird Project, 2025 season update

Gwen Baluss, Juneau Audubon Society

The Rufous Hummingbird (*Selasphorus rufus*, RUHU) has been identified as a priority for monitoring, research, and management throughout the Western US and Mexico. Significant declines in the species have been registered on the Breeding Bird Survey warranting their placement on the Audubon Alaska Watchlist. A conservation assessment and plan organized by the Western Hummingbird Partnership is in progress.

Since 2013, RUHU have been banded for a mark-recapture study near Juneau, AK, following data collection protocols adapted from those used by Rocky Point Bird Observatory and the Hummingbird Monitoring Network (Hummingbird Conservation Networks). Standardized trapping using two Hall traps takes place about every 10 days between late April and late July at the Juneau Community Garden (JCGA), an area of cultivated plots surrounded by natural coniferous forest, deciduous riparian habitat and wetlands. By banding at intervals throughout the season, the effort roughly tracks nesting chronology and the emergence of hatch-year birds.

In 2025, banding continued with a similar effort to previous years at the JCGA. This season yielded low capture numbers, but an increase over 2023 and 2024 for adult females (Figure 1). There were no recaptures this season, which is unexpected at a regular hummingbird banding station.

Weather is likely a major factor influencing annual productivity. Regionally, spring 2025 was characterized by low snow cover; but plants grew slowly as spring and summer were cool and wet in comparison to historic normals. In a locale that is already a cool, temperate rainforest, such weather could increase the challenge for nectivores and insectivores.

Interpreting variability between years is a challenge. Natural food availability is likely one driver of capture numbers, with possibly less birds visiting the feeder trap when natural food takes them elsewhere. Hummingbirds in Juneau have been observed "swarming" at food sources, where high numbers (>20) of adults may congregate one day, and yet be nearly absent from the same location on a different day. This is a breeding-season behavioral pattern that differs from passerines, which tend to be distributed more evenly across suitable habitats with most individuals more closely tied to a specific territory. Thus, with a periodic banding scheme, it is possible to hit or miss the active days in a specific location by chance.

Two years ago, Juneau banding data was included with a network of stations in British Columbia, along with BBS survey data near monitoring stations, for a demographic analysis (English et al. 2024). The authors found that RUHU declines are mainly driven by juvenile survival and recruitment, and that human population density negatively impacts RUHU survival within habitat areas. In Alaska, where human population is low, and agriculture is minimal, the greatest threat to hummingbirds is likely climate related change in floral and insect abundance. Forestry practices may contribute, as many harvested areas are now reaching a stage of high canopy cover and low density of flowering shrubs and forbs on the forest floor.

In addition to the demographic data, most birds are photographed, and plumage variability is recorded. For birds that are recaptured, it may be possible to detect change over time. In this species, the amount of rust red feathers on the back of males, and the iridescent red throat feathers in females both vary by individual, and individuals may change slightly over time (Figure 2).

Support for the establishment of hummingbird banding stations was provided by the U.S. Forest Service, Region 10, Alaska. Help from student interns was provided by the Tongass National Forest, Student Conservation Association, and the Juneau Audubon Society. Banding site is maintained by the Juneau Community Garden Association, and the City and Borough of Juneau. Thanks to the many local citizen scientists who assisted with trapping and data collection. Bander-in-charge was Gwen Baluss (under federal permit).

Contact: Gwen Baluss, Phone: (907) 500-2771, Email: gbaluss@gmail.com

Literature cited:

English, S., S. Wilson, Q. Zhao, C. A. Bishop, and A. J. Moran. 2024. Demographic mechanisms and anthropogenic drivers of contrasting population dynamics of hummingbirds. *Biological Conservation* 289:110415. https://doi.org/10.1016/j.biocon.2023.110415

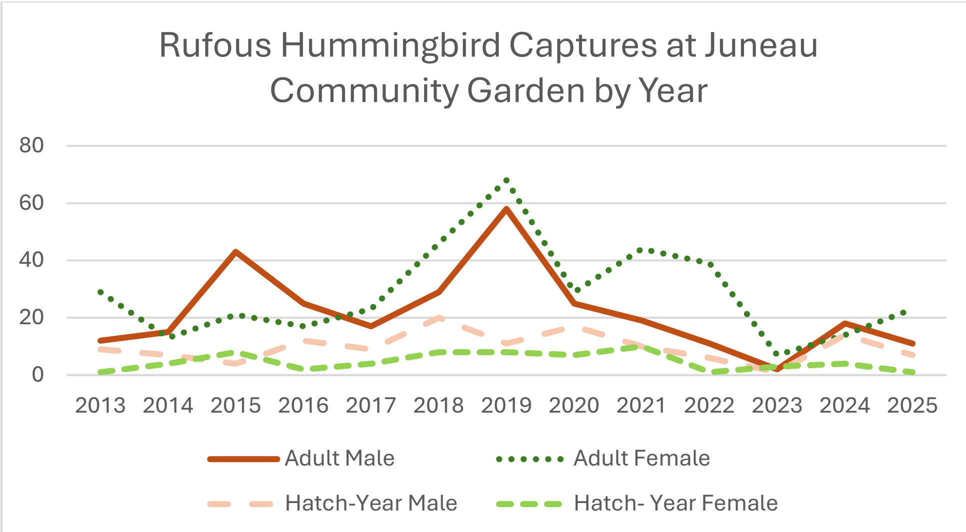


Figure 1. JCGA total Rufous Hummingbird standard-effort captures, including both new bands and recaptures from previous years.

Figure 2. Variation in number of iridescent red throat feathers in adult female Rufous Hummingbirds. Individuals may have none, few or up to >25. A recent data analysis of over 300 individuals showed that throat patch size follows roughly a normal distribution, with a mean of about 14 feathers.

(BCR 5) Juneau Tree Swallow Nest Watch, 2025 update

Brenda Wright and Gwen Baluss, Juneau Audubon Society

Since 2015, Juneau Audubon Society (JAS) has erected and monitored Tree Swallow nest boxes around Juneau. The box design was taken from a standardized program, Golondrinas, formerly run by Cornell, and the citizen science observations were collected using Cornell Nestwatch guidelines. Starting in 2018, data collection protocols evolved to also synchronize as possible with other stations in the Alaska Swallow Monitoring Network.

The project's goals are to contribute to the knowledge base for this aerial insectivore; collect data that is comparable to other box monitoring projects in the state and continent; provide a long-term data set to track phenological change; and provide an opportunity for student studies. Community education is also accomplished by public presentation of the results, recruitment of citizen scientists, and involvement of school and scout groups in nest box construction.

Nest boxes, once established in productive areas, are re-erected in the same location, when possible, for annual comparison. Since 2015, there has been an increase in box occupancy. Some locations have changed due to predation issues (bears, human vandalism), or because the original location failed to attract swallows.

In 2025, there were 62 boxes erected at six sites surrounding the Mendenhall Wetlands complex. 55 boxes (about 89%) were occupied by Tree Swallows. One box was lost to predation (black bear), 3 were taken over by Chestnut-backed Chickadees and 4 remained vacant. In total there were 308 eggs, 236 of which hatched and 192 fledged. In addition to the standard box monitoring, 51 adult females and 4 males were banded at the sites.

Acknowledgments: Nest box opening was permitted by Alaska Department of Fish and Game (ADF&G). JAS thanks ADF&G, Southeast Alaska Land Trust and City and Borough of Juneau for hosting the swallow boxes. Thanks to all local volunteers, especially Marsha Squires and Birds Studies and Conservation Intern Kristen Cooney. Special thanks to Molly Cable, the bander in charge, and the Alaska Songbird Institute for supporting her training and travel.

Contact: Brenda Wright, Juneau Audubon Society, P.O. Box 21725, Juneau, AK 99802, Email: info@juneau-audubon-society.org

Figure 1. Tree Swallow is banded at Mendenhall Wetlands. Photo: Kari Monagle.

(BCR5) Recent population and ecological changes in American Dippers (*Cinclus mexicanus*) in Southcentral Alaska

Douglas Causey, Department of Biological Sciences, University of Alaska Anchorage

American Dippers (*Cinclus mexicanus*) are widespread throughout the northern tier of North America, but comparatively little is known about their behavior and foraging ecology in Southcentral Alaska. These studies were initiated in 2014 and continue to the present. The research is centered on breeding populations in the Chugach National Forest and specifically Portage Valley. American Dippers feed almost exclusively on aquatic invertebrates in glacier streams, which in the focus study area, were open year-round. In our region, they serve as ideal samplers and indicators of stream quality, and as target indicators for other insectivorous animals, such as little brown bats

(*Myotis lucifugus*). Our initial results indicate that this species is resident year-round, and population abundance appears to be stable throughout the year. While there is annual variation in numbers, particularly during winter, until recently post-breeding feeding flocks remained at approximately the same densities over the study period (Figure 1). Population sizes of the target samples appear to be slightly increasing, but clearly more surveys need to be conducted.

In 2019, population numbers were dramatically smaller, ranging from about 25–75% less than in previous years, but populations observed to be gradually increasing in subsequent years. These initial results suggest that the resident population of American Dippers in Portage Valley were most strongly negatively affected by the increase in High Flow Frequency and water chemistry (Figure 2) and positively associated with presence and abundance of diet items (Figure 3). The observed decline in size of foraging flocks and estimated population size is likely due to abiotic factors (e.g., increased runoff caused by greater glacial melt) rather than biotic factors such as change in distribution and abundance of diet species. Research is continuing in 2026 throughout the Portage Valley component of the Chugach National Forest Glacier District.

Acknowledgments: Thanks to rangers and staff of the Chugach National Forest, Glacier District for allowing and assisting in this research to take place, and the availability of resources. Much of the data collected was done by numerous students in the Exploration Ecology course offered in the UAA Department of Biological Sciences and supported by NSF's Research Experience for Undergraduates program. Research was done through the authority of permits by Alaska Department of Fish and Game, U.S. Fish & Wildlife Service, and U.S. Geological Survey Federal Bird Banding Permit.

Contact: Douglas Causey, UAA Department of Biological Sciences, 3211 Providence Drive, Anchorage, AK 99508, Email: dcausey@alaska.edu

Literature Cited:

Royan, A., C. Prudhomme, D. M. Hannah, S. J. Reynolds, D. G. Noble, and J. P. Sadler. 2015. Climate-induced changes in river flow regimes will alter future bird distributions. Ecosphere 6(4):50. http://dx.doi.org/10.1890/ES14-00245.1

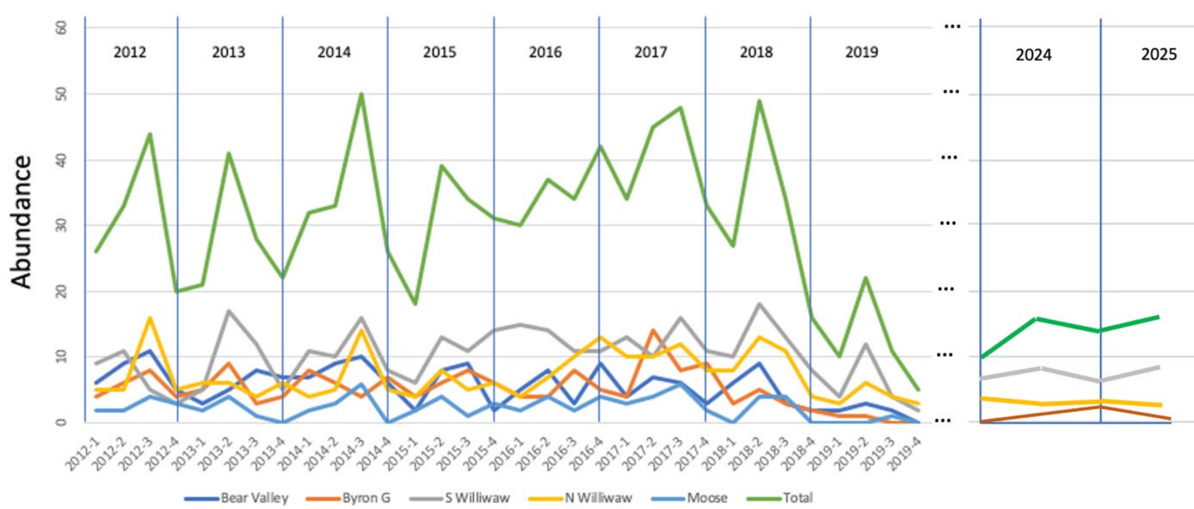


Figure 1. American Dipper population size at four survey sites, estimated by mark-recapture of banded individuals.

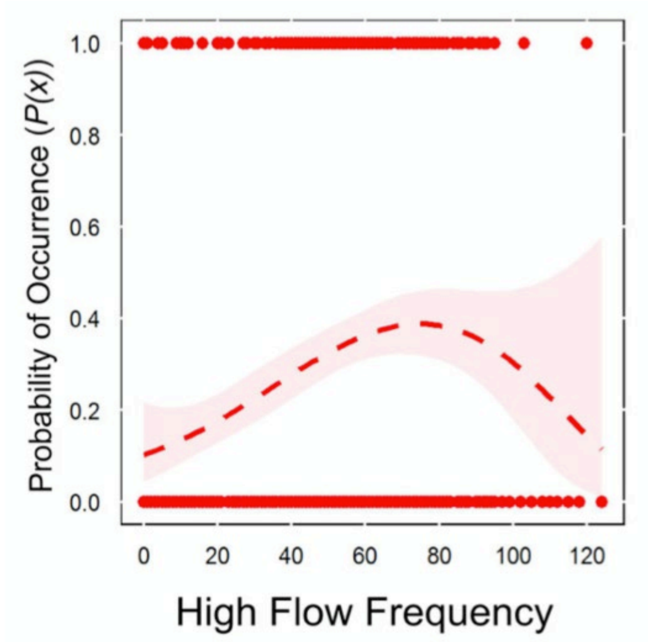


Figure 2. Probability of White-throated Dipper foraging occurrence as a function of High Flow Frequency (e.g., the number of high flow days per year above 3x the median). Dotted line represents best model fit of recorded data during the hydrological year. Shaded areas represent the 95% CI on model fit. The results for this species indicates that foraging presence rises as flow frequency increases with peak at about 80d/hy. Values higher than that are associated with low dipper abundance (Royan et al. 2015).

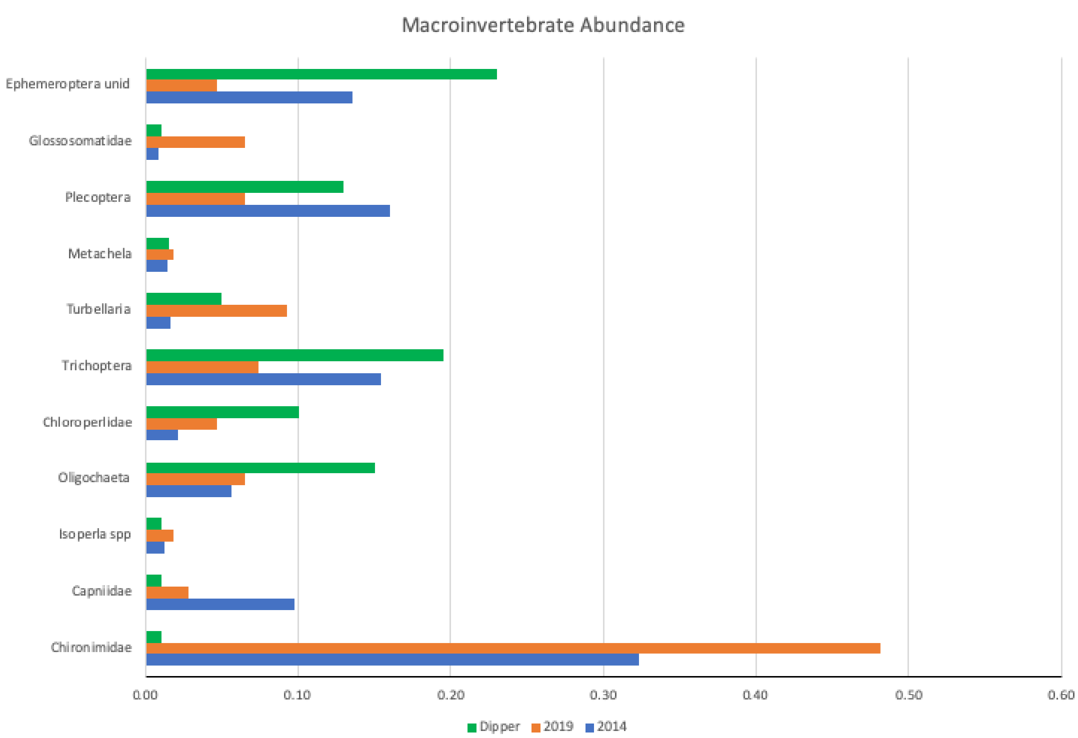


Figure 3. Macroinvertebrate diversity and relative abundance in N and S forks of Williwaw Creek in 2014 (blue) and 2019 (orange). Macroinvertebrate diet in American Dippers (green) estimated from feeding observations, fecal samples (DNA barcoding).

(BCR 5) Bald Eagle nest survey in Berners Bay

Stephen B. Lewis and Jordan Muir, U.S. Fish and Wildlife Service, Migratory Bird Management

We conducted bald eagle nest occupancy and productivity surveys in Berners Bay, north of Juneau. This effort was aimed to continue long term monitoring of Bald Eagle nesting populations in Alaska to address on-going permit management questions as well as to monitor for lingering effects of the recent outbreak of highly pathogenic H5N1 influenza a virus. We found 35% of nests were occupied; nest success rate was 32% with productivity of 1.1 young/successful nest. These values were below long-term averages for this area and were likely low due to poor weather conditions in the spring.

Contact: Stephen Lewis, Email: steve_b_lewis@fws.gov

(BCR 6 & 7) Boreal Bird Monitoring Program – Northwest Territories and Nunavut, 2025

Samuel Haché and Eamon Riordan-Short, Canadian Wildlife Service Northern Region, Environment and Climate Change Canada

Comprehensive coverage by avian survey efforts in the boreal portions of Northwest Territories (NWT) and Nunavut (NU) has not yet been achieved, leading to uncertainty in estimates of landbird distribution, abundance, and population trends. To help address knowledge gaps, the Canadian Wildlife Service (CWS) Northern Region has been implementing the national Boreal Bird Monitoring Program (BBMP) with the goal of obtaining high-quality survey data that represents the mosaic of habitats in the NWT and NU that can improve distribution/habitat models, species population estimates, and population trend estimates.

Since 2019, CWS has been collaborating extensively with Indigenous communities, the Government of the NWT, academic institutions, and other partners to integrate the BBMP sampling framework within the broader NWT Biodiversity Monitoring (NWTBM) program. The NWTBM allows partners to address shared monitoring priorities across a broader range of species and leverage resources to overcome logistical challenges of surveying in remote northern areas.

In 2025, surveys using multi-environmental sensor deployments including autonomous recording units (ARUs; ~435 sampling stations) and human point counts (275 stations), took place in 11 different study areas across the NWT and NU. Since 2017, ~4900 locations from 27 of NWT's 37 ecoregions have been surveyed at least once with many resampling events (i.e. multiple years of data).

Other scientific contributions from the NWTBM in 2025 include data being included in: 1) Boreal Avian Modeling (BAM) national models; 2) a worldwide passive acoustic monitoring network; 3) initiatives to support Indigenous data sovereignty in a context of co-produced monitoring data; 4) integration of ARU and wildlife camera data to improve habitat models of Sandhill Crane; 5) documenting landbird responses to wildfires; 6) an evaluation of song rates from ARUs to predict breeding status of the Olive-sided Flycatcher; and 7) ecological forecasting initiatives (e.g. Western Boreal Initiative).

Contact: Samuel Haché, Email: Samuel.Hache@ec.gc.ca or Eamon Riordan-Short, Email: Eamon.Riordan-Short@ec.gc.ca

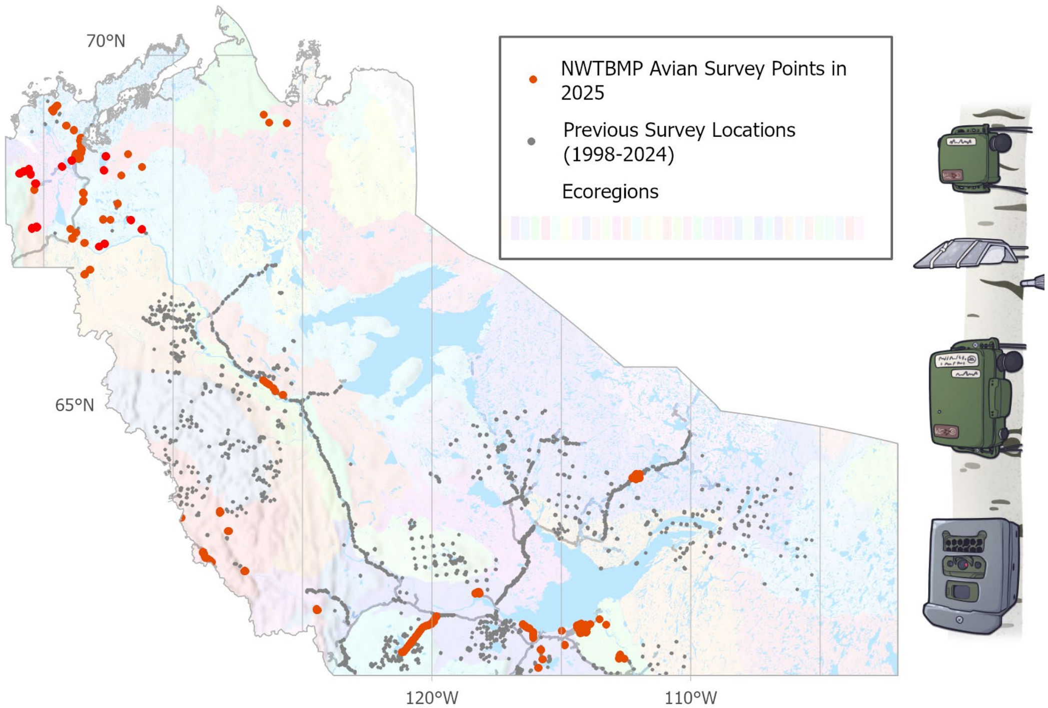


Figure 1. Map of sampling locations in the NWT visited by contributors to the NWTBMP in 2025, and sampling locations from previous years. Illustration shows the environmental sensors commonly used by the NWTBM (Top to bottom: Bat ARU, temperature logger, ARU, and wildlife camera).

(Alaska-wide) 2025 update on the Alaska Landbird Monitoring Survey

Rachel Richardson[1], Colleen Handel[1], Joe Eisaguirre[1], Vijay Patil[1], Katie Christie[2] and multiple collaborators from Boreal Partners in Flight
[1]U.S. Geological Survey, Alaska Science Center, [2]Threatened, Endangered and Diversity Program, Alaska Department of Fish and Game

Background: The Alaska Landbird Monitoring Survey (ALMS) uses standardized distance sampling to survey breeding bird populations and their habitats at 12–25 points within 10 km × 10 km blocks selected through a stratified random design of accessible areas across Alaska. The main purpose of the survey is to monitor long-term population trends of birds (primarily landbirds) in off-road areas as a complement to the roadside North American Breeding Bird Survey (BBS). A secondary purpose is to model bird-habitat associations as well as distribution and abundance across the state through analysis of the bird and associated habitat data. Biologists are encouraged to use the ALMS sampling grids and survey protocols to gather systematic inventory data so they can be analyzed in a common framework. This survey is a statewide collaborative program with voluntary participation from governmental agencies and non-governmental organizations, coordinated by the U.S. Geological Survey (USGS) Alaska Science Center (Handel et al. 2021).

Surveys in 2025: Several land management entities participated in 2025, including the Municipality of Anchorage, the Bureau of Land Management, Joint Base Elmendorf-Richardson, Klondike Gold Rush National Historical Park, Alaska Peninsula and Becharof National Wildlife Refuges, and Izembek National Wildlife Refuge. During the 23rd year of the ALMS program, a total of 12 blocks were surveyed statewide: 4 blocks in BCR 2, 6 blocks in BCR 4, and 2 blocks in BCR 5 (Figure 1). All blocks surveyed in 2025 were repeat visits to previously sampled ALMS blocks. These repeated surveys provide an additional year of observations that will be important for evaluating changes in breeding bird populations across Alaska.

Data release and analyses: The ALMS dataset collected from 2002–2022 (version 1.0) has been published online and is available for download (Handel et al. 2024). This dataset provides valuable information for researchers, conservationists, and land managers interested in monitoring and protecting Alaska's breeding bird populations. To further support data accessibility and ongoing research, the USGS Alaska Science Center is currently compiling survey data collected during 2023–2025, with a public release of version 2.0 of the ALMS dataset planned for summer 2026. Collaborative work is also underway with the Alaska Department of Fish and Game to update trends for landbird populations in Alaska by combining analyses of roadside BBS data and off-road ALMS data following the framework established by Handel and Sauer (2017). These efforts will help maximize the utility of ALMS data, inform management decisions, and guide future conservation initiatives across Alaska.

Contact: Rachel Richardson, U.S. Geological Survey, Alaska Science Center, 4210 University Drive, Anchorage, AK 99508, Phone: (907) 786-7194, Email: rrichardson@usgs.gov

Literature cited:

Handel, C. M., L. M. Pajot, and S. M. Matsuoka. 2024. Alaska Landbird Monitoring Survey dataset (version 1.0): U.S. Geological Survey data release. https://doi.org/10.5066/P9SCO7AN

Handel, C. M., S. M. Matsuoka, M. N. Cady, and D. A. Granfors. 2021. Alaska Landbird Monitoring Survey: Alaska Regional Protocol Framework for Monitoring Landbirds Using Point Counts, version 1.0. Natural Resources Program Center, Fort Collins, CO. https://iris.fws.gov/APPS/ServCat/DownloadFile/200432

Handel, C. M., and J. R. Sauer. 2017. Combined analysis of roadside and off-road breeding bird survey data to assess population change in Alaska. The Condor: Ornithological Applications, 119:557–575. https://doi.org/10.1650/CONDOR-17-67.1

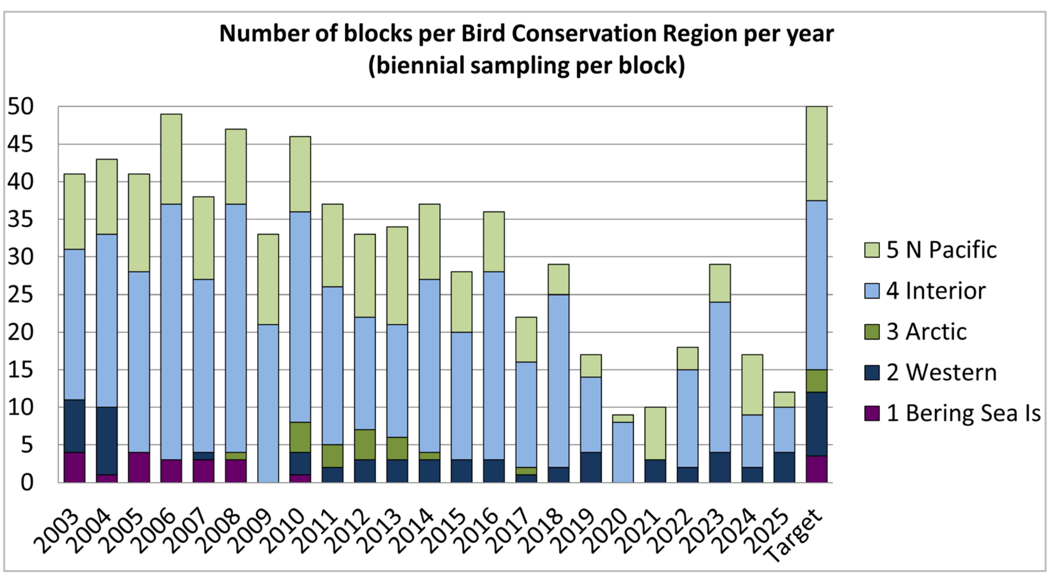


Figure 1. Number of ALMS blocks surveyed each year within the five Bird Conservation Regions in Alaska between 2003 and 2025.

(Alaska-wide) Leveraging eBird to supplement and extend structured monitoring programs
Kylee Dunham, Lab of Ornithology, Cornell University

Many avian monitoring programs use standardized surveys, yet the resource-intensive nature of structured sampling means that data are often restricted to broad extents at coarse-resolution or limited locations and fine-resolutions. Participatory science programs like eBird collect data and generate population estimates across the full annual cycle at finer spatial resolution and broader extents than structured monitoring programs. The eBird status and trends project (S&T), has produced seasonal range maps, weekly and seasonal estimates of relative abundance and habitat associations at a 3x3 km resolution for >2000 species globally. Additionally, spatially explicit population trends have been produced for >900 species at a 27x27 km resolution. eBird S&T data products (e.g., relative abundance) can provide complementary information to supplement or improve population monitoring efforts. In an ongoing collaboration between the Cornell Lab of Ornithology (CLO) and Alaska USFWS, we highlight how eBird S&T data products can be used to supplement and extend structured monitoring efforts. Specifically, our objectives are to 1) assess alignment between existing population trend and abundance estimates produced by eBird and structured survey data (BBS and ALMS) for priority species, and 2) identify data deficient geographies and habitat configurations for bird species in northern breeding areas. Using this information, CLO and USFWS will work collaboratively to develop and assess strategies to guide monitoring efforts that support cost-effective, collaborative inter-agency monitoring plans and identify opportunities to improve precision and accuracy of population trend estimates for priority species. Initial results from trend comparisons between eBird and BBS (2012–2022) at the statewide scale revealed that 90% of BBS trends and 36% of eBird trends are non-significant (i.e., confidence intervals cross 0), leaving only 9 species with significant trends for comparison. Two species, the Red-breasted Nuthatch and the Downy Woodpecker had positive trend estimates from both data sets. Five species, Yellow Warbler, Varied Thrush, Hermit Thrush, Cliff Swallow, and Black-billed Magpie, had negative trend estimates from both data sets. Only two species had diverging trends, Ruby-crowned Kinglets were estimated to be declining from BBS data and increasing from eBird data, and Western Wood-Pewees were estimated to be declining from eBird and increasing from BBS. To address the second objective, we are developing a data coverage tool that will be available to the public. This tool can be used strategically to select locations for data collection both spatially and temporally across the full annual cycle. Next steps for this collaboration include expanding the trend comparisons to include ALMS, further customizing the data coverage tool for use by practitioners for May 2026, and meeting in person with USFWS and other agencies to discuss opportunities to improve eBird sampling and its utility for informing conservation decisions.

Contact: Kylee Dunham, Email: kdd58@cornell.edu

(Alaska-wide) Assessing functional wetland loss and its emerging risks to waterbird habitat networks in the Pacific Flyway
Patrick Donnelly, Ducks Unlimited

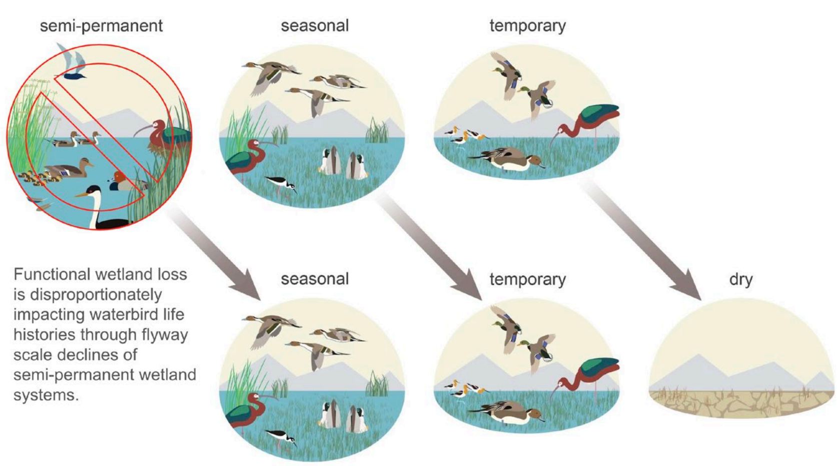
A recent study documenting the rapid drying of wetland ecosystems raises concerns over the sustainability of Pacific Flyway habitats that support migratory waterbirds. To improve our understanding of these potential impacts, we examine findings from regions in the western U.S. as a basis for exploring interest in expanding similar efforts to Alaska. The study combined newly available data documenting 40 years (1984–2023) of wetland surface water hydrology with eBird relative abundance maps to identify emerging bottlenecks in habitat availability. Assessments were made using an ensemble of shorebird and waterfowl species (hereafter waterbirds) representing diverse life histories tied to wetland ecosystems within the region. A machine-learning approach was applied to identify wetland factors important for structuring individual species' abundance within a spatial framework, and to assess changes in essential ecosystem functions aligned with seasonal distributions (i.e., breeding, post-breeding migration, non-breeding, pre-breeding migration). Wetland density (measured as surface water extent), semi-permanent wetlands, and littoral saline lake wetlands were the primary factors influencing bird abundance. Waterbirds exhibited density-dependent patterns to mitigate resource scarcity by aggregating in landscapes that encompass the most predictable and abundant wetland habitats. Functional wetland losses, caused by persistent declines in surface water, overlapped with species' annual cycles and indicated decreasing availability and greater uncertainty in waterbird habitats. Losses were highest in semi-permanent wetlands, with declines of 19% to 48% over the past twenty years. While these effects were based on a selection of representative species, the impacts were emblematic of the associated waterbird guilds that rely on similar wetland environments. To address the rapid changes in wetland resources in Alaska, we encourage integrating this approach into waterbird management strategies to conserve the ecological processes that support flyway function in Alaska and across the Pacific Flyway.

Contact: Patrick Donnelly, Email: pdonnelly@ducks.org

Literature Cited:

Donnelly, J. P., J. N. Moore, J. S. Kimball, et al. 2026. eBird data highlight shifts in wetland resources structuring waterfowl and shorebird abundance. Ecology and Evolution 16(2): e73061. https://doi.org/10.1002/ece3.73061

Donnelly, J. P., J. N. Moore, J. S. Kimball, K. Jencso, M. Petrie, and D. E. Naugle. 2025. Going, going, gone: Landscape drying reduces wetland function across the American West. Ecological Indicators 171: 113172. https://doi.org/10.1016/j.ecolind.2025.113172



(Alaska-wide) Avian keratin disorder research, 2025 update

Caroline Van Hemert, Colleen M. Handel[1] and Danielle E. Gerik[1]
[1]U.S. Geological Survey, Alaska Science Center

Avian keratin disorder, a disease among wild birds characterized by beak overgrowth and other keratin abnormalities, is identified as a conservation issue in the 2021 Alaska Landbird Conservation Plan, Version 2.0. We continue to receive multiple reports of birds with beak deformities each week through the USGS Beak Deformity and Banded Bird Observation Report form.

In 2025, we published a manuscript describing a cluster of beak deformities characteristic of avian keratin disorder (AKD) among Red-tailed Hawks (*Buteo jamaicensis*) in the state of Washington with an exceptionally high prevalence rate—29% of individuals captured between 2014 and 2021 were affected (Van Hemert et al. 2025). During this investigation we compiled over 100 reports of affected Red-tailed Hawks, primarily from the Pacific Northwest region, including those submitted to our web form, iNaturalist, and from the scientific literature. As part of this work, we also used targeted PCR to screen 10 Red-tailed Hawks with grossly deformed beaks from Washington for Poecivirus, the virus associated with AKD in Black-capped Chickadees (*Poecile atricapillus*); we detected the virus in a single swab, suggesting support for a shared etiology. A story describing this work was published on the AOS Wing beat blog.

Work continues on our forthcoming manuscript entitled 'Beak deformities in wild birds: using citizen science to track an issue of global concern.' In this study, we compiled and analyzed the distribution of reports from participatory science projects, the scientific literature, and long-term monitoring efforts to better understand the scope of AKD globally. As part of this comprehensive work, we will also publicly release nearly 20 years of reports gathered through the USGS Beak Deformity and Banded Bird Observation Report form.

Contact: Danielle Gerik, Email: dgerik@usgs.gov

Literature cited:

Van Hemert, C., Handel, C. M., Cottrell, S., Gerik, D. E., & Bildfell, R. J. 2025. Beak deformities in *Buteo jamaicensis* (Red-tailed Hawk) signal possible emergence of avian keratin disorder among raptors. Ornithology 142(4):ukaf023. https://doi.org/10.1093/ornithology/ukaf023

(Alaska-wide) Road-system grouse and ptarmigan spring breeding surveys, Alaska, 2025 update

Tim Spivey and Cameron Carroll, Alaska Department of Fish and Game

Springtime breeding behavior of many tetraonids allows a means to index annual abundance and the often-cyclic nature of grouse and ptarmigan populations. In Alaska, male Ruffed, Sharp-tailed, and Sooty Grouse, as well as Willow and Rock Ptarmigan perform conspicuous, springtime, territorial displays. Male Spruce Grouse and White-tailed Ptarmigan also perform a springtime display, but it is one that is not easily located or viewed, making monitoring of population abundance through this behavior more challenging. These 2 species are monitored through wing collections, periodic site visits to areas where fall harvest occurs, and reports from ADF&G biologists, hunters, and outdoor enthusiasts. In the fall of 2019, partly in an effort to understand the potential impacts of a widespread spruce bark beetle outbreak in Southcentral Alaska, roadside surveys for spruce grouse were initiated in unit 14A. The survey technique is currently being evaluated to determine whether the population index is a reliable indicator of population abundance.

The spring breeding season for grouse and ptarmigan in Alaska occurs from late April through early June. Due to the geography of Alaska, limited road system, poor access off the road system in the spring, and staff limitations, survey and monitoring efforts conducted by the Small Game Program (SGP) are restricted to species and areas in which population abundance can be assessed. Therefore, the SGP has focused on those populations that are either heavily exploited by hunters, within popular outdoor recreational areas, very close to large urban centers or along major road-systems and afford consistent and reliable access from year to year.

Survey methods utilized for Ruffed and Sharp-tailed Grouse and Willow and Rock Ptarmigan are consistent with state and national techniques. For Ruffed Grouse, roadside and trail transects were established in Anderson (1993), Delta Junction (2003), Fairbanks (2016), Palmer (1992), and Tok (2014) and have been completed annually since their inception. Sharp-tailed Grouse lek surveys were established in the Delta Junction Agricultural Project in 2000, and in Tok in 2014. Sooty Grouse surveys were established in and around the communities of Juneau and Petersburg in 2015 and Ketchikan and Haines in 2019. For Willow and Rock Ptarmigan, we use a broadcast recording of a territorial male along established transects and record the number of males that respond within ¼ mile. Survey routes for Willow and Rock Ptarmigan have been established along the Denali (1997), Richardson (1997), Parks (2000), and Taylor (2015) highways. Additional survey routes have been established inside Denali National Park (2014) and along trails in Chugach State Park (2008) and the Kenai Peninsula (2014). In addition, a line transect survey using conventional distance sampling to estimate Rock Ptarmigan abundance was initiated near Eagle Summit in 2015 and along a portion of the Denali Highway in Unit 13B in 2025. These surveys will continue to be monitored annually.

Based on the 2025 spring breeding surveys, many of the monitored populations showed small increases in abundance. Interior Ruffed Grouse numbers continued to increase near Anderson, Fairbanks, and Tok, as well as an increase in the Mat-Su. Sharp-tailed Grouse lek counts near Tok and Delta Junction were higher in 2025 than 2024, with both locations yielding average lek counts above the previous 5-year moving average. Sooty Grouse densities declined around Juneau, were similar around Petersburg, and increased around Ketchikan during 2025 in comparison to counts conducted in 2024. Monitored Rock Ptarmigan populations remained variable throughout Southcentral, but numbers increased slightly in the Alaska Range in 2025. Willow Ptarmigan counts increased throughout the Alaska Range and southern Interior in 2025 yet remained lower and more variable around Southcentral, Alaska.

Contact: Cameron Carroll, Alaska Department of Fish and Game, Division of Wildlife Conservation, 1300 College Road, Fairbanks, AK 99701, Phone: (907) 459-7237, Email: cameron.carroll@alaska.gov or Timothy Spivey, Alaska Department of Fish and Game, Division of Wildlife Conservation, 333 Raspberry Road, Anchorage, AK 99518, Phone: (907) 267-2897, Email: timothy.spivey@alaska.gov

Literature Cited:

Carroll, C. J. and T. J. Spivey. 2025. Alaska Small Game Summary 2025. Alaska Department of Fish and Game.

(Alaska-wide) Behavioral states of Bald and Golden Eagles in Alaska

Stephen B. Lewis[1,2]

[1]U.S. Fish and Wildlife Service, Migratory Bird Management, [2]Wildlife Biology Program, University of Montana

Understanding how individuals allocate space and movement during the breeding season can reveal hidden demographic structure in long-lived raptors. Using 12 years of GPS telemetry from adult Bald Eagles (*Haliaeetus leucocephalus*) and Golden Eagles (*Aquila chrysaetos*) across Alaska, we evaluated whether movement data could distinguish behavioral states—territorial breeders, territorial non-breeders, and floaters—and estimate their proportions within populations. Random-forest models built from spatial metrics (e.g., distance from activity centers, home-range area, revisit rates) classified territorial status with high accuracy (100% for Bald Eagles; 93% for Golden Eagles) and nesting status with moderate to high accuracy (92% and 77%, respectively), demonstrating that behavioral state can be inferred reliably from movement data alone.

Across all tracked individuals, 61.6% of Bald Eagles and 65.0% of Golden Eagles were classified as territorial, with the remainder behaving as floaters. Behavioral states were dynamic: among individuals monitored >1 year, 18.8% of Bald Eagles and 13.6% of Golden Eagles switched between territorial and floater strategies, most commonly transitioning from floater to territorial. Nesting was common but not universal among territory holders; 66.3% of territorial Bald Eagles and 68.0% of territorial Golden Eagles nested in a given season. Males of both species were significantly less likely than females to nest, and male Golden Eagles were also less likely to hold territories. Territorial birds used smaller areas, moved shorter distances, and remained closer to central locations than floaters, while nesting individuals showed even stronger spatial constraint.

These findings indicate that a substantial portion of adult eagle populations consists of nonbreeding floaters, suggesting that populations may operate near carrying capacity or that delayed breeding is an adaptive strategy. Because floaters can rapidly replace territorial birds, they may buffer populations against losses and enhance resilience. Incorporating floater dynamics into monitoring and population models will improve conservation planning, as traditional breeding surveys alone may underestimate population size and demographic stability in long-lived raptors (Lewis 2025, Lewis et al. 2025).

Contact: Stephen B. Lewis, Email: steve_b_lewis@fws.gov

Literature Cited:

Lewis, S. B. 2025. Space use, habitat selection, and flight behavior of eagles across northwestern North America. PhD dissertation, University of Montana, Missoula, Montana, USA. https://scholarworks.umt.edu/etd/12583/

Lewis, S. B., T. E. Katzner, B. A. Millsap, D. P. Walsh, T. L. Booms, C. P. Barger, R. Domenech, B. E. Bedrosian, and V. J. Dreitz. 2025. GPS telemetry reveals social structure and movement patterns of territorial and floater *Haliaeetus leucocephalus* (Bald Eagle) and *Aquila chrysaetos* (Golden Eagle). Ornithology 142:1–12. https://doi.org/10.1093/ornithology/ukaf034

(Alaska-wide) Behavioral-state differences in Bald Eagle space use and habitat selection
Stephen B. Lewis[1,2]
[1]U.S. Fish and Wildlife Service, Migratory Bird Management, [2]Wildlife Biology Program, University of Montana

Movements link individuals to their environments and can reveal how life-history strategies structure space use and resource dependence. Using GPS telemetry from Bald Eagles (*Haliaeetus leucocephalus*) across Alaska (USA) and Yukon/British Columbia (Canada), we compared seasonal space use, movement, and habitat selection among three behavioral states: territorial adults, adult floaters, and immatures. We analyzed 333 eagle-years from 82 tagged eagles (2011–2021), assigning behavioral state a priori from movement-based classifications. We estimated seasonal home ranges and core-use areas using autocorrelated kernel density estimates (AKDEs) and quantified daily movement from regularly resampled tracks. We then evaluated state-specific habitat selection in summer and winter using resource selection functions (RSFs) with availability sampled from each bird's movement-constrained activity space.

Space-use patterns differed dramatically by behavioral state, especially during summer. Territorial adults maintained the smallest home ranges and core areas, floaters used areas an order of magnitude larger, and immatures ranged most widely (often tens to >100× larger than territorials). All territorial summer tracks were range-resident, whereas many floaters and immatures exhibited non-resident movement, indicating that conventional "home-range" summaries can underrepresent the most mobile segments of the population. Despite large differences in spatial extent, cumulative daily movement distances overlapped broadly among states, indicating behavioral state primarily governs where eagles distribute use over weeks to months (i.e., central-place fidelity versus broad-ranging strategies), rather than how far they move on a given day. Within territorials, nesting imposed additional summer constraints: nesting birds (particularly females) had markedly smaller home ranges and core areas than non-nesting territorials, again without consistent differences in daily movement.

Habitat selection also differed strongly by behavioral state in both seasons. In summer, state-specific RSF models overwhelmingly outperformed simpler alternatives, indicating distinct foraging strategies. Territorial eagles selected coastal and estuarine tideflats and showed moderate association with anadromous streams. Floaters exhibited exceptionally strong selection for salmon streams and landfills but avoided fishing-associated features, consistent with reliance on concentrated natural pulses and anthropogenic subsidies outside defended territories. Immatures showed the strongest selection for coastal habitats and fishing-related sites while avoiding estuaries. Winter patterns broadly mirrored summer but with seasonal shifts: territorials retained strong coastal and stream associations, whereas floaters increased use of both natural and anthropogenic subsidies and selected more strongly for uplift-rich areas. These results show that assessments focused only on breeders can miss the most mobile and subsidy-dependent segments of the population; incorporating behavioral state into planning will better anticipate conflicts and

how changes in landfills, fish-waste practices, or coastal infrastructure may disproportionately affect floaters and immatures that contribute to population resilience (Lewis 2025).

Contact: Stephen B. Lewis, Email: steve_b_lewis@fws.gov

Literature Cited:

Lewis, S. B. 2025. Space use, habitat selection, and flight behavior of eagles across northwestern North America. PhD dissertation, University of Montana, Missoula, Montana, USA. https://scholarworks.umt.edu/etd/12583/

(Alaska-wide) Factors influencing altitude of Bald Eagle (*Haliaeetus leucocephalus*) flight over landscape and seasons: implications for aviation safety

Stephen B. Lewis[1,2], and Cassandra Schoofs[3]
[1]U.S. Fish and Wildlife Service, Migratory Bird Management, [2]Wildlife Biology Program, University of Montana, [3]673 CES/CEIEC, Joint Base Elmendorf-Richardson

Human–wildlife conflicts are increasing as human activities and wildlife overlap, and wildlife–aircraft strikes are among the most costly and hazardous outcomes. Raptors, especially large soaring species, are disproportionately vulnerable because they rely on atmospheric uplift, have limited maneuverability, and frequently occupy low-altitude airspace near airports. Using 13 years of GPS telemetry, we quantified how Bald Eagles (*Haliaeetus leucocephalus*) use vertical airspace across northwestern North America and evaluated implications for strike risk near military airfields. We analyzed 47 eagles tagged in Alaska (21 females, 26 males), yielding 490,369 hourly locations after filtering; 137,451 (28%) met criteria for flight. We standardized altitude to mean sea level, estimated flight height above ground level (AGL), and annotated flight locations with static landscape variables (topography, terrain position, ruggedness, land cover), dynamic uplift proxies (thermal uplift potential w and orographic wind support w0), and temporal predictors (diel and seasonal cycles). Mixed-effects models with random intercepts for individual and year were compared using AIC.

Flight altitude varied widely, with most explainable variance driven by individual and interannual differences (low marginal $R^2 \leq 0.05$; conditional $R^2 \sim 0.23$). The top model included static, dynamic, and temporal predictors, but temporal structure dominated fixed effects: eagles flew highest around midday and in late spring, consistent with thermal development and seasonal behavior. Static and dynamic predictors showed statistically detectable but modest effects (e.g., slightly higher altitudes with elevation, east-facing terrain, ruggedness, upper slopes, and over several land-cover classes). Both uplift metrics were positively associated with altitude, but effect sizes were small, likely reflecting coarse resolution of regional weather products relative to fine-scale uplift used by soaring birds. Behavioral state mattered: immatures and territorial adults flew slightly higher than floaters; sex effects were minimal.

Strike-risk analyses at Joint Base Elmendorf-Richardson (JBER) showed substantial overlap with the altitude band where most strikes occur. Mean flight altitude was 66.1 m AGL, and 92% of flight locations were below 152 m (500 ft). Eagle flight density peaked ~3–4 km from runways, with smaller peaks farther out, indicating concentrated use within approach/departure airspace even if few locations occurred immediately adjacent to runways. Within FAA imaginary surfaces, 51.6% of locations were inside the Conical Surface; 15.7% inside the Inner Horizontal Surface; and 4.1% inside Air Accident Zone surfaces. Collectively, results indicate that predictable diel and seasonal cycles, combined with local habitat features and strong individual variation, shape when eagles occupy low-altitude airspace near airfields. Mitigation will be most effective when focused on reducing attractants near runways (e.g., landfills, nesting/perching resources) and targeting heightened-risk periods such as midday and late spring (Lewis 2025).

Contact: Stephen B. Lewis, Email: steve_b_lewis@fws.gov

Literature Cited:

Lewis, S. B. 2025. Space use, habitat selection, and flight behavior of eagles across northwestern North America. PhD dissertation, University of Montana, Missoula, Montana, USA. https://scholarworks.umt.edu/etd/12583/

(Boreal North America) New landbird model products and tools from the Boreal Avian Modelling Centre

Elly Knight[1,2], Anna Drake[3], Mélina Houle[4], Mannfred Boehm[1], Jeff Ball[4], Steve Cumming[3], Erin Bayne[1], and Diana Stralberg[1,3]

[1]University of Alberta, [2]Biodiversity Pathways, [3]Canadian Forest Service, [3]Université Laval, [4]Environment and Climate Change Canada

The Boreal Avian Modelling Centre (BAM): supports the conservation of North America's boreal birds through high-quality, data-driven and collaborative science. BAM was initiated as a collaborative project over 20 years ago to bring together boreal bird data and today brings those data together through novel data integration methods to produce high-resolution model products for informing conservation and land use management. In 2025, BAM joined the non-profit organization Biodiversity Pathways, bringing efficiencies and opportunities that will deepen our commitment to rigorous, collaborative science.

Landbird Density Models: BAM has developed a species abundance modeling pipeline that generates boreal-wide landbird density models and spatial predictions. The models estimate the effects of a large suite of spatially explicit environmental covariates using machine learning and statistical offsets to account for detectability. In 2020, we released Version 4 of our density results for 143 species as 1 km² resolution raster layers, which are available on our model website along with regional and national population size estimates and habitat associations.

Over the last year, we've accomplished two important model milestones: 1) published our modelling framework in the journal *Ecosphere* (Stralberg et al. 2025) and 2) completed Version 5 of our models. The new models have several major improvements over version 4 (Table 1), including predictions for multiple years and for Alaska (Figure 1). Canada-wide predictions for 67 priority species have been soft-launched at the time of writing this update, with predictions for the remaining 77 species as well as Alaska and the hemiboreal of the lower 48 United States available in the coming weeks (see "Model Access" below).

Model Access: BAM has also released three model access tools alongside the release of Version 5 of our landbird density models. The tools are designed to fit a suite of user needs and technical abilities. The most powerful of those tools is our BAMExploreR R package, which allows users to download and work with BAM's model predictions directly in the R environment, with interpretation functions to calculate population size and area of occurrence for custom areas of interest and to understand the importance of model predictors like vegetation and climate. The next tool is a web-hosted Shiny app that mirrors the functionality of the R package, but for users that are more comfortable with a graphical user interface. Finally, we've built a Google Earth Engine (GEE) app which allows users to explore the models alongside Google imagery as well as access and work with model predictions as assets in the GEE environment. All three model access tools will be available via our model website, which will be updated to a dashboard for all our model products in the coming months.

Contact: Elly Knight, Email: bamp@ualberta.ca

Literature Cited:

Stralberg, D., P. Sólymos, T. D. S. Docherty, A. D. Crosby, S. L. Van Wilgenburg, E. C. Knight, A. Drake, et al. 2025. A generalized modeling framework for spatially extensive species abundance prediction and population estimation. Ecosphere16(10):e70405. https://doi.org/10.1002/ecs2.70405

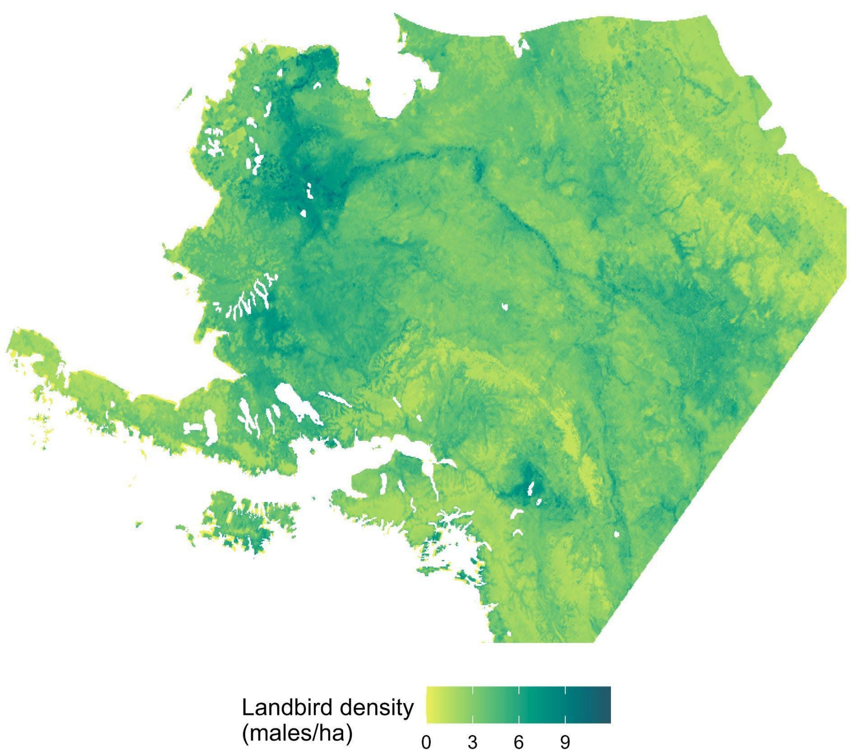


Figure 1. Total estimated density of male landbirds in Alaska across 89 species from preliminary V5 models.

Table 1. Comparison of features between Version 4 and 5 of BAM's landbird density models.

Feature	BAM V4	BAM V5
Release year	2020	2026
Species included	143	67 priority species; 77 in progress
Dataset size	0.3 million surveys	1.4 million surveys, including eBird
Geographic extent	Canada only	Canada; Alaska and US hemiboreal in progress
Temporal resolution	Predictions for 2017	Predictions at five-year intervals from 2000 to 2020; 1990 to 1995 in progress
Model subregions	Bird conservation region (BCR)	Updated BCRs (several large BCRs subdivided)
Environmental predictors	Landcover, biomass, climate	Time-matched predictors for vegetation biomass, human disturbance, and annual climate
Model reliability information	Cross-validated model performance	Map of coefficient of variation across bootstraps; cross-validated model performance, maps of model extrapolation & detection distribution in progress

(Nonbreeding grounds) Full life-cycle conservation of Alaska's long-distance migratory birds in Colombia, 2025 update

Nick Bayly[1], Julie Hagelin[2], Katherine Christie[2], and Angie Trumbo[3]
[1]SELVA, [2]Alaska Department of Fish and Game, [3]Tracy Aviary

This initiative began in late 2025, with the goal of conserving key stopover habitats for three Species of Greatest Conservation Need (SGCN) in Colombia and Central America: Olive-sided Flycatcher, Blackpoll Warbler and Gray-cheeked Thrush. Over the coming year, the project will work on three fronts as follows:

1. Habitat mapping and restoration of Olive-sided Flycatcher habitat in NW Colombia and Central America.
2. Habitat enhancement for Gray-cheeked Thrush at a major spring stopover site in the Santa Marta Mountains in NE Colombia.
3. Conservation and enhancement of Blackpoll Warbler fall stopover habitat on the Guajira peninsula in northeast Colombia.

Contact: Nick Bayly, SELVA: Investigación para la Conservación en el Neotropico, Email: nicholas.j.bayly@gmail.com