



BOREAL

Partners in Flight

2022 Summary of Landbird Projects

April 2023

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Compiler's Note

This year marked the 31st anniversary of Boreal Partners in Flight, founded in November 1991 by a small group of ornithologists during the 4th Alaska Bird Conference. This annual Summary of Landbird Projects showcases a diversity of new and ongoing inventory, monitoring, research, and outreach programs, and recent publications by a highly skilled and dedicated membership across Alaska and northwestern Canada.

We have compiled and lightly edited these 2022 project summaries voluntarily contributed by our members. Thank you to our members for these contributions and their continued commitment to understand, conserve, and enjoy landbird populations across northwestern North America.

Maureen de Zeeuw, Outgoing Chair of Boreal Partners in Flight
Jaime Welfelt, Outgoing Secretary of Boreal Partners in Flight

Cover. Logo artwork of Willow Ptarmigan (*Lagopus lagopus*), Northern Goshawk (*Accipiter gentilis*), and McKay's Bunting (*Plectrophenax hyperboreus*) by Bryce W. Robinson (ornithologi.com).

2022 Project summaries by Bird Conservation Region (BCR)

(BCR 1) Landcover Mapping of the Pribilof Islands

Alaska Maritime National Wildlife Refuge, U.S. Fish and Wildlife Service, Homer, Alaska

Detailed land cover maps of St. Paul and St. George islands was completed in September 2022 by Michael Fleming (Images Unlimited) for the Alaska Maritime National Wildlife Refuge, U.S. Fish and Wildlife Service. These maps will serve as a baseline for monitoring long-term trends in land cover and help to quantify wildlife habitat relationships. Maps are currently being used to identify important breeding habitats for the Pribilof Rock Sandpiper.

Contact: Rachel Richardson, Wildlife Biologist, USGS Alaska Science Center, Anchorage, Alaska. Phone: (907)786-7194, email: rrichardson@usgs.gov

(BCR 1) Bird-Aircraft Hazard Surveys, Shemya Islands

Jim Johnson and Zak Pohlen, Alaska Migratory Bird Management, Anchorage, Alaska

Shemya Avian Monitoring (SAM) point counts aimed at assessing changes in avian abundance and distribution. Completed 128 point counts (4 replicates) between May and June 2022. Counted 3,410 birds and 14 different species. Identified 3 high-risk species: Aleutian Cackling Goose, Glaucous-winged Gull, and Common Raven.

Contact: Jim Johnson, Wildlife Biologist, Migratory Bird Management, Anchorage, Alaska. Phone: (907)786-3423, email: jim_a_johnson@fws.gov

(BCR 2) Landbird Monitoring on the Alaska Peninsula & Becharof National Wildlife Refuges, 2022

Jaime Welfelt, US Fish and Wildlife Service, King Salmon, Alaska

INVENTORY & MONITORING

Christmas Bird Count. Refuge staff assisted in the annual Christmas Bird Count in Naknek and King Salmon.

Breeding Bird Surveys. Refuge staff completed the Naknek/King Salmon BBS and assisted Katmai National Park with the Brook Camp BBS.

Alaska Landbird Monitoring Surveys. Staff conducted ALMS on the Lower King Salmon River and Lower Ugashik Lake.



Figure 1. Alaska Peninsula & Becharof NWRs staff completed Willow Ptarmigan Line Transects (left), assisted with the Katmai NP Brooks Camp BBS (center), and completed two ALMS plots (Lower King Salmon River, right).

Willow Ptarmigan Density on the Alaska Peninsula. Alaska Peninsula and Becharof National Wildlife Refuges began pilot studies to investigate Willow Ptarmigan (*Lagopus lagopus*) populations on the Alaska Peninsula beginning in 2011 through 2013. In 2015, we established 19 4-km line transect surveys and finalized the monitoring protocol for ptarmigan density estimates.

We initially planned to conduct surveys in every odd-year spring, to avoid the spring bear hunt. Staff turnover in 2015 halted survey efforts for several years. The Covid-19 pandemic further delayed field operations in 2000 and 2021. We resumed survey efforts in 2022.

In May 2022, the Alaska Peninsula & Becharof National Wildlife Refuges conducted 8 line transect surveys at 4 different locations in the Bristol Bay lowlands, on both Refuge and State of Alaska lands. 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. In 2022, Katmai completed 9 line transects at 6 different locations, including the two sites within road access of Naknek and King Salmon. Through our combined efforts, we completed 17 Willow Ptarmigan line transects in 2022.

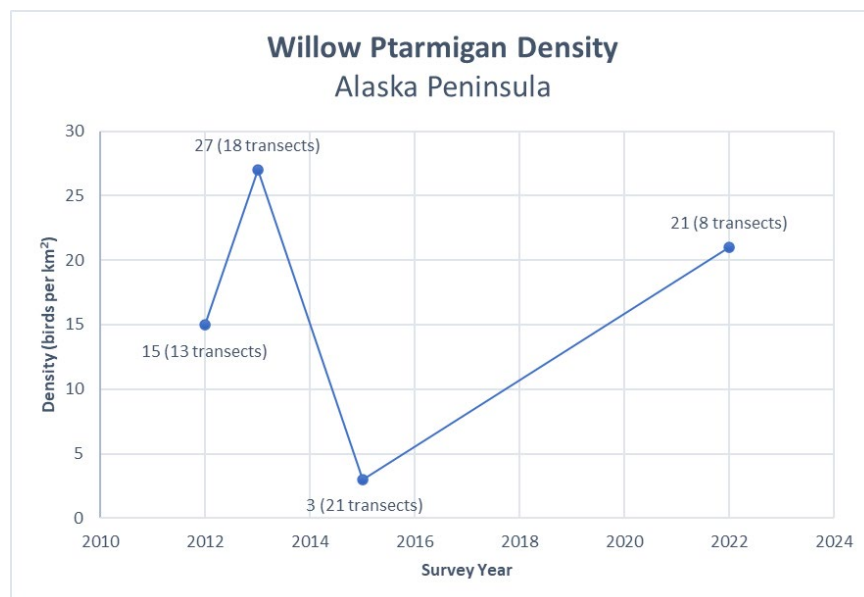


Figure 1. Male willow ptarmigan density estimates (male ptarmigan/km²) by survey year, including the number of transects completed each year. Estimates are based on U.S. Fish and Wildlife Service data only.

ENVIRONMENTAL EDUCATION AND PUBLIC OUTREACH

World Migratory Bird Day. In coordination with the larger international event each May, the Refuge hosts a community-wide event to count all birds accessible from the road system. Staff and volunteers break into small groups and census all birds in the area. Annual records are maintained by the Refuge.

Bristol Bay Shorebird Festival. Refuge staff provide spotting scopes, binoculars, identification guides, and outreach as part of the annual Bristol Bay Fishtival, a community celebration at the end of fishing season. The event focuses on shorebird identification but highlights the importance of fish in fueling long-distance migrations of both shore and landbirds.

Alaska Migratory Bird Calendar Contest. Refuge visitors service staff promote, facilitate, and judge the annual youth calendar contest which engages students from rural villages in migratory bird conservation issues. The theme this year was, “Fill the Bill”, highlighting the different form and function of avian beaks.



Figure 2. Bristol Bay residents joined Refuge staff on the Naknek Beach for the annual Fishtival Shorebird (we count landbirds too) event.

Contact: Jaime Welfelt, Alaska Peninsula & Becharof National Wildlife Refuges, PO Box 277, King Salmon, AK 99613, Phone: (907)782-5000, email: jaime_welfelt@fws.gov

(BCR 3) No information was provided for BCR3 Landbird activities in 2022.

(BCR 4) Road-system Grouse and Ptarmigan Spring Breeding Surveys, Alaska, 2022 Update.

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 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 surveys have been conducted annually. These surveys will continue to be monitored annually.

Based on the 2022 spring breeding surveys, many of the monitored populations continued to remain relatively low in abundance. Interior ruffed grouse numbers were near their cyclical lows near Delta Junction and Tok but appeared to be increasing near Anderson and Fairbanks. Sharp-tailed grouse numbers near Delta Junction were lower in 2022 than 2021 but up slightly near Tok from 2021 to 2022. Sooty grouse densities further declined in 2022 near Juneau and Petersburg but increased slightly near Ketchikan. Monitored rock ptarmigan populations remained low throughout Southcentral but numbers increased slightly in the Alaska Range in 2022. Willow ptarmigan populations were up only modestly throughout the Alaska Range and southern Interior in 2022 yet appeared to be much higher throughout the Yukon-Kuskokwim delta in 2022 (based on numerous field observations).

Contact: Richard A. Merizon, Alaska Department of Fish and Game, Division of Wildlife Conservation, 1801 South Margaret Drive, Suite 2, Palmer, AK 99645. Phone: (907)746-6333, email: richard.merizon@alaska.gov OR 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.

Literature Cited: Merizon, R.A. and C.J. Carroll. 2022. Alaska small game summary 2022. 6pp. unpublished report. Available at:

<http://www.adfg.alaska.gov/index.cfm?adfg=smallgamehunting.research>.

Merizon, R.A. and C.J. Carroll. *In Prep.* Status of grouse, ptarmigan, and hare in Alaska, 2021 and 2022. Alaska Department of Fish and Game, Wildlife Management Report ADF&G/DWC/WMR-2023-XX, Juneau. <http://www.adfg.alaska.gov/index.cfm?adfg=smallgamehunting.research>.

(BCR 4) Statewide Hunter Harvested Grouse and Ptarmigan Wing Collection Program, Alaska, 2022 Update

Alaska Department of Fish and Game

Since 2011, the statewide Small Game Program (SGP) within the ADF&G has been collecting grouse and ptarmigan wings and tail feathers from hunter harvested birds. This is a voluntary program that through the past 11 hunting seasons (2011/12 – 2021/22) has resulted in samples from over 434 hunters statewide. During the 2021 regulatory year (RY; July 1, 2021 to June 30, 2022) hunters provided

wings from 32 ruffed, 236 spruce, 53 sharp-tailed, and 16 sooty grouse in addition to 311 willow, 15 rock, and 37 white-tailed ptarmigan wings statewide (Merizon and Carroll, *In Prep*). Samples were collected from 14 of the 26 game management units statewide including the Alaska Peninsula, Northwest, Southwest, and Southeast Alaska, and most of the road system from the Dalton Highway to Homer.

These samples allow managers to better understand the harvest composition of exploited populations of tetraonids. Specifically, they allow an estimation of harvest distribution and timing, population age structure, and juvenile production.

This program will continue and is a permanent component of the SGP. The SGP provides free wing envelopes and free return options to encourage participation. Envelopes are available either through direct mailing or at all ADF&G offices. As of October 2022, hunters have provided approximately 570 wings statewide during the 2022-2023 season.

Contact: Richard A. Merizon, Alaska Department of Fish and Game, Division of Wildlife Conservation, 1801 South Margaret Drive, Suite 2, Palmer, AK 99645. Phone: (907)746-6333, email: richard.merizon@alaska.gov OR 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

Literature Cited: Merizon, R.A. and C.J. Carroll. *In Prep*. Status of grouse, ptarmigan, and hare in Alaska, 2021 and 2022. Alaska Department of Fish and Game, Wildlife Management Report ADF&G/DWC/WMR-2023-XX, Juneau.
<http://www.adfg.alaska.gov/index.cfm?adfg=smallgamehunting.research>.

(BCR 4) Grouse and Ptarmigan summer brood surveys, Alaska, 2022 Update

Alaska Department of Fish and Game

Since 2016, the statewide Small Game Program (SGP) within the ADF&G has completed brood surveys for select populations of grouse and ptarmigan. Brood surveys have been used by numerous state and federal fish and wildlife agencies to monitor population trends and productivity (brood size and density) of various galliform species (including grouse, quail, turkey, and pheasant) throughout North America. However, limited funding and staff availability can make these surveys difficult to achieve. Often state agencies can partner with other government agencies, conservation organizations, or dog training groups to complete surveys.

A variety of techniques have been used to monitor galliform broods including passive observations of broods while conducting other field work, counting the number of broods annually along set routes, and using trained pointing dogs (Guthery and Mecozzi 2008, Dahlgren et al. 2010, 2012). The use of trained pointing dogs has been found to be one of the most effective and efficient techniques for locating cryptic grouse broods that dwell in open habitats (Dahlgren et al. 2010).

During the last 2 weeks of July into very early August since 2016, the SGP has enlisted up to 38 volunteers annually to complete survey transects for sharp-tailed grouse in Delta Junction, and rock, white-tailed, and willow ptarmigan at Eagle Summit, along the Denali Highway, and in Hatcher's Pass. Beginning in summer 2021 and increase in volunteer support allowed the expansion of surveys to include routes near Sheep Mountain, within Chugach State Park, and the Kenai Mountains. These data are used to estimate early chick survival, brood size, brood density, and to more accurately project what grouse or ptarmigan hunters can expect to encounter during the upcoming hunting season. This information has proven to be very useful for upland bird hunters, state and federal biologists, and for informing Board of Game regulatory decisions.

In 2022, rock ptarmigan brood surveys near Eagle Summit were not fully completed and thus don't allow comparison with prior years. However, reports from the Bureau of Land Management (BLM) staff conducting trail work in the area and other field observations throughout the summer suggest strong chick survival near Eagle Summit. Results from brood surveys completed in Chugach State Park and the Kenai Mountains indicated chick survival was also very strong in summer 2022. Willow ptarmigan chick survival throughout the Alaska Range improved in 2022 after 2 very poor years in 2020 and 2021. Chick survival was also very strong throughout Southcentral. High chick survival was likely to be at least

partially a result of the warm and dry weather conditions that occurred throughout much of Alaska during the early brood-rearing period (late June/early July).

Contact: Richard A. Merizon, Alaska Department of Fish and Game, Division of Wildlife Conservation, 1801 South Margaret Drive, Suite 2, Palmer, AK 99645. Phone: (907)746-6333, email: richard.merizon@alaska.gov OR 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

Literature Cited: Merizon, R.A. and C.J. Carroll. 2022. Status of grouse, ptarmigan, and hare in Alaska, 2021 and 2022. Alaska Department of Fish and Game, Wildlife Management Report ADF&G/DWC/WMR-2023-XX, Juneau.
<http://www.adfg.alaska.gov/index.cfm?adfg=smallgamehunting.research>.

(BCR 4) Willow and Rock Ptarmigan Distribution and Movement Studies in Southcentral and Interior, Alaska, 2022 Update

Alaska Department of Fish and Game

Two rock ptarmigan research projects have recently been completed that have focused on 1) movement and survival and 2) reproductive ecology.

The first project was initiated by SGP staff in the spring of 2015 and ran through the summer 2020. Approximately 231 rock ptarmigan (128 females, 58 males, and 45 chicks) were captured and fitted with radio-transmitters and monitored throughout the study period to gather estimates of seasonal movements and age-specific survival. In addition, line transect surveys were initiated in the spring of 2015 to estimate spring breeding densities of male rock ptarmigan using conventional distance sampling methodology (Buckland et al. 2001). Field work was concluded in summer 2019 and a final report is expected in 2023. The SGP plans to continue annual spring breeding surveys near Eagle Summit.

The second research project was initiated in the spring of 2018 by a University of Alaska Fairbanks graduate student and fieldwork concluded at the end of the summer of 2019. A total of 171 rock ptarmigan females (98 at Eagle Summit, 73 adjacent to Denali Highway) were captured and fitted with radio-transmitters and monitored throughout the nesting and brood-rearing season to gather estimates of nest initiation dates, nest success, and brood survival. Field work was concluded in the summer of 2019 and the graduate student is currently preparing the results of that work in a M.S. thesis.

A third research effort was initiated in spring 2022 to study movements of willow ptarmigan on the Yukon-Kuskokwim (YK) delta. Initial efforts to capture and radio-tag 30 ptarmigan with GPS tags in the summer of 2022 had low success due to bird behavior and only 1 female was captured. Additional capture efforts are planned for spring 2023. Deploying GPS radio-tags will allow SGP staff to better understand the scale of movement of willow ptarmigan throughout the YK Delta.

Contact: Richard A. Merizon, Alaska Department of Fish and Game, Division of Wildlife Conservation, 1801 South Margaret Drive, Suite 2, Palmer, AK 99645. Phone: (907)746-6333, email: richard.merizon@alaska.gov OR 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

(BCR 4) Alaska Landbird Monitoring Surveys in BCR 4, 2022 Update

Zak Pohlen, Migratory Bird Management, US Fish and Wildlife Service

In 2022, Migratory Bird Management completed a sixth year of implementing the Alaska Landbird Monitoring Survey on National Wildlife Refuges in BCR 4. 12 survey blocks were scheduled to be resurveyed at six National Wildlife Refuges: Tetlin, Innoko, Nowitna, Koyakuk, and Arctic NWRs. However, we were only able to survey 7 of 12 blocks due high water levels, time limitations, and pilot

shortages. We substituted 2 blocks scheduled to be surveyed in 2023 to make up for inaccessible blocks in 2022.

- Surveyed 9 ALMS blocks across Tetlin, Innoko, Nowitna, Koyakuk, and Arctic NWRs
- Completed 139 ALMS point counts
- Detected 1,306 individuals of 54 species
- Averaged 19.7 species per block and 145.1 individuals per block
- Averaged 6.1 species per point and 9.4 individuals per point
- Five most frequently detected species: Swainson's Thrush, Dark-eyed Junco, Yellow-rumped Warbler, White-crowned Sparrow, and American Robin
- Observed 11 BPIF BCR 4 Priority Species: Varied Thrush, Common Redpoll, American Tree Sparrow, Fox Sparrow, Golden-crowned Sparrow, Gray-cheeked Thrush, White-crowned Sparrow, Orange-crowned Warbler, Olive-sided Flycatcher, Rusty Blackbird, and Bohemian Waxwing

Additionally, Migratory Bird Management completed a second round of Alaska Landbird Monitoring Surveys on Eielson Air Force Base. In 2021, we established a 500 x 500 m random point count array over the entire installation and selected 120 spatially balanced points in undeveloped and unrestricted lands. Of those 120 point count locations, we surveyed 109 in 2021 and 103 in 2022. All ALMS points were conducted 15–18 June. Some points were not surveyed due to high water levels, wildlife encounters, or time constraints.

- Completed 103 ALMS point counts
- Detected 1,171 individuals of 51 species
- Averaged 6.7 species per point and 11.4 individuals per point
- Five most frequently detected species: Swainson's Thrush, Dark-eyed Junco, White-winged Crossbill, Lincoln's Sparrow, Ruby-crowned Kinglet
- Observed 11 BPIF BCR 4 Priority Species: Bank Swallow, Bohemian Waxwing, Common Redpoll, Dark-eyed Junco, Orange-crowned Warbler, Olive-sided Flycatcher, Rusty Blackbird, Townsend's Warbler, Varied Thrush, White-crowned Sparrow, and Western Wood-Pewee.

Contact: Zachary Pohlen, Wildlife Biologist, Migratory Bird Management, USFWS, email: zachary_pohlen@fws.gov

(BCR 4) Landbird Monitoring and Research in Denali National Park and Surrounding Areas, 2022 Update

Carol McIntyre, Denali National Park

Golden eagle spring migration count, Mentasta Mountains, Wrangell-St. Elias National Park and Preserve, Alaska. Between 17 March and 3 April 2022, we recorded the number of migrating golden eagles and other raptors that we detected along the southern slopes of the Mentasta Mountains while we were engaged with other field activities in a study area just north of Jack Lake. We detected 1,344 migrating golden eagles and two pairs of territorial golden eagles during this period, with the highest daily counts of migrating eagles made from 26 to 29 March and on 3 April (~ 80% of eagles detected during entire count period). We also detected 47 migrating bald eagles, with the first detection occurring on 27 March. We also detected migrating sharp-shinned hawks (2), northern goshawks (12), red-tailed hawks (4), rough-legged hawks (2), and merlins (3). Data from telemetered golden eagles suggests that most of the golden eagles that migrate through this flyway continue migrating westward along the Alaska Range.

Golden eagle territory occupancy and reproductive success, Denali National Park and Preserve, Alaska. We completed our annual monitoring of golden eagle territory occupancy, breeding activities, and reproductive success in the northeast portion of Denali National Park and Preserve, Alaska in 2022. Data

on territory occupancy and breeding activities were collected during an aerial survey in late April. Data on nesting success and breeding output (i.e., number of fledglings produced) were collected during an aerial survey in late July. We monitored 91 golden eagle territories in 2022. Of these, 84 were occupied, including 33 occupied by a breeding pair (i.e., a pair where the female laid at least one egg). We documented 23 successful nests and detected 35 fledglings. We also collected data on gyrfalcon territory occupancy and breeding activities during the late April survey, but our July surveys were conducted too late to document their nesting success this year. We started this monitoring in 1988 and have completed both surveys every year except 2020. So far, we've monitored 2,876 golden eagle territories, and detected 2,482 occupied territories, 1,354 breeding attempts, 909 successful breeding attempts, and 1,316 fledglings.

North American Breeding Bird Survey, Denali National Park and Preserve, Alaska. We completed the Savage BBS route in Denali National Park, Alaska, on 22 June 2022. The landslide along the park road near the Polychrome overlook prevented us from completing the Toklat BBS route this year. The Savage BBS route was first surveyed in 1986 and has been surveyed in 31 years since then. The same observer has surveyed this route since 2001. Since 1986, 64 species have been detected on the Savage BBS route, but only 34 species have been detected in more than five years. American Robin, American Tree Sparrow, White-crowned Sparrow, Savannah Sparrow, Orange-crowned Warbler, and Wilson's Warbler have been detected in every survey year. In 2022, we detected 28 species and added a new species, bohemian waxwing, to the route list. The number of individuals detected in 2022 was 504 and was within the range of individuals detected annually since 2001 (range 357 to 866). Since 2001, we've noted an increase in the number of Swainson's thrush, gray-cheeked thrush, and blackpoll warbler detected along this route.

Brambling in Denali National Park, Alaska. Ryan Arash Marsh, Camp Denali naturalist, detected and photographed a Brambling (*Fringilla montifringilla*) near Mile 81 of the Denali Park Road on 5 September 2022. The female or immature Brambling was in an alder patch with a small flock of American tree sparrows. This is a new species for Denali NPP and one of the only observations of Brambling in interior Alaska.

Notable numbers of woodpeckers in the Cantwell and McKinley Park areas. Community members have noted a substantial increase in the numbers of all five species of woodpeckers that occur in interior Alaska in the Cantwell and McKinley Park areas over the past year. This increase coincides with the rapid and extensive expansion of spruce bark beetle in the area. Several community members documented multiple woodpecker nests on their properties in 2022. Many community members have also expressed concerns about woodpeckers drumming and excavating on their homes.

Contact: Carol McIntyre, Wildlife Biologist, Denali National Park, email: carol_mcintyre@nps.gov

(BCR 4) Breeding Bird Cumulative Effects Project, 2022 Update

CWS Canada, Northern Boreal Mountain Project

Wildlife Conservation Society (WCS) Canada is a conservation organization that uses science to help protect wildlife and wild places and to inform better land management decisions. Yukon is a region with one of the lowest levels of human disturbance in Canada but with increasing pressures from industry. To help maintain these wild places and to have a better understanding of how human disturbance affects wildlife, WCS Canada is conducting research on the cumulative effects of mining, roads, and other disturbances throughout Yukon. An avian field survey is part of this research. WCS Canada's Northern Boreal Mountains Cumulative Effects Program has the following primary objectives:

- Understand the cumulative effects of human disturbance and climate change stressors on wildlife and important habitat.

- Inform conservation targets to ensure they are built around ecological thresholds for sustaining healthy wildlife populations and ecosystems.

The project findings will help to inform regional land use planning, and other key decisions that will shape the future of central Yukon.

In 2021, WCS Canada, led by Dan Yip, carried out breeding bird surveys using point counts and autonomous recording units (ARUs) at 50 sites located near Dawson City and Mayo, YT. Sites were selected across a gradient of low to high disturbance. Point counts (PC) consisted of one 10-minute survey at 9 stations per site, with a simultaneous ARU recording. Sites surveyed using only ARUs consisted of five stations, and ARUs were programmed to record bird sounds during nights and early mornings. At these sites, six 3-minute recordings were randomly selected per station between 4 – 8am over a period of about a week and were annotated by tagging the first detection of each individual to obtain abundance of each species. A total of 127 species were detected including 6 species-at-risk (olive-sided flycatcher, lesser yellowlegs, rusty blackbird, common nighthawk, bank swallow, and short-eared owl). Currently, Morgan Brown, a post-doc at WCS Canada is performing a cumulative effects analysis to determine how species are influenced by surface disturbance and density of anthropogenic linear features.

Contact: Morgan Brown, Breeding Bird Cumulative Effects Post-Doctoral Fellow, Wildlife Conservation Society Canada. Phone: 1(867)393-2447, email: jmbrown@wcs.org

(BCR 4) Birds in Burns, 2022 update

Hilary Cook, Northern Boreal Mountains Program, Wildlife Conservation Society Canada

A new project of cavity-using birds in recent burns in boreal Yukon. In 2 years of study (2021 and 2022), we've found 89 new cavities in 4 burns, including 34 American Three-toed (ATTW) and 45 Black-backed (BBWO) Woodpeckers. Five of 11 cavities occupied by BBWO and ATTWO in 2021 were reused in 2022 (1 reused by different spp: BBWO in ATTW cavity). We also deployed ARUs and are collecting data on burn severity and cavity tree characteristics.

Contact: Hilary Cook, Co-Director Northern Boreal Mountains Program, Wildlife Conservation Society Canada, email: hcooke@wcs.org

(BCR 4) Boreal Monitoring Strategy

Hilary Cook, Northern Boreal Mountains Program, Wildlife Conservation Society Canada

Pacific Region: This is a new program being implemented into the CWS-Pacific region (British Columbia) which focuses on terrestrial birds and acoustic monitoring primarily across BCR4. This season we deployed approximately 70 ARUs across BCR 4 and 6 to sample breeding birds between May and July using the BOSS design implemented in Northern and Prairie region (<https://doi.org/10.1371/journal.pone.0234494>). This program aims to inform status and trend for BC birds on a 10-15 year cycle as well as provide baseline data and fill knowledge gaps within our region.

Contact: Hilary Cook, Co-Director Northern Boreal Mountains Program, Wildlife Conservation Society Canada, email: hcooke@wcs.org

(BCR 4) Olive-sided Flycatcher: Measuring Habitat Use Across a Disturbance Gradient

Andrea Norris, Environment and Climate Change Canada

This project relates to occupancy and habitat suitability of Olive-sided Flycatchers relative to disturbance gradients in Tsay Keh Dene Territory (southern portion of BCR4). Additional project information provided in video: <https://youtu.be/qoJrBz2j7RY>

Contact: Andrea Norris, Research Scientist, Environment and Climate Change Canada, email: andrea.norris@ec.gc.ca

(BCR 5) Juneau Tree Swallow Nest Watch, 2022 Update

Brenda Wright, Mali Tamone, and Gwen Baluss, Juneau Audubon Society

Since 2015 Juneau Audubon Society has erected and monitored Tree Swallow nest boxes around Juneau. The box design was taken from a standardized program (<http://golondrinas.cornell.edu/>) and the citizen science observations were collected using Cornell Nestwatch (<http://nestwatch.org/>) guidelines. Starting in 2018 data collection protocols evolved to synchronize as possible with other stations in the Alaska Swallow Monitoring Network (<https://aksongbird.org/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. The plan is to maintain at least 50 boxes in optimal habitats that are not expected to have imminent dramatic habitat change. 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 2022, there were 59 boxes erected at five sites surrounding the Mendenhall Wetlands complex. Fifty-two or 88% of boxes were occupied. The average brood size at hatching was 5 nestlings, and an estimated 258, or 96% of those chicks fledged. This follows similar success rates of the previous four years since elevated data collection began. Lay dates ranged from May 23 to May 29. Despite variable spring and summer weather, Juneau Tree Swallows continue to be highly productive.

A few individuals were found deceased at two nest boxes. The first incidence occurred early in the season during warm, dry weather, and was considered a typical event for the timing and conditions. However, mortalities found later in the season spurred concerns about Highly Pathogenic Avian Influenza. Birds were not tested but observers used extra precautions to reduce transmission risk.

Nest box opening permitted by Alaska Dept. of Fish and Game.

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

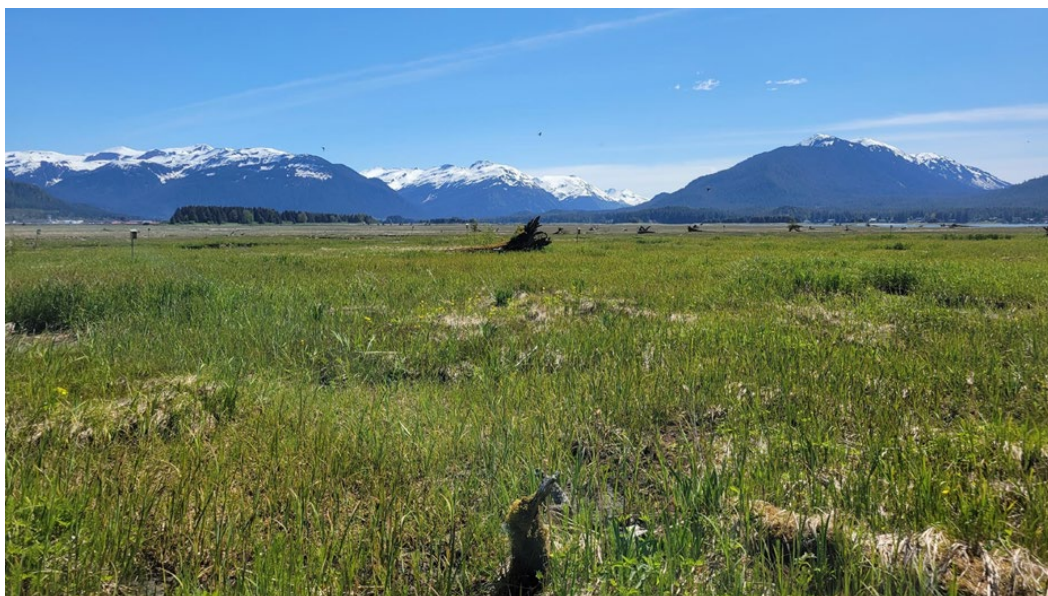


Figure 1. Highly productive tree swallow habitat (“just add boxes”) at Mendenhall Wetlands, a globally recognized Audubon Important Bird Area.



Figure 2. Young Tree Swallows stand a good chance of fledging.

(BCR 5) Tongass Hummingbird Project, 2022 Update

Gwen Baluss, Juneau Audubon Society

The Rufous Hummingbird (*Selasphorus rufus*, RUHU) has been identified as a priority for monitoring, research, and management. Significant declines in the species have been registered on the Breeding Bird Survey warranting their placement on the Audubon Alaska Watchlist.

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 (<http://www.rpbo.org/hummingbirds.php>) and the Hummingbird Monitoring Network ([Monitoring - Hummingbird Monitoring Network \(savehummingbirds.org\)](http://savehummingbirds.org)).

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 forests and wetlands. By banding at intervals throughout the season, the effort roughly tracks nesting chronology and the emergence dates of hatch-year birds.

In 2022 banding was continued with similar effort to previous years at the JCGA. This season yielded low capture numbers, especially for adult males, the lowest number since the station inception. (Table 1). A late spring was followed by a relatively warm, dry June, and a cool, wet July.

Interpreting variability between years is a challenge. Natural food availability is likely a driver of capture numbers, with less birds visiting the feeder trap when natural food takes them elsewhere. There is also high variability between banding dates within each season. 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 differs from passerines, which tend to be distributed more evenly across suitable habitat with most individuals tied to a specific territory.

Each bird is normally photographed at banding and again if recaptured to record plumage change over time. When published, this may prove useful to banders attempting to determine if individuals are hatch year or second years birds; or conclude that it is impossible to do so based on a complete winter molt. Often birds are reencountered multiple years after banding. Two adult females have been captured up to 5 years after banding. The only significant encounter to date was that of an adult female captured at JCGA in July 2017 and recaptured at a migration monitoring station at Lesser Slave Lake, Alberta a week later.

In 2022 the first Anna’s Hummingbird (a hatch-year male) was captured during a regular monitoring session. Anna’s Hummingbirds have been sighted occasionally during late summer and early fall in past years.

Support for the establishment of Rufous Hummingbird banding stations was provided by the US Forest Service, Region 10, Alaska. Help from student interns was provided by the Tongass National Forest, VetsWork, and the Juneau Audubon Society. Sites and logistical support were provided by the Juneau Community Garden Association, and the City and Borough of Juneau. Thanks to the local citizen scientists who assisted with trapping and data collection.

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

Year	Adult Male	Adult Female	Hatch-Year Male	Hatch-Year Female
2022	11	39	6	1
2021	19	44	10	10
2020	25	29	17	7
2019	58	68	11	8
2018	29	46	20	8
2017	17	23	9	4
2016	25	17	12	2
2015	43	21	4	8
2014	15	13	7	4
2013	12	29	9	1



Figure 1. A male Rufus Hummingbird. The amount of green coloration on the back varies between individuals.

(Alaska-wide) Alaska Landbird Monitoring Survey, 2022 Update

Colleen M. Handel¹ and multiple collaborators from Boreal Partners in Flight

¹USGS Alaska Science Center

The Alaska Landbird Monitoring Survey (ALMS) program uses standardized distance-sampling techniques 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 USGS Alaska Science Center.

During 2022, effort devoted to the ALMS program began to rebound following the dampening effects of the COVID-19 pandemic during the previous two years. Fifteen surveys were completed statewide, including 2 in BCR 2 and 13 in BCR 4; data from an additional 5 surveys were received this year from 2021 in BCR 5, making a total of 8 blocks surveyed that year (Fig. 1). Surveys conducted through ALMS now provide an impressive compilation of quantitative data on the abundance and distribution of birds throughout Alaska (Fig. 2). As of 2022, observers have conducted 10,356 ALMS surveys in 144 blocks at 2,749 points, with varying numbers of replications during the 20-year period (Fig. 3). Surveys from ALMS and its predecessor, the Off-road Breeding Bird Survey, have documented over 231,000 detections of birds since 1993.

Additional surveys using ALMS protocols have been conducted since 2019 by FWS biologists Zak Pohlen and Callie Gesmundo at several Department of Defense installations across the state, increasing our coverage greatly, particularly in western and northern Alaska. Additional surveys using ALMS protocols have also been conducted in the Tongass National Forest by Gwen Baluss as part of a study of forest management practices. These surveys also extend our geographic coverage and will help us understand the relationship between landbird populations and vegetation structure and composition in southeastern Alaska. The FWS has committed to conducting ALMS surveys across National Wildlife Refuges in Alaska, following the recent adoption of the ALMS protocol as the official FWS survey protocol for the Alaska region (Handel et al. 2021).

Additional analyses of ALMS data are in progress to model the current distribution of several landbirds of special concern across boreal Alaska relative to habitat characteristics, and to identify potential climate refugia for sensitive species in the Boreal Cordillera. Work is also now in progress to publish the ALMS data online for public accessibility.

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://ecos.fws.gov/ServCat/DownloadFile/200432>

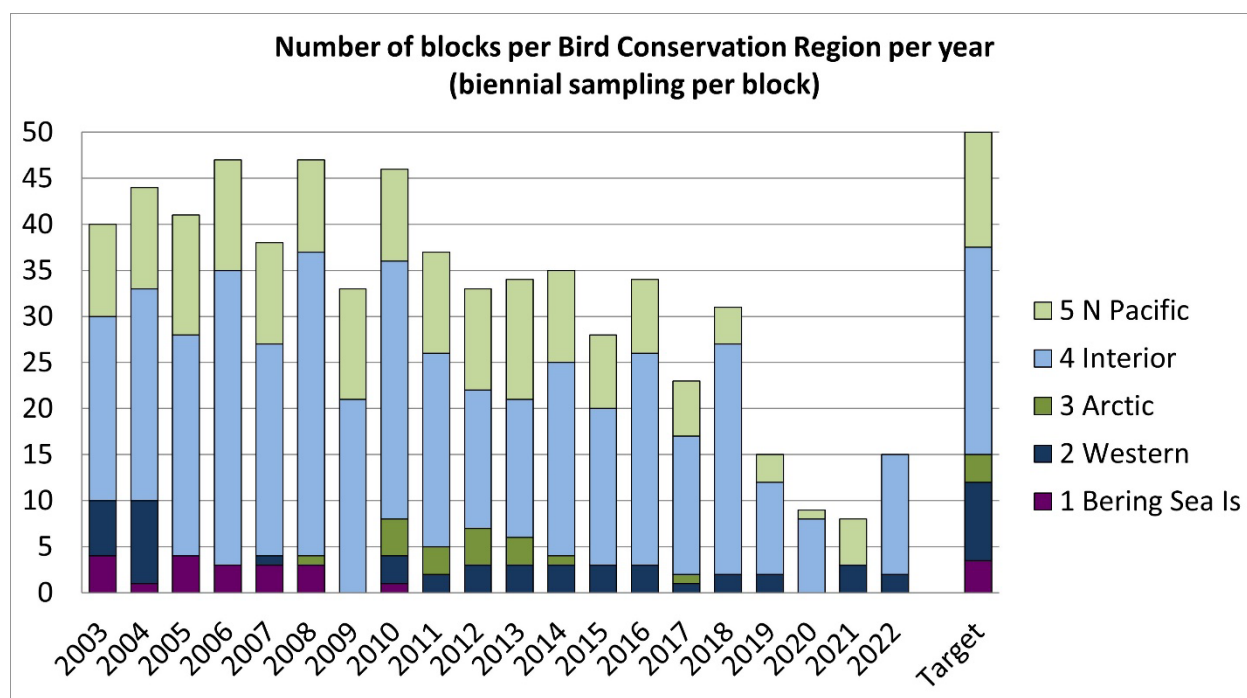


Figure 1. Number of ALMS blocks surveyed each year within the five Bird Conservation Regions in Alaska between 2003 and 2022.

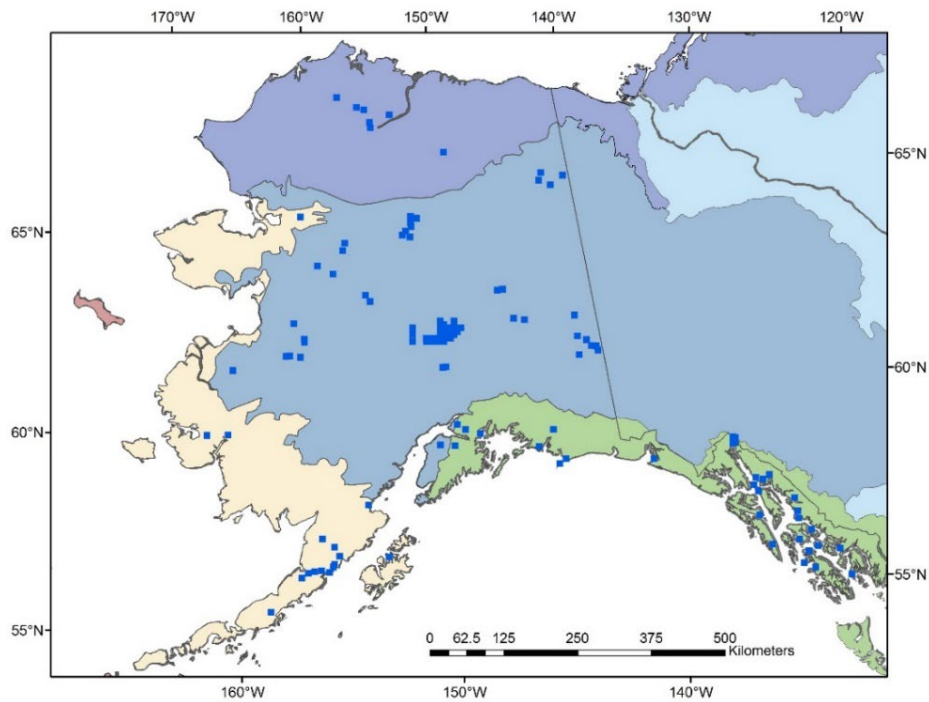


Figure 2. Locations of landbird surveys conducted as part of the Alaska Landbird Monitoring Survey (ALMS) from 2003 to 2022. The five Bird Conservation Regions in Alaska are indicated by color: Arctic Plains and Mountains (purple), Northwestern Interior Forest (blue), Western Alaska (tan), North Pacific Rainforest (green), and Aleutian/Bering Sea Islands (pink).

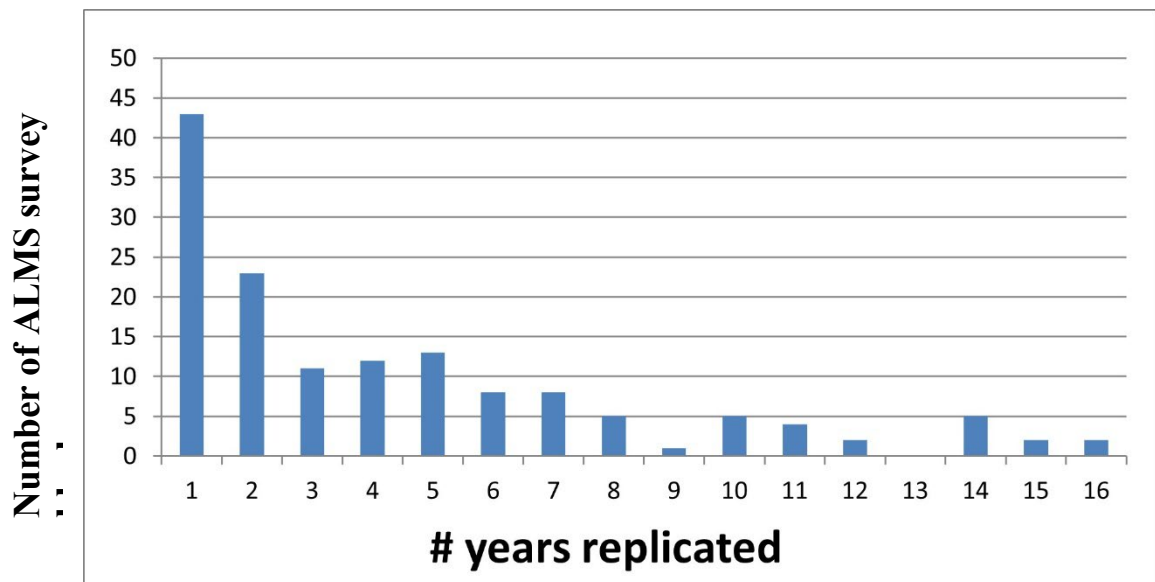


Figure 3. Number of ALMS blocks that have been surveyed for 1–16 years between 2003 and 2022. The standard protocol is to replicate each block biennially (e.g., 5 times over a 10-year period), but some surveys have been replicated annually. Most blocks replicated during a single year represent those surveyed for inventory rather than monitoring purposes.

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New Publications

- Adams, E. M., Stenhouse, I. J., Gilbert, A. T., Boelsma, J., Gress, G., Scott Weidensaul, C., Grigsby, C., Williams, E. J., Phillips, L., & McIntyre, C. L. (2022). The first documentation of the Nearctic–Paleotropical migratory route of the Arctic Warbler. *Ecology and Evolution*, 12, e09223. <https://onlinelibrary.wiley.com/doi/10.1002/ece3.9223>
- Eisaguirre, JM, TL Booms, CP Barger, SB Lewis, GA Breed. 2022. Demographic partitioning of dynamic energy subsidies revealed with an Ornstein-Uhlenbeck space use model. *Ecological Applications* 32:e2542. <https://doi.org/10.1002/eap.2542>
- Hagelin, J. C., Hallworth, M. T., Barger, C. P., Johnson, J. A., DuBour, K. A., Pendelton, G. W., et al. 2021. Revealing migratory path, important stopovers and non-breeding areas of a boreal songbird in steep decline. *Animal Migration*, 8(1), 168-191. <https://doi.org/10.1515/ami-2020-0116>
- Johnson, DL, MT Henderson, DA Anderson, TL Booms, and CT Williams. 2022. Isotopic niche partitioning and individual specialization in an Arctic raptor guild. *Oecologia* 198:1073-1084. <https://doi.org/10.1007/s00442-022-05154-3>
- Leung, M. and D. Reid. 2022. Nesting ecology of the Barn Swallow on agricultural lands in Yukon. *Western Birds* 53: 309–326; <https://doi.org/10.21199/WB53.4.2>
- Martin, E.C., P.F. Doherty, Jr., K.A. Jochum & C.F. Bagley. 2022. Abundance and habitat use estimates show Lesser Yellowlegs (*Tringa flavipes*) breed in high numbers in interior Alaska. *Avian Conservation and Ecology* 17 (1):8. <https://doi.org/10.5751/ACE-02012-170108>
- Meehan, T.D., H.A. Cooke, et al. 2022. Integrating data types to estimate spatial patterns of avian migration across the Western Hemisphere. *Ecological Applications*. <https://doi.org/10.1002/eap.2679> (incorporates Blackpoll Warbler migration connectivity data from Yukon, Alaska, and other boreal sites).
- Miller, RA, JB Buchanan, TL Pope, JD Carlisle, C Moulton, and TL Booms. 2022. Short-eared Owl land-use associations during the breeding season in the Western United States. *Journal of Raptor Research*. <https://doi.org/10.3356/JRR-21-19>
- Slabe, VA et al. 2022. Demographic implications of lead poisoning for eagles across North America. *Science* 375:779-782. <https://doi.org/10.1126/science.abj3068>