2012 Summary of Landbird Projects For Boreal Partners in Flight

December 2012

Compiled and lightly edited by Jim Johnson for Boreal Partners in Flight. Anyone wanting more information about these studies should contact the individual(s) noted at the end of each project summary.

Visit the Alaska Landbird Resource Information System, the official website of Boreal Partners in Flight: http://alaska.usgs.gov/science/biology/bpif/index.php

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A Note from the Compiler

Welcome to the 2012 Boreal Partners in Flight (BPIF) summary of new and ongoing landbird projects in Alaska. This report highlights the important work being conducted on landbirds and is intended to stimulate communication and collaboration among educators, researchers, and managers. This year's report contains 50 project summaries, led by more than 100 investigators, with the data collected by hundreds more. The majority of projects were affiliated with government resource agencies (34 projects), followed by the private sector (7), academic institutions (4), and NGOs (5). Projects focused on a variety of topics encompassed by three general themes: survey and monitoring (34 projects), research (11), and education (5). Most of this year's projects focused on raptors (23 projects), followed by passerines (13), and grouse and ptarmigan (5). Multi-species survey and monitoring programs, such as the Alaska Landbird Monitoring Survey, comprised the remaining nine projects. Despite the broad-scale coverage from Southeast Alaska to the Brooks Range, more than twice as many projects were conducted in BCR 4 (25 projects) than any other region (BCR 2 = 5 projects, BCR 3 = 9, BCR 5 = 6, statewide = 5). The only region not represented this year was BCR 1.

In addition to these projects, 33 papers on Alaskan landbirds were published in 2011–2012 by BPIF members or other scientists. Fourteen of these publications focused on raptors, including the Gyrfalcon (10 papers), Golden Eagle (3), and Short-eared Owl (1). Also noteworthy are four papers that investigated the factors that cause bill deformities in Black-capped Chickadees, and three papers that used light-level geolocators to describe migratory connectivity of the Northern Wheatear, Rusty Blackbird, and Golden-crowned Sparrow. This impressive list of papers clearly showcases the expertise of our colleagues.

Despite much to be celebrated, this year also unfortunately marks the end of the Alaska Bird Observatory (ABO), which sadly closed its doors after 21 years of providing exceptional educational opportunities to Alaska's youth as well as contributing to numerous important research and monitoring efforts on Alaska's birds. In addition to its contributions to ornithology and environmental education, ABO's personnel played an integral role in BPIF, including helping found BPIF, participation and leadership in annual meetings, serving on executive and steering committees, and imparting their understanding of issues related to northern bird populations. I wish a speedy transition to our friends and colleagues with ABO.

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ROAD-SYSTEM GROUSE AND PTARMIGAN ABUNDANCE SURVEYS, ALASKA, 2012 UPDATE

Alaska Department of Fish and Game

Springtime breeding behavior of many tetraonids allows a means to index annual abundance and the 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 DWC biologists, hunters, and outdoor enthusiasts.

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, the Small Game Program is restricted to species and areas in which population abundance can be assessed. Therefore, the program has focused on those populations that are either heavily exploited by hunters, within popular outdoor recreational areas, or very close to large urban areas or 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 (2008), and Palmer (1992), and have been completed annually since their inception. Sharp-tailed grouse lek surveys were established in the Delta Junction Agricultural Project in 2000; additional leks have been located and monitored since. Sooty grouse observational data were collected for the first time beginning in spring of 2012 and will continue in 2013. To assess both willow and rock ptarmigan populations, we use a broadcasted 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, Richardson, Parks, and Steese highways. Beginning in 2012, a remote survey location was created in the upper Susitna River to begin monitoring less heavily exploited populations. The Small Game Program plans to continue and potentially expand these efforts during the spring of 2013.

Based on these surveys it appears that monitored populations are generally abundant and widespread. Interior ruffed grouse populations are beginning to increase after recording the low in their population cycle in 2010-11. Sharp-tailed grouse populations that breed on the Delta Agricultural Project appear to remain at moderate densities but have been stable since 2009. Monitored willow ptarmigan populations statewide appear to be growing with the exception of the western Denali Highway. However, monitored road-system rock ptarmigan populations are generally at or near historic lows yet have remained stable.

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STATEWIDE HUNTER HARVESTED GROUSE AND PTARMIGAN WING COLLECTION PROGRAM, ALASKA, 2012 UPDATE

Alaska Department of Fish and Game

In August 2011, the statewide Small Game Program within the Alaska Department of Fish and Game (ADF&G) initiated a statewide grouse and ptarmigan wing collection program from hunter harvested birds. This was a voluntary program with no penalty for not participating. During the 2011 regulatory year (RY; July 1, 2011 to June 30, 2012) hunters provided wings from 29 ruffed, 131 spruce, and 56 sharp-tailed grouse in addition to 615 willow, 42 rock, and 39 white-tailed ptarmigan wings statewide (Merizon 2012). Samples were collected from 12 of the 26 game management units statewide including the Alaska Peninsula, Northwest and Southwest 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 sex ratios, juvenile production, and harvest distribution. We were also able to test an alternative means of estimating sex among willow ptarmigan using only a wing when the whole carcass was available.

This program will become a permanent portion of the ADF&G Small Game Program. The ADF&G provides individual wing envelopes and free return options to encourage participation. Through October, 2012 hunters have provided a total of over 500 wings including all seven tetraonid species statewide.

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Merizon, R.A. 2012. Status of grouse, ptarmigan, and hare in Alaska, 2012. Alaska Department of Fish and Game. Wildlife Management Report, ADF&G/DWC/WMR-2012-1. Anchorage.

HIERARCHICAL MODELS OF BIRD DISTRIBUTION AND ABUNDANCE ACROSS NATIONAL PARKS OF SOUTHWESTERN ALASKA

Courtney Amundson and Colleen Handel, U.S. Geological Survey, Alaska Science Center

During 2004–2006 and 2008, USGS, in collaboration with the Southwest Alaska Network of National Parks (SWAN), completed 1,021 avian point-transects in Lake Clark National Park, Katmai National Park and Preserve, and Aniakchak National Monument and Preserve. Surveys were focused on landbirds and shorebirds breeding in montane (>100 m elevation) habitats. Observers recorded over 7,000 birds of more than 100 species during surveys. Initial summary reports described species occurrence and general relationships with elevation and habitat, but detailed information on habitat relationships and distribution across the parks remained unknown. In 2012, we reanalyzed inventory data, modeled abundance and occurrence across the

landscape within each park, and explored detailed habitat relationships for numerous species observed during surveys.

We used multiple methods to map either probability of occurrence or abundance for over 50 species of birds. We estimated detection probability using distance sampling for 17 species with sufficient observations. We then modeled abundance relative to habitat and landscape characteristics and mapped resulting distributions across all three parks using hierarchical N-mixture models. We estimated probability of occurrence for rare species using maximum entropy models and Bayesian methods.

Results will help land managers assess the status of birds of conservation concern, identify areas of high species richness, and identify habitats associated with species and guilds within the parks. Additionally, methods used are widely applicable to other survey data within Alaska and throughout North America. A federal technical report on this analysis is forthcoming.

This project will be completed by the end of 2012.

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SITKA WINTER BIRD OBSERVATION PROJECT

Gwen Baluss, Juneau Audubon Society; Matt Goff, sitkanature.org;
Kitty LaBounty, University of Alaska Southeast; Scott Harris, Sitka Sound Science Center; and Kent Bovee, Sitka School District

We are investigating three wintering land bird species in Sitka, Alaska: Chestnut-backed Chickadee, thought to be a year-round resident; Dark-eyed (Oregon) Junco, considered resident but may be a regional or altitudinal migrant; and Song Sparrow, likely a mix of resident and migrants from farther northwest. We plan to study: 1) feeding site fidelity of local over-wintering individuals, and 2) spatial patterns of local individuals throughout the year. Additional objectives are to 1) increase interest and knowledge of grade-school students about wintering songbirds, 2) provide a community-wide citizen-science opportunity to study birds and discuss the results, and 3) provide a forum to discuss anthropogenic causes of bird mortality.

In November 2012, 96 birds were color-banded using standard mist-netting and banding protocols. We were assisted by high school student Naquoia Bautista, as part of a Science Mentorship Program. She will be compile results for an independent project. Other local students and citizen scientists observed and are being trained to properly report band combinations locally. Findings will be entered into a spacial database for statistical analysis. More banding is tentatively planned for late winter 2013.

This project is primarily an educational endeavor, but may yield results of greater ornithological interest. Similar studies are underway in Washington State, but the results may be different in the north.

Local website for info and reporting observations
http://sitkawild.org/2012/11/have-you-seen-this-bird/
http://wiki.seaknature.org/Form:SBBP_observation

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Chestnut-backed Chickadee sports new color bands.

EVALUATION OF AUTUMN MIST-NETTING DATA FOR MONITORING PASSERINE POPULATIONS IN INTERIOR ALASKA

Anna-Marie Benson and Walter N. Johnson, U.S. Fish and Wildlife Service; Ronald P. Barry, University of Alaska Fairbanks; and Susan L. Guers, Alaska Bird Observatory

We evaluated the data from two autumn mist-netting stations for monitoring passerine population trends and measuring the timing of migration. The data for these analyses were collected at autumn mist-netting stations in Fairbanks (ABO), Alaska, and near the Tetlin National Wildlife Refuge (Tetlin), Alaska, from 1993–2009. The timing of migrant passage through ABO and Tetlin were similar when all 17 years were combined. Juveniles preceded adults in 10 of 14 species at ABO and in 13 of 14 species at Tetlin NWR. Relative capture rates (log of weather-corrected capture rates) from the ABO and Tetlin NWR stations from 1996–2009 were correlated for 2 of 7 species: Ruby-crowned Kinglet (*Regulus calendula*) and Yellow Warbler (*Dendroica petechia*). Power calculations indicate that for 6 of 7 species, a 50% decline in relative capture rates could be detected in a 20-year period. These stations provide a unique contribution for monitoring passerine populations by providing a large sample of the timing of migration and productivity indices at two interior-Alaska locations.

Contact: Anna-Marie Benson, U.S. Fish and Wildlife Service, National Wildlife Refuge System, 101 12th Ave., Room 264, Fairbanks AK, 99701; Anna-Marie_Benson@fws.gov

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SELECTED EDUCATION PROJECTS AT THE ALASKA BIRD OBSERVATORY, 2012

Tricia Blake and collaborators

ABO's education program reached *at least* 10,742 people in 2012 through the following programs:

Education at Creamer's Field Migration Station (CFMS): 1992-2012

- Conducted 86 formal educational programs for 2,148 students and teachers from 20 different Interior Alaskan schools.
- Welcomed at least 935 independent visitors from throughout the U.S. and around the world to experience science first-hand and interact with ABO researchers.
- Trained 65 volunteers, including four youth, to assist with our research. These volunteers contributed at least 1,770 hours to the project.

Tree Swallow Nesting Ecology Project: 1998-2012

- Mentored 10 students (ages 10-14), 5 high school students, and one AmeriCorps volunteer conducting research on Tree Swallow nesting ecology on Creamer's Refuge. Together these students contributed over 560 volunteer hours to the project. 2012 was the 15th year of this project, which has traditionally been a youth mentoring endeavor.
- This year students monitored 39 nests (out of 102 boxes), recording lay, hatch, and fledge dates for each as in years past.
- We also were able to capture, age, and band 43 of the breeding adults (all females and five males).
- We deployed four SLAM traps to monitor diversity and abundance of aerial insects during the breeding season and collected and characterized all 38 nests (size, composition, and presence/absence of aquatic snail shells, a potential stress indicator).
- Three students conducted independent projects as part of ABO's new high school internship program. Students looked at: the diversity and abundance of insects during the nesting cycle of Tree Swallows, the impact of human activity (proximity to trails) on the breeding success of Tree Swallows over time, and the impact of the age of the breeding female on nest characteristics and overall nesting success. Another student designed a phenology loop trail for volunteers to collect data on the phenology of plants and invertebrates in the nesting area.

Additional Programs for Students & Teachers

- Taught hundreds of 5th grade students from throughout the Fairbanks North Star Borough School District during the 45th Annual *5th Grade Birdwatch*, a long-standing community education program that teaches students the importance of wildlife refuges and preserving migratory bird habitat.
- Conducted 14 programs for at least 254 students and teachers from the Fairbanks area and as far as Delta Junction, Huslia, & Hughes, AK. These programs included service-learning programs, bird walks, winter bird banding, and opportunities for middle school students to collect spring and fall phenology data through ABO's FOREST program.
- Collaborated with local education, environmental, health, and social service organizations to coordinate an evening with nationally acclaimed author and outdoor education advocate Richard Louv. The event included an open house featuring outdoor learning opportunities in the Fairbanks area and was attended by at least 350 people.

Training Scientists, Educators, & Community Volunteers

- Provided 5 internships through our research and education projects.
- Provided 5 high school student internships with ABO's summer research projects. These

students each contributed at least 120 volunteer hours and each conducted an independent project. Students presented their projects at ABO's Center for Education & Research.

- Coordinated the 25th *Fairbanks FeederCount*, a citizen-science program that collects data on winter bird population trends. Provided financial and logistical support for two graduate students.

Community Education

- Collaborated with other local conservation organizations to present the *Spring Migration Celebration* and the 15th annual *Tanana Valley Sandhill Crane Festival*. At least 1,000 people attended these events.
- Conducted 10 community workshops, family programs, and presentations for a diverse group of organizations (1,102).
- Taught a four part class on bird ecology and identification for the Osher Lifelong Learning Institute, an organization that provides learning opportunities for older adults in the Fairbanks area.
- Hosted three bird-themed First Friday Art Events attended by at least 494 people.

Outreach Efforts to Communities throughout Alaska & Beyond

- Provided interviews, information, and resources for media stories related to birds featured on: KUAC public radio (reaching 24 interior Alaskan communities) and the *Fairbanks Daily News-Miner* (reaching an average of 18,500 people in 25 communities).
- Hosted at least 3,883 visitors to the ABO Center for Education & Research in addition to those visiting for scheduled programs and events. Guests came from throughout Alaska, the continental U.S., and many foreign countries.
- Maintained a web site with information about ABO, upcoming events, updates on our research and education projects, and information about birding and bird conservation in Alaska.
- Distributed ABO's annual report and two issues of ABO's newsletter *The Arctic Warbler* to at least 450 households throughout Alaska, other U.S. states, and Canada.
- Answered numerous requests for information on birds and bird watching via telephone and email.

A final note: Thank you to everyone who has supported ABO and our education program over the years. Over the last 21 years ABO has educated and inspired tens of thousands of Alaskan students of all ages, provided a valuable STEM education resource for teachers, trained interns and aspiring ornithologists of all ages, and provided information and resources about Alaska's birds and their habitats to our community and to visitors from throughout the state and around the globe. We could not have done it without your support.

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GRAY-HEADED CHICKADEE SURVEY

Travis Booms, Alaska Department of Fish and Game, Wildlife Diversity Program; and collaborators with USFWS and NPS

The Gray-headed Chickadee (*Poecile cinctus*) is purported to be among the rarest regularly breeding birds in North America with the majority of its apparent North American distribution occurring in Alaska. Information on the species comes primarily from historical field observations and approximately 30 museum specimens, nearly all of which date prior to 1950. Only two banding records exist in North America and current information about the species distribution, biology, and status in North America is essentially non-existent. Given this dearth of information, we initiated research attempting to document the current distribution and basic biology of the species in Alaska. We report here preliminary results of three field efforts from 2010–2012 to re-survey areas at which Gray-headed Chickadees were known to occur historically. During 16 days of active surveys at three remote study areas, we detected only one Gray-headed Chickadee.

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GYRFALCON SURVIVAL, DISPERSAL, AND SITE FIDELITY ON THE YUKON DELTA NATIONAL WILDLIFE REFUGE

Travis Booms, Alaska Department of Fish and Game, Wildlife Diversity Program; and collaborators with the Yukon Delta National Wildlife Refuge and University of Wisconsin Stevens Point

T. Booms conducted cliff-nesting raptors surveys of the Ingakslugwat Hills (Volcanoes) Study Area by foot from 20 June – 4 July. Molted feathers and blood samples were collected from Gyrfalcon nest cliffs to continue a long-term mark-recapture study using non-invasive genetic sampling.

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NORTON SOUND PEREGRINE FALCON SURVEY

Travis Booms, Peter Bente, and Kim Titus, Alaska Department of Fish and Game

The Norton Sound coastline from Cape Prince of Wales to St. Michael was surveyed by P. Bente and K. Titus (primary observers) and T. Booms (secondary observer) in mid-July. Information

on all cliff-nesting raptors was collected, though the survey focused on peregrines using historical data spanning the previous 30 years.

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SOUTHERN SEWARD PENINSULA CLIFF-NESTING RAPTOR SURVEY

Travis Booms and Peter Bente, Alaska Department of Fish and Game

T. Booms assisted Peter Bente in his annual survey of cliff-nesting raptor habitat on the Southern Seward Peninsula. P. Bente conducted an occupancy survey in May and a productivity survey in June. T. Booms subsequently visited Golden Eagle and Gyrfalcon sites to collect genetic samples.

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UPDATE ON THE BOREAL AVIAN MODELLING PROJECT

Boreal Avian Modelling Project

The Boreal Avian Modelling Project (BAM) was founded in 2005 to compile and analyze avian point-count survey data from across boreal Canada and to use the knowledge gained to help conserve bird populations throughout this vast region (Cumming et al. 2010). In 2010, the program expanded to include boreal forest regions of Alaska, the Upper Midwest, and New England. BAM now includes data from approximately 190,000 point-count locations across North America's boreal forest region as defined by Brandt (2009). Analyzing these data is complicated because point-count survey protocols were not standardized across surveys throughout the region (Matsuoka et al. in review). Thus, BAM has modified two existing models of avian detection rates—distance sampling and removal models—to estimate densities and population sizes from these heterogeneous data (Matsuoka et al. 2012, Solymos et al. in review a, b).

In 2012, BAM updated its website (www.borealbirds.ca) which now includes a wealth of new information on avian breeding densities by habitat type, maps of avian distribution, and recommendations on conducting point-count surveys. Much of the information is focused on boreal Canada, but information specific to Alaska will become available in the coming years. Other upcoming work includes developing spatially explicit models of avian densities and population sizes across the boreal, projecting avian responses to future changes climate and land use, and estimating population impacts of natural and anthropogenic disturbances since 1990. BAM includes the following people:

Steering Committee: Erin Bayne, Steve Cumming, Fiona Schmiegelow, and Samantha Song
Staff: Trish Fontaine (Spatial Database Manager), Catherine Rostron (Project Coordinator), Diana Stralberg (PhD Candidate), and Péter Sólymos (Statistical Ecologist)
Project Affiliates: Lisa Mahon and Steve Matsuoka.
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ALASKA LANDBIRD MONITORING SURVEY (ALMS), 2012 UPDATE

Boreal Partners in Flight

During 2012, biologists conducted surveys at 490 points in 30 sampling blocks statewide during the tenth year of the Alaska Landbird Monitoring Survey (ALMS) program. This represents a slight decline in effort from the mean annual effort of 524 points across 33 blocks since the inception of the program (Fig. 1). The current level of effort is 60% of the target monitoring level of 50 blocks per year, or a total of 100 blocks repeated biennially. The ALMS program uses standardized distance-sampling techniques to survey breeding bird populations at 12–25 points within 10-km x 10-km blocks selected using 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). Biologists are also encouraged to use the same sampling grids and standardized survey techniques to gather systematic inventory data during single visits.

Surveys conducted through ALMS, its predecessor the Off-road Breeding Bird Survey (ORBBS), and the roadside BBS now provide an impressive compilation of quantitative data on the abundance and distribution of birds throughout Alaska (Fig. 2). As of 2012, observers have conducted 5,241 ALMS surveys in 331 different blocks at 1795 different points, with varying numbers of replications during the 10-year period (Fig. 3). Combined, ALMS and ORBBS surveys have documented almost 200,000 detections of birds. These data are currently being analyzed not only to determine current population trends, but also to document current patterns of distribution relative to habitat and to project potential changes in distribution that may occur with predicted changes in climate.

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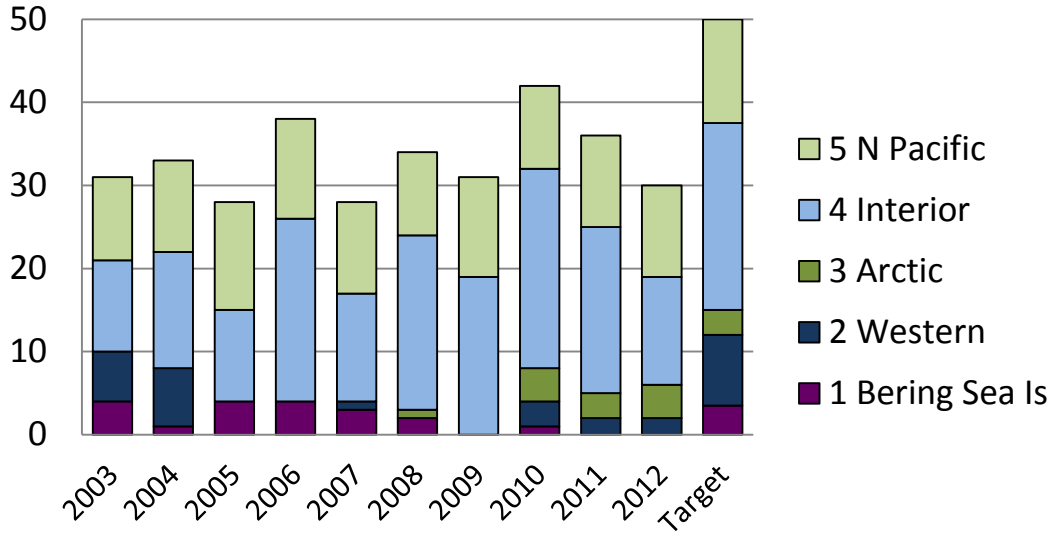

Figure 1. Number of ALMS blocks surveyed each year within the five Bird Conservation Regions in Alaska between 2003 and 2012.

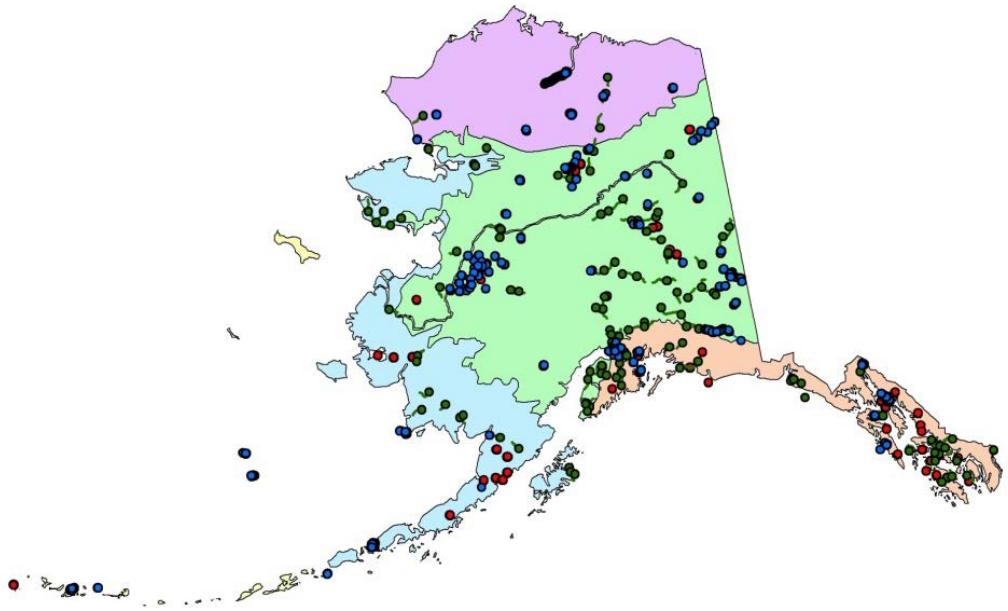

Figure 2. Locations of landbird surveys conducted as part of the roadside Breeding Bird Survey (BBS), Alaska Off-road Breeding Bird Survey (ORBBS), and Alaska Landbird Monitoring Survey (ALMS) in Alaska through 2011.

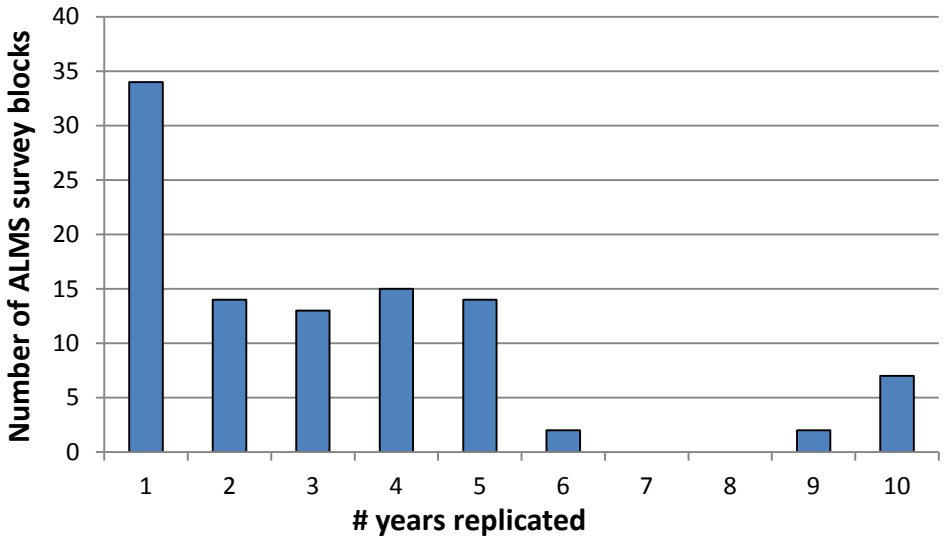

Figure 3. Number of ALMS blocks that have been surveyed 1–10 years between 2003 and 2012. The standard protocol is to replicate each block biennially (e.g., 5 times over a 10-year period), but some surveys have been replicated annually. Most blocks replicated during a single year represent those surveyed for inventory rather than monitoring purposes.

NORTH AMERICAN BREEDING BIRD SURVEY, ALASKA, 2012 UPDATE

Boreal Partners in Flight

The North America Breeding Bird Survey (BBS) is the longest running omnibus survey of breeding birds in Alaska. This program became operational in Alaska in 1982 and a decade later underwent an expansion in participation by the members of Boreal Partners in Flight (Fig. 1). The BBS website (Sauer et al. 2011) currently has information available on numbers of routes run up to 2011 (Fig. 1) and population trends in Alaska to 2007 (Table 1, 2). In 2011, BBS surveys were conducted on 66 routes, a decline in effort from the 72 routes run in 2010 and below the average state-wide effort of 73 routes run each year since 1993. However, the 2011 total for routes may still rise as the remaining data collected in 2011 are reported.
Through the dedication of many observers, the program has now run 84 routes for ≥10 years, 62 routes for ≥15 years, and 24 routes for ≥20 years. Eight routes have been run for ≥25 years: Kachemak and Ketchikan (25 years), Juneau and Seven Lakes (26 years), Anchor River and Galena (27 years), Little Salcha (28 years), and Swan Lake Road (30 consecutive years!). This consistency and long-term effort is providing trends in abundance for more than 100 species on the BBS website (http://www.pwrc.usgs.gov/bbs/results/). We summarize in Table 1 the Alaska trend estimates from 1980–2007 for the 44 species with reasonable credibility due to adequate numbers of detections (≥0.1 birds per route), numbers of routes with occurrence (≥14 routes), and precision to detect a 5% per year change in abundance (Sauer et al. 2011).

Notably, four species showed significant populations declines and nine species significant population increases ($P \leq 0.15$, Table 2). Declining birds include three Neotropical migrants and one temperate migrant: Violet-green Swallow (-3.3% per year), Blackpoll Warbler (-3.0%), Lesser Yellowlegs (-2.0%), and Savannah Sparrow (-0.7%). The trends of the latter three species mirrored the survey-wide trends. The cause of these declines should be the focus of research or conservation, which might take advantage of broader initiatives for declining aerial insectivores (Nebel et al. 2010, Shutler et al. 2012), boreal wetland birds (Austin et al. 2000, Greenberg et al. 2011), or South American migrants (U.S. Fish and Wildlife Service 2007). The list of birds with increasing trends only includes one Neotropical migrant (Northern Waterthrush) with the remaining species either residents or temperate migrants (Table 2).

In 2013, we hope to continue widespread participation in the BBS in Alaska, run a minimum of 70 routes, and collect GPS locations for all count stops. The latter should be submitted to the national office along with the count data. The former will include filling route vacancies (http://www.pwrc.usgs.gov/bbs/results/routemaps/index.cfm).

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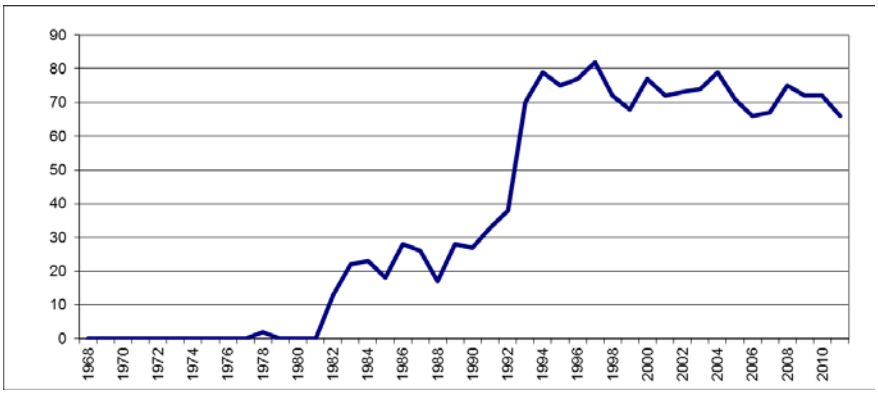

Figure 1. Numbers of North American Breeding Bird Survey routes run in Alaska (y-axis) by year from 1968–2011 (x-axis). Boreal Partners in Flight was founded in 1992.

Table 1. Trends in avian abundance (% per year) for 44 species estimated from the North American Breeding Bird Survey (BBS). Analyses differed with route regression used in Alaska and hierarchical Bayesian models used for the survey-wide data (Sauer and Link 2011). Survey-wide trends do not use data from Alaska and northern portions of Canadian provinces because the data are too sparse or do not include the long-term period of analysis.

	Alaska BBS 1980-2007				Survey-wide BBS 1966-2010				2000-2010	
Species	Trend	*P*	N	R.A.	Trend	95% CI	N	R.A.	Trend	95% CI
Common Loon	0.7	0.67	28	0.3	0.9	(-0.4, 1.9)	807	1.2	1.3	(-0.3, 2.9)
American Wigeon	1.4	0.36	45	5.2	-3.5	(-5.0, -2.4)	557	1.8	-2.1	(-4.4, 0.2)
Red-breasted Merganser	0.1	0.96	19	4.0	-7.6	(-31.9, -1.0)	76	0	0.5	(-14.6, 16.2)
Bald Eagle	5.1	0.03	51	1.4	5.5	(4.3, 6.7)	713	0.1	8.8	(5.6, 12.3)
Sandhill Crane	1.4	0.58	37	1.4	5.1	(3.2, 6.2)	646	1.2	6.9	(4.7, 9.8)
Greater Yellowlegs	1.1	0.70	38	1.4	4.0	(-0.3, 7.6)	97	0.1	11.7	(3.3, 26.8)
Lesser Yellowlegs	-2.0	0.11	45	2.3	-5.3	(-7.9, -3.1)	132	0.9	-3.3	(-7.4, 0.8)
Solitary Sandpiper	-3.1	0.18	27	0.6	0.2	(-5.7, 3.1)	100	0.1	2.2	(-2.8, 9.6)
Common Snipe	1.7	0.07	88	9.8	0.1	(-0.4, 0.6)	1685	4.4	1.8	(0.6, 3.0)
Belted Kingfisher	-2.3	0.32	38	0.5	-1.4	(-1.9, -1.0)	2946	0.3	-1.4	(-2.2, -0.5)

	Alaska BBS 1980-2007				Survey-wide BBS 1966-2010				2000-2010	
Species	Trend	*P*	N	R.A.	Trend	95% CI	N	R.A.	Trend	95% CI
Red-breasted Sapsucker	6.6	0.01	17	10.3	0.4	(-0.9, 1.7)	268	1.4	0.8	(-2.3, 3.8)
Olive-sided Flycatcher	-1.0	0.46	56	1.5	-3.5	(-4.7, -2.8)	1210	1.5	-2.2	(-3.4, -0.6)
Pacific-slope Flycatcher	1.1	0.60	16	16.5	-0.4	(-1.3, 0.1)	642	4.7	-0.1	(-1.6, 1.4)
Alder Flycatcher	0.0	0.96	79	17.9	-1.2	(-2.0, -0.4)	1287	14.4	-1.2	(-2.6, 0.3)
Hammond's Flycatcher	-0.9	0.77	23	2.0	1.1	(0.3, 1.8)	466	5.1	1.5	(-0.2, 3.2)
Gray Jay	1.7	0.01	57	5.1	0.0	(-1.4, 1.1)	704	1.8	1.8	(-0.9, 4.7)
Steller's Jay	0.2	0.88	24	3.9	0.0	(-0.5, 0.3)	613	4.2	-0.5	(-1.5, 0.3)
Black-billed Magpie	1.4	0.27	32	0.9	-0.5	(-0.9, -0.2)	1036	10.8	-0.2	(-1.0, 0.5)
Northwestern Crow	4.8	0.01	22	17.0	0.6	(-1.0, 2.2)	49	70.8	1	(-1.6, 3.7)
Common Raven	2.9	0.13	100	4.4	2.5	(1.8, 3.0)	2303	6.9	3.8	(2.9, 4.7)
Violet-green Swallow	-3.3	0.10	43	1.1	-0.2	(-0.9, 0.4)	922	10.8	0.5	(-0.5, 1.6)
Black-capped Chickadee	-0.1	0.95	56	1.0	1.0	(0.6, 1.4)	2231	4.1	0.7	(-0.1, 1.7)
Chestnut-backed Chickadee	0.1	0.96	20	8.2	-1.2	(-2.1, -0.2)	230	7.6	-0.7	(-3.0, 1.7)
Boreal Chickadee	0.3	0.88	52	0.8	0.7	(-0.7, 2.0)	354	0.3	3.5	(-4.2, 7.8)
Winter Wren	-0.7	0.31	23	17.2	1.1	(0.3, 1.9)	1133	6.4	0.5	(-1.3, 2.3)
Golden-crowned Kinglet	-1.2	0.52	33	1.8	-0.6	(-2.5, 0.5)	1032	3.2	0.9	(-1.7, 4.1)
Ruby-crowned Kinglet	0.1	0.90	77	6.1	0.1	(-1.1, 1.1)	1141	11.9	2	(-0.2, 4.3)
Swainson's Thrush	0.5	0.37	82	25.4	-0.8	(-1.4, -0.2)	1224	37.8	-0.1	(-1.0, 0.9)
Hermit Thrush	0.2	0.75	69	6.1	0.9	(-0.1, 1.7)	1535	9.2	1.7	(0.2, 3.4)
American Robin	1.3	0.06	100	19.5	0.3	(0.2, 0.4)	3971	32.4	0.3	(0.1, 0.6)
Varied Thrush	0.8	0.33	89	11.8	-2.2	(-3.1, -1.4)	280	15.3	-0.7	(-2.5, 1.4)
Orange-crowned Warbler	-0.4	0.48	93	17.1	-0.9	(-1.6, -0.1)	718	5.1	0.8	(-0.8, 2.6)
Yellow Warbler	-0.8	0.39	95	10.5	-0.5	(6.1, -0.2)	3236	6.6	-0.3	(-0.8, 0.1)
Yellow-rumped Warbler	0.1	0.84	82	14.0	-0.1	(-0.7, 0.4)	1625	10.7	0.3	(-0.7, 1.4)
Blackpoll Warbler	-3.0	0.01	56	5.9	-5.8	(-24.4, -0.6)	225	2.3	-2.3	(-13.4, 16.3)
Northern Waterthrush	2.0	0.01	72	12.4	0.6	(-0.2, 1.3)	980	1.9	1.8	(-1.1, 4.1)
Wilson's Warbler	0.9	0.30	90	15.3	-2.1	(-3.2, -1.4)	909	2.2	-1.5	(-2.9, -0.2)
Savannah Sparrow	-0.7	0.10	77	21.2	-1.1	(-1.4, -0.8)	2213	20.1	-1.2	(-1.8, -0.5)
Fox Sparrow	2.9	0.01	95	15.6	0.5	(-1.7, 2.9)	422	3.1	2.6	(-3.9, 10.5)
Song Sparrow	0.2	0.94	31	1.0	-0.5	(-0.7, -0.4)	3194	15	-0.4	(-0.7, -0.1)
White-crowned Sparrow	-0.5	0.49	79	28.3	-0.9	(-1.6, -0.2)	501	6.9	0.1	(-1.4, 2.2)
Dark-eyed Junco	0.0	0.94	84	23.2	-1.2	(-1.8, -0.7)	1541	13	-1.2	(-2.1, -0.2)
Rusty Blackbird	-2.4	0.59	28	0.8	-6.2	(-11.1, -1.5)	222	0.2	-5.8	(-16.1, 5.0)
Pine Siskin	-2.1	0.19	43	2.6	-3.1	(-4.6, -1.7)	1369	20.6	-3.4	(-6.0, -0.5)

Table 2. Species with significant ($P \leq 0.15$) trends in abundance in Alaska from 1980–2007 as estimated from the North American Breeding Survey. Survey-wide trends are also presented for comparison.

	Alaska BBS 1980-2007				Survey-wide BBS 1966-2010				2000-2010	
Species	Trend	*P*	N	R.A.	Trend	95% CI	N	R.A.	Trend	95% CI
Bald Eagle	5.1	0.03	51	1.4	5.5	(4.3, 6.7)	713	0.1	8.8	(5.6, 12.3)
Lesser Yellowlegs	-2.0	0.11	45	2.3	-5.3	(-7.9, -3.1)	132	0.9	-3.3	(-7.4, 0.8)
Common Snipe	1.7	0.07	88	9.8	0.1	(-0.4, 0.6)	1685	4.4	1.8	(0.6, 3.0)
Red-breasted Sapsucker	6.6	0.01	17	10.3	0.4	(-0.9, 1.7)	268	1.4	0.8	(-2.3, 3.8)
Gray Jay	1.7	0.01	57	5.1	0.0	(-1.4, 1.1)	704	1.8	1.8	(-0.9, 4.7)
Northwestern Crow	4.8	0.01	22	17.0	0.6	(-1.0, 2.2)	49	70.8	1	(-1.6, 3.7)
Common Raven	2.9	0.13	100	4.4	2.5	(1.8, 3.0)	2303	6.9	3.8	(2.9, 4.7)
Violet-green Swallow	-3.3	0.10	43	1.1	-0.2	(-0.9, 0.4)	922	10.8	0.5	(-0.5, 1.6)
American Robin	1.3	0.06	100	19.5	0.3	(0.2, 0.4)	3971	32.4	0.3	(0.1, 0.6)
Blackpoll Warbler	-3.0	0.01	56	5.9	-5.8	(-24.4, -0.6)	225	2.3	-2.3	(-13.4, 16.3)
Northern Waterthrush	2.0	0.01	72	12.4	0.6	(-0.2, 1.3)	980	1.9	1.8	(-1.1, 4.1)
Savannah Sparrow	-0.7	0.10	77	21.2	-1.1	(-1.4, -0.8)	2213	20.1	-1.2	(-1.8, -0.5)
Fox Sparrow	2.9	0.01	95	15.6	0.5	(-1.7, 2.9)	422	3.1	2.6	(-3.9, 10.5)

N is the number of routes with species detections, R.A. is the average abundance per route, and 95% CI is the credible interval.

DEVELOPMENT OF AN AUTUMN SAMPLING TECHNIQUE FOR SPRUCE GROUSE IN NORTHERN INTERIOR ALASKA FOREST

Aleya R. Brinkman, Fort Wainwright-Tanana Flats and Yukon Training Areas, Colorado State University

The Yukon Training Area (YTA), east of Salcha, Alaska, is characterized by upland broad-leaved deciduous forest and mixed coniferous forest, where spruce grouse (*Falcipennis canadensis*) are typically found. Several important regions for spruce grouse harvest exist in YTA and we seek to better understand both levels and areas of hunting. During 2012, we began a pilot project to evaluate the feasibility of developing a sampling technique for monitoring spruce grouse at population height, when encounters may be maximized. We identified areas where spruce grouse have previously been observed along major access routes and established off-road plots around these points. Plots were surveyed by foot using a dog. We used a repeat survey design and compared detections between off-road plots and driving surveys. A total of 8 off-road plots and 8 driving transects were surveyed with 8 individual detections. Detections were higher for driving transects than off-road plots. We intend to intensify and repeat this survey for 2013.

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EFFECTS OF MULTIPLE DETERRENTS ON CLIFF SWALLOW NESTING AND COLONIZATION AT FORT WAINWRIGHT, ALASKA

Aleya R. Brinkman, Fort Wainwright-Tanana Flats and Yukon Training Areas, Colorado State University

On Fort Wainwright, cliff swallows (*Petrochelidon pyrrhonota)* typically arrive around May 11 each spring and begin nesting on many barracks buildings, storage facilities, and aircraft hangars. Ample 'nest habitat' and the close proximity of the Chena River make Fort Wainwright an ideal area for cliff swallows. Collectively, this large nesting effort poses many opportunities for human-wildlife interaction and potential violation of the Migratory Bird Treaty Act. Consequently, in 2009 we began monitoring nesting activity at 20 military buildings and implementing nest deterrents where the greatest concentrations and most violations have occurred. Several treatments have been tested including the application of forked wire, chicken wire, vinyl strips, and metal flashing onto buildings. Data analysis for this project will take place during 2013. Ostensibly, the building barriers, particularly vinyl strips and metal flashing, appear to have reduced available nesting habitat because the degree to which new buildings and areas are colonized is low. Despite reductions in nesting, violations of the Migratory Bird Treaty Act appear consistent, perhaps due to frequent personnel turnover and associated knowledge regarding how to interact with cliff swallows.

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PTARMIGAN IN A CHANGING ARCTIC: ESTABLISHING SPATIO-TEMPORAL PATTERNS OF PTARMIGAN DISTRIBUTION IN NORTHERN ALASKA

Katie S. Christie and Mark S. Lindberg, University of Alaska Fairbanks; and Joel Schmutz, USGS, Alaska Science Center

Rock and Willow ptarmigan are ubiquitous in northern Alaska, yet little is known about their distribution, habitat associations, or movement patterns. These species are likely to play an important ecological role in the Arctic, and strongly influence the growth and architecture of arctic shrubs by browsing them. In this study we quantified ptarmigan distributional patterns with respect to shrub cover, snow-free ground, and latitude, and determined temporal patterns of abundance within and across years. Aerial surveys in northeastern Alaska were conducted from early to late spring in 2011 and 2012. In areas with at least 40% cover of shrubs, occupancy of ptarmigan or their tracks was >80%, indicating that dense patches of tall shrubs associated with riparian areas had a high probability of being visited by ptarmigan. Similar to occupancy, abundance was positively related to percent shrub cover and snow-free ground. Abundance increased throughout the spring in both years, supporting the idea that ptarmigan migrate north of the Brooks Range to arctic breeding grounds. Abundance decreased with latitude; however, this relationship was more pronounced early than late in the season, again suggesting a pattern of

seasonal northward movement. Ptarmigan are widespread and abundant in the Arctic, where they congregate around tall shrub patches. These birds are likely to influence, and in turn be influenced by, the rapid expansion of woody shrubs in the Arctic.

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BEST MANAGEMENT PRACTICES FOR RIPARIAN FOREST IN SOUTHERN LAKES, YUKON

Hilary Cooke, Wildlife Conservation Society Canada

Most North American jurisdictions use unharvested buffer zones to protect riparian and wetland systems (Lee et al. 2004). Buffer width prescriptions vary with type and size of waterbody or wetland, shoreline slope, and presence of fish. Riparian buffers may not be the best management practice for protecting wildlife habitat. For example, narrow linear buffers may be of insufficient area to conserve old forest species (Hannon et al. 2002). In Yukon's mountainous Southern Lakes ecoregion, forested land occurs at lower elevations and is coincident with agriculture, forestry, and rural residential development. Primary harvest species, white spruce and lodgepole pine, occur in valley bottoms, with the most productive stands along rivers on alluvial floodplains (Smith et al. 2004). The oldest stands of white spruce occur in small bands alongside streams and rivers. The overall goals of this project are to increase our knowledge of wildlife use of white spruce forest along streams & rivers in the Southern Lakes ecoregion and to develop Best Management Practices for riparian forest buffers. In 2013, I examined how breeding bird use of riparian spruce forest varied with stream width and distance from shoreline, and how forest characteristics influence use by breeding birds.

In 2012, twenty sites were selected based on elevation, forest type, and stream size. All sites occurred within the Boreal Lowlands bioclimate zone, which includes the continuously forested areas of wide valley bottoms at low to middle elevation (~300-1150m). Sites were selected along streams and rivers that varied in width between ~1 and 40 m, and within stands dominated by white spruce forest within at least 50m of the shoreline. The 20 study sites included 7 small streams (1-5m), 9 medium streams (5-20m), and 4 large rivers (>20m) (classes applied in current buffer standard). Ten point count stations and two line transects were established at each site. All point count stations were 200m apart; five were 50m from the shoreline and five were 250m from shoreline. The line transects extended 300m approximately perpendicular to shoreline. Two 10-minute point count surveys were conducted at each station between June 3rd and 20th. Line transect surveys were used to evaluate patterns in space use, i.e. distribution of each species with distance from the riparian forest edge. The survey involved walking continuously along the transect route and mapping all observations of birds by sight and sound within 100m on of the transect. Site and forest data were collected at each point count station. Site data included: general forest type; average tree canopy height; slope; aspect of slope; stream width; and, evidence of disturbance (fire; flood; harvest; beaver; human). Detailed information was collected at each point count station: percent ground cover by type (within 5-m radius); number of seedling & Saplings (within 5-m radius); percent shrub cover (within 11.3-m radius); number of

trees by species, decay class, ad DBH class (within 11.3-m radius). We also cored the 4 largest, live trees (>7 cm DBH) of the dominant tree species at 4 point count stations per site.

A total of 66 bird species were detected during point counts across all sites. Of these, 57 were landbirds. Within a 50-m radius of point counts, 41 species were detected including 39 landbirds. Nine species were excluded from further analysis because they are likely not well detected by point counts (e.g. Common Nighthawk; Ruffed and Spruce Grouse; Crossbills). The most common species, based on detections at ≥75% of sites (n=20), were Yellow-Rumped Warbler (100%), Swainson's Thrush (100%), Dark-eyed Junco (100%), and Boreal Chickadee (95%). Species observed on 25-75% of sites included Ruby-crowned Kinglet (70%), American Robin (70%), Blackpoll Warbler (65%), Chipping Sparrow (50%), Varied Thrush (40%), Northern Waterthrush (40%), Hammond's Flycatcher (35%), American Three-toed Woodpecker (35%), Townsend's Warbler (30%), Wilson's Warbler (30%), Lincoln's Sparrow (30%), and Red-breasted Nuthatch (25%). [*Note, point count data presented in this interim report has not been adjusted for detectability, although has been limited to detections within 50-m of stations to minimize detectability issues; future analysis will incorporate detectability estimates, including from stream/river noise, into abundance and occupancy values*]. A focal group of landbirds was selected based on known association with coniferous forest in Yukon (n=16; Sinclair et al. 2003). These include 8 associated with mature and old white spruce forest (American Three-toed and Black-backed Woodpeckers; Hammond's Flycatcher; Boreal Chickadee; Red-breasted Nuthatch; Golden-crowned and Ruby Kinglets; Townsend's Warbler) and 5 associated with coniferous riparian areas (Olive-sided Flycatcher; Western Wood Pewee; Swainson's Thrush; Varied Thrush; Bohemian Waxwing; Blackpoll Warbler; Northern Waterthrush). The remaining 3 species are associated generally with conifer forests (Swainson's and Varied Thrush; Pine Grosbeak). For all landbird species and the 16 conifer forest species, preliminary analysis suggests that distance from shoreline has a greater influence on the species richness than stream class. Preliminary results also indicates neither distance from shoreline nor stream width had a significant effect on number of mature and old white spruce forest species. There were more species associated with riparian edges of coniferous forest on points located 50 m from shoreline compared with the points at 250 m. Five individual species were significantly more abundant at 50m than 250m from shoreline (American Robin; Blackpoll Warbler; Northern Waterthrush; Hammond's Flycatcher; Townsend's Warbler). For these species, the median distance from shoreline on line transects was 35-84m. Ruby-crowned Kinglet had a trend to higher abundance in riparian forest (i.e. at 50m). Black-capped Chickadee was significantly more abundant and Swainson's Thrush trended to higher abundance at 250m from shoreline. Four birds associated with a variety of forest types were found to not differ in abundance between 50m and 250m (Chipping Sparrow; Dark-eyed Junco; Yellow-rumped Warbler; Varied Thrush). Future analysis will incorporate estimates of detectability and examine influence of forest structure and composition, and stand age on occurrence and abundance of species.

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MONITORING AVIAN PRODUCTIVITY AND SURVIVORSHIP (MAPS) ON THE BUSKIN RIVER, KODIAK, ALASKA

Robin Corcoran, USFWS Kenai National Wildlife Refuge, and Cindy Trussell, Department of Biology, Kodiak College-UAA

The summer of 2012 marked the third season of the Kodiak Refuges' Monitoring Avian Productivity & Survivorship Program (MAPS) at Refuge headquarters on the Buskin River State Recreation Area. This season, Refuge employees and volunteers banded 164 birds representing 13 species, and recaptured 71 birds including 24 birds banded in previous years. In general resident (non-migratory) and short distant migrants including hermit thrush and fox sparrows had higher capture and return rates and higher productivity compared to long-distance migrants including Wilson's and yellow warblers. Last winter's record cold temperatures and deep snow apparently took a toll on two resident species, pacific wrens and golden-crowned kinglets. Both species have been common in previous seasons but were absent from the site this year. Cooperators from the community included Cindy Trussell, biology professor at Kodiak College, and Rich MacIntosh, a retired biologist with NOAA Fisheries and local bird expert. Despite the early morning hours working before sunrise to set up nets, this summer we had 20 volunteers from the Kodiak community participate, including several enthusiastic youngsters.

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Table 1. Summary of birds banded at the Buskin River, Kodiak Island Monitoring Avian Productivity and Survivorship (MAPS) program, 2010–2012.

	Number Banded by Year			Total	Between-year Recaptures	Hatch Year to Adult Ratio
Species	2010	2011	2012	2010-12	2010-12	2010-12
Hermit Thrush	52	41	47	140	9	1.9
Wilson's Warbler	76	26	29	131	6	0.2
Fox Sparrow	46	44	33	123	9	1.4
Yellow Warbler	29	15	26	70	6	0.2
Pacific Wren	16	24	0	40	1	0.6
Golden-crowned Kinglet	3	27	0	30		1.8
Varied Thrush	3	12	9	24	2	0.8
Black-capped Chickadee	13	5	5	23	1	1.0
Pine Siskin	1	12	3	16		0.2
Orange-crowned Warbler	7	3	2	12		0.2
Pine Grosbeak	1	5	4	10	2	0.0
Golden-crowned Sparrow	6	0	1	7		
Red-breasted Nuthatch	2	2	2	6	1	
Myrtle Warbler	1	0	2	3		
Song Sparrow	2	0	0	2		
Common Redpoll	0	1	0	1		
Downy Woodpecker	1	0	0	1		
Brown Creeper	0	0	1	1		

Pine grosbeak ready to be released after banding during the Monitoring Avian Productivity & Survivorship Program in 2012 on Kodiak Island. (Photo: Robin Corcoran, FW

BREEDING ECOLOGY OF SMITH'S LONGSPURS IN NORTHERN ALASKA

Heather Craig, Department of Biology and Wildlife, University of Alaska Fairbanks and Abby Powell, U.S. Geological Survey, Alaska Cooperative Fish and Wildlife Research Unit, University of Alaska Fairbanks

In 2011, we began work to investigate annual survival and local breeding parameters of Smith's Longspurs in northern Alaska. This research built on a banded population of Smith's Longspurs in Atigun Gorge established during a past study (2007-2011) investigating distribution and landscape level habitat requirements of Smith's Longspurs in the Brooks Range (Wild et al., unpublished data). The current research is conducted on two breeding populations at Atigun Gorge and Slope Mountain, both located north of the Brooks Range along the Dalton Highway.

Since banding commenced in 2007 at Atigun Gorge and in 2011 at Slope Mountain, we have individually color-banded 262 adults and 460 hatch-year birds. We investigated annual survival of adult and hatch-year birds captured in Atigun Gorge using program MARK. The top model suggested no difference between apparent survival of breeding males and females, with an overall survival estimate of 0.60 (95% CI: 0.51 - 0.69). Maximum longevity observed was a female who was at least 6 years old (to our knowledge this is the oldest recorded Smith's Longspur). We resighted 19 hatch-year birds during subsequent years in Atigun Gorge; estimated survival was slightly greater than half that of adults, at 0.35 (95% CI: 0.19 - 0.56).

A total of 197 nests have been found since 2007, the bulk of these were found in 2011 and 2012 (n=53, n=86 respectively). We report preliminary nesting success estimates of 75.6% in Atigun Gorge and Slope Mountain (2011 and 2012). Predation was the most common source of nest failure. Mean observed initiation date was June 8th and mean fledge date was June 29th.

In 2013, we hope to continue capture/resight efforts and nest searching and monitoring throughout both study sites. Additionally, we plan on deploying 20 geolocators to investigate migration routes and wintering locations of Alaska breeding Smith's Longspurs.

This project is scheduled to continue for two more years (2013-2014).

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AERIAL SURVEY FOR RAPTOR STICK NESTS ON KANUTI NATIONAL WILDLIFE REFUGE, FALL 2012

Tim Craig and Les Dillard, U.S. Fish and Wildlife Service, Kanuti National Wildlife Refuge

A number of raptors that build stick nests in trees use Kanuti National Wildlife Refuge each year. These birds include Bald Eagles, Northern Goshawks, Sharp-shinned Hawks, Harlan's Red-tailed Hawks, Osprey, and Common Raven, often considered an "ecological raptor."

Intensive surveys for stick-nesting raptors have not occurred on the Refuge in recent years, although several nests have been found by Refuge employees, incidental to other work. Despite low numbers of documented nests by Bald Eagles (2) and Osprey (1) on the Refuge, adult birds are seen along its rivers each year in locations where there are no known nests. The number of these sightings suggests there are more nests of both species than are currently known.

We initiated a raptor stick nest survey in fall 2012 for several reasons. First, the number of summertime Bald Eagle sightings made along watercourses seems out of proportion to the known number of nests on the Refuge. Second, many upland, closed deciduous timber stands on the Refuge are old enough that they may have become suitable goshawk nesting areas in recent years. Finally, as an intensive aerial survey has not been attempted in several years, we wanted to investigate the accuracy of anecdotal evidence pointing to low densities of stick-nesting raptors.

Aerial surveys were conducted over 3 days (1, 3, and 5 October). We searched for stick nests along the major rivers on Kanuti NWR (i.e., Kanuti, Kilolitna, main stem Koyukuk, South Fork Koyukuk, and Jim rivers), Henshaw Creek, and 10 randomly selected polygons encircling closed "old-growth" deciduous timber stands located in the southern part of the Refuge.

During the survey we found 17 locations where stick nests occurred. Judging by their morphology, 5 of these nests were probably made by Bald Eagles, 4 by Northern Goshawks, and 2 by Ospreys. Harlan's Hawks probably built most of the remaining nests, although it should be noted that we did not attempt to discriminate between Common Raven and Harlan's Hawk nests. Even though winter was imminent and some small, shallow ponds had already frozen, we also spotted 5 adult Bald Eagles and an Osprey during our survey. Most (4) of these Bald Eagles were along the South Fork Koyukuk River.

We hope to conduct a spring 2013 survey following the same protocol be conducted prior to leaf-out and snow melt, but after Bald Eagles and other raptors have arrived on territory to ascertain the extant nesting density on the Refuge. Nest detection probability may be higher during these conditions and we can investigate species specific nest occupancy.

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NORTHERN GOSHAWK BROADCAST SURVEYS ON KANUTI NATIONAL WILDLIFE REFUGE

Tim Craig, Les Dillard, and Erica Craig, U.S. Fish and Wildlife Service, Kanuti National Wildlife Refuge

For the second year in a row, Refuge personnel conducted broadcast call surveys for detecting Northern Goshawks near closed forest patches along the Kanuti River in 2012. There are several reasons to monitor nesting goshawks on Kanuti NWR:

- The Refuge is located on the Arctic Circle. We are not aware of any nesting surveys of Northern Goshawks at, or even near, the northern extremity of their nesting range in North America.
- As the climate warms, vegetation changes in Alaska's Interior are expected to be extensive. The associated changes in habitat for goshawks are likely to be commensurately dramatic. The management strategy for the Kanuti NWR will ensure that the Refuge will retain its wilderness character into the future. Therefore, the Refuge is an ideal location to monitor goshawk populations in the absence of anthropogenic disturbances, particularly as they relate to climate change.
- Fire is the dominate process driving habitat changes in interior Alaska, including on Kanuti NWR; over 1.2 million acres have burned on the Refuge since 1950. As a result, nesting habitat for Northern Goshawks on the Refuge is in constant flux.

From 21-22 June, standardized broadcast call protocols were conducted at 80 calling stations, accessed by motorized boat, along the Kanuti River from the Kanuti Lake USFWS administrative cabin (N 66.17932° x W 151.73831°) downriver to the confluence with the Koyukuk River. Goshawks were detected at 6 of 80 stations. In 2011, goshawks responded at 4 of these stations. This survey was done in conjunction with 2 river Breeding Bird Surveys.

During 11-17 July 2012, a similar goshawk survey was conducted for the first time along the Jim and South Fork Koyukuk rivers. Broadcasting was conducted at 165 calling stations, accessed by inflatable kayaks, between the eastern Refuge boundary at the Jim River and the confluence of the South Fork and main stem Koyukuk rivers. Goshawks were detected at 5 of the stations on the Jim/South Fork Koyukuk Rivers. This work was done in conjunction with an invasive weed inventory of the 2 river segments; no weeds were found.

This project is scheduled to continue in 2013.

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MONITORING AUTUMN PASSERINE MIGRATION ON MIDDLETON ISLAND, ALASKA

Lucas DeCicco and James Johnson, U.S. Fish and Wildlife Service; and David Tessler, Alaska Department of Fish and Game

Middleton Island is located in the northern Gulf of Alaska 80km south of the nearest point of land. The island's small size (13 km^2) combined with its position within a region influenced by a very dynamic weather regime make Middleton an ideal site to monitor passerine migration. The principal aim of this study is to determine the extent that passerines utilize a trans-gulf migration strategy during autumn. To achieve this, we focus on the composition and abundance, and temporal patterns of passerine species in relation to weather events.

This year was the second consecutive season we monitored autumn migration on Middleton. Our 2011 results indicated that we missed early and late migratory periods, so we added 30 days to

our stay in 2012. We operated an array of 13 mist-nets, 6-hours per day, from 10 August to 10 October, 2012. This effort resulted in 42 days (229.5hrs) of operation and 2,543 net-hours. We captured a total of 2,616 passerines of 33 species (Table 1), at an average of 103 birds per 100 net-hours. Of the birds we captured, 88% were juvenile, 10% adult, and 2% unknown.

Our 2012 capture rate of 103 birds per 100 net-hours was 70% lower than the 2011 capture rate (Table 1), but 2-times greater than the six-year average at an autumn banding station in Yakutat. Fox Sparrows were the predominant species captured, and comprised 52% of our total catch. Yellow Warblers were a distant second, comprising 17% of the captures (Table 1). Our expanded temporal coverage in 2012 allowed us to identify the migratory periods for most groups of passerines using Middleton Island during autumn.

In 2011 and 2012, we found that passerine species occurring on Middleton Island were in very good body condition, with high fat stores being the norm. This strongly suggests that Middleton Island represents an intentional stopover location rather than a refuge for birds that are unfit to continue their southerly migration. Field observations and estimates of turnover rates of banded birds elucidated that weather patterns in the Gulf of Alaska have a major influence on passerine migratory patterns. Weather and radar data and migratory rates of passerines have yet to be analyzed; however, field observations from both seasons suggest that passerines migrate in large numbers only during clear sky conditions. This strongly suggests that Middleton Island does not act as a fallout refuge for migrants that encounter weather conditions not conducive to migration. Furthermore, we recaptured in 2012, 12 Fox Sparrows banded on Middleton in 2011. Of these 12 birds, eight were determined to be local breeders that returned to their breeding locales, while four birds were likely migrants faithful to a migration route or stopover site.

Based on the results of this work we can conclude the following: 1) large numbers of passerine birds arrive to Middleton Island during good weather conditions, which suggests that a trans-Gulf of Alaska migratory route does exist and 2) weather has a major, and as of yet not fully understood, effect on trans-Gulf of Alaska migrant passerines. This project has provided the first comprehensive data on autumn-migrant passerines in the Gulf of Alaska and Middleton Island.

This project was funded by USFWS, Migratory Bird Management and the ADF&G Wildlife Diversity Program. We are indebted to the many field assistants, USGS, FAA, and others; without their support this project would not have been possible.

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Table 1. Summary of mist-net captures at Middleton Island in autumn of 2011 and 2012. Rate is calculated as the number of birds per 100 net-hours.

	Total #		% of total		Rate		% juvenile		% adult	
Species	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Downy Woodpecker	3	0	0.18	0.00	0.3	0.0	33	0	33	0
Northern Flicker	7	2	0.41	0.08	0.7	0.1	14	50	29	50
Olive-sided Flycatcher	0	6	0.00	0.23	0.0	0.2	0	100	0	0
Western Wood-Pewee	0	7	0.00	0.27	0.0	0.3	0	100	0	0
Alder Flycatcher	2	15	0.12	0.57	0.2	0.6	100	100	0	0
Willow Flycatcher	0	1	0.00	0.04	0.0	0.0	0	0	0	0
Least Flycatcher	1	0	0.06	0.00	0.1	0.0	100	0	0	0
Northern Shrike	0	1	0.00	0.04	0.0	0.0	0	100	0	0
Warbling Vireo	1	0	0.06	0.00	0.1	0.0	100	0	0	0
Red-breasted Nuthatch	3	0	0.18	0.00	0.3	0.0	33	0	67	0
Brown Creeper	20	0	1.17	0.00	2.0	0.0	90	0	5	0
Pacific Wren	51	31	2.99	1.19	5.2	1.2	73	65	8	19
Golden-crowned Kinglet	57	0	3.35	0.00	5.8	0.0	95	0	4	0
Ruby-crowned Kinglet	8	49	0.47	1.87	0.8	1.9	100	92	0	6
Gray-cheeked Thrush	5	6	0.29	0.23	0.5	0.2	20	83	80	17
Swainson's Thrush	2	2	0.12	0.08	0.2	0.1	100	50	0	50
Hermit Thrush	101	149	5.93	5.70	10.3	5.9	87	89	13	11
American Robin	7	14	0.41	0.54	0.7	0.6	86	93	0	0
Varied Thrush	40	29	2.35	1.11	4.1	1.1	88	90	10	10
Northern Waterthrush	2	3	0.12	0.11	0.2	0.1	100	67	0	0
Tennessee Warbler	1	1	0.06	0.04	0.1	0.0	100	100	0	0
Orange-crowned Warbler	41	59	2.41	2.26	4.2	2.3	98	80	2	8
Cape May Warbler	2	0	0.12	0.00	0.2	0.0	100	0	0	0
Yellow Warbler	496	432	29.11	16.51	50.8	17.0	91	85	9	11
Chestnut-sided Warbler	0	1	0.00	0.04	0.0	0.0	0	100	0	0
Blackpoll Warbler	1	1	0.06	0.04	0.1	0.0	100	100	0	0
Yellow-rumped Warbler	42	14	2.46	0.54	4.3	0.6	88	93	10	0
Townsend's Warbler	16	17	0.94	0.65	1.6	0.7	94	100	0	0
Wilson's Warbler	39	26	2.29	0.99	4.0	1.0	97	85	0	8
American Tree Sparrow	1	1	0.06	0.04	0.1	0.0	100	100	0	0
Chipping Sparrow	1	0	0.06	0.00	0.1	0.0	100	0	0	0
Savannah Sparrow	15	86	0.88	3.29	1.5	3.4	87	79	7	21
Fox Sparrow	531	1368	31.18	52.29	54.4	53.8	85	1	13	0
Song Sparrow	3	3	0.18	0.11	0.3	0.1	67	100	33	0
Lincoln's Sparrow	40	46	2.35	1.76	4.1	1.8	98	87	3	0
White-crowned Sparrow	8	11	0.47	0.42	0.8	0.4	100	100	0	0
Golden-crowned Sparrow	111	177	6.52	6.77	11.4	7.0	92	95	5	2
Dark-eyed Junco	31	26	1.82	0.99	3.2	1.0	97	96	0	4
White-winged Crossbill	1	3	0.06	0.11	0.1	0.1	100	1	0	0
Common Redpoll	4	3	0.23	0.11	0.4	0.1	100	100	0	0
Pine Siskin	10	26	0.59	0.99	1.0	1.0	50	27	40	58
Total	1704	2616			175	103				

AMERICAN PEREGRINE FALCON (FALCO PEREGRINUS ANATUM) MONITORING ALONG THE UPPER YUKON RIVER IN YUKON-CHARLEY RIVERS NATIONAL PRESERVE, CENTRAL ALASKA NETWORK, 2012

Melanie Flamme, John Burch, Julia Brice, Yukon-Charley Rivers National Preserve, National Park Service; and Josh Spice, Fairbanks Public Lands Information Center

In 2012, we surveyed 265 kilometers of the upper Yukon River between Circle, Alaska and the border with Yukon Territory, Canada for nesting American peregrine falcons. This year marks the 37th continuous year of monitoring this population (1975-2012). Melanie Flamme, John Burch, and Julia Brice, of Yukon-Charley Rivers National Preserve partnered with outreach ranger, Josh Spice, of the Fairbanks Public Lands Information Center to conduct the surveys. In May, we conducted occupancy surveys to determine which territories were being used for nesting and in July we returned to count the total number of nestlings produced. Fifty-seven territories were occupied by American peregrine falcons in 2012 (52 pairs and 5 single adults on territories). Of these, 27 of the 52 pairs (51.9%) were successful, and produced 58 nestlings. Productivity was 1.12 nestlings per total pair and 2.15 nestlings per successful (≥ 1 nestling observed) pair. Three pairs of peregrines utilized new eyrie (nesting) ledges on commonly used territories. Four eggs were collected for contaminants analyses in collaboration with the U. S. Fish and Wildlife Service Environmental Contaminants Program. We also collected adult feathers, egg DNA swabs, buccal swabs from nestlings and egg-shell fragments that can all as genetics samples to assess parental and nestling genotypes present in this population in partnership with the USGS Molecular Ecology Lab. Between 1975 and 2012, the number of total and successful pairs nesting along the upper Yukon River has been steadily increasing, though the percentage of total pairs nesting successfully has been stabilizing. This year, the number of single birds on territories was higher than most years. This may be attributable to increased competition for resources due to increased peregrine population density in the upper Yukon area.

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AMERICAN PEREGRINE FALCON (FALCO PEREGRINUS ANATUM) WEBCAM IS INSTALLED IN AN EYRIE ALONG THE UPPER YUKON RIVER

Team Webcam (alphabetically): Paul Atkinson, Stacia Backensto, Julia Brice, John Burch, Joe Durrenberger, Melanie Flamme, Hungwitchin Corporation, Joe Kloss (ABS Alaska), Richard Olson, Macy Possenti, Pam Rice, Pat Sanders, Ansel Siegenthaler, Josh Spice, Ron Sutton, Alicia Tanrath, Roger Thiel, Nick Thompson

In June of 2012, we installed a web camera in a wild and remote American peregrine falcon nest along the upper Yukon River on a bluff across from Eagle Village, Alaska and on Hungwitchin Corporation members' land. This project, which took many years in the making, entailed the collaboration of every division of the Yukon-Charley National Preserve staff and assistance from Joe Kloss of ABS Alaska (Fairbanks), Richard "Oly" Olson of Bethel, Alaska, Hungwitchin

Coroporation and Roger Thiel of Eagle, Alaska. Recognition and heart-felt thanks must be given to these four outstanding outside partners, without whom this project would not have come to fruition. Richard Olson developed the web camera system to watch local ravens near his home in Bethel. He volunteered his time and expertise to help us develop our system. Joe Kloss at ABS Alaska puzzled through power and repeater site challenges borne from working in a remote setting with solar power. The members of Hungwitchin Corporation kindly permitted us to install the camera system on their lands. Local Eagle resident, Roger Thiel, graciously allowed us to install a necessary repeater site on his house so we could bump the signal all the way to the Eagle Visitor Center. This year, local school children and residents of Eagle, and viewers on the web watched as 4 eggs hatched in the eyrie and two of these grew into strong fledglings that left the nest. The web cam will remain operational throughout the winter so that it may be useful for aviators checking Eagle weather and enjoyed by viewers who may watch the seasons change and the river freeze. The result of this collaborative effort can be viewed at: http://www.nps.gov/yuch/photosmultimedia/webcams.htm

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BALD EAGLE SURVEYS ON JOINT BASE ELMENDORF-RICHARDSON (JBER)

Herman Griese, US Air Force, JBER; Stephen B. Lewis, U.S. Fish and Wildlife Service; Catherine Latimer, Colorado State University, CEMML

JBER, a 30,207 ha military installation within the Municipality of Anchorage, provides important training opportunities for the US Army Alaska and two airfields operated by the US Air Force and the Alaska Army National Guard. The Bald and Golden Eagle Protection Act (Act) provides protective measures for nesting eagles that can conflict with the military mission. In addition, eagles are large slow flying birds that can cause potentially disastrous interactions with aircraft. The JBER 2011 Interim Integrated Natural Resource Management Plan gave a high priority to locating all nesting eagles for mission planning and to avoid violations of the Act. The 2012 survey repeats a similar survey conducted during 2011 contracted to AK Department of Fish and Game.

S. Lewis, USFWS, was contracted to aerially locate occupied bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) nests during late April 2012. The survey was to be flown in a PA-12 Supercub at approximately 3-4 minutes/mi2 within 0.5 miles from all water bodies and 0.5-2 minutes/mi2 for the remainder of JBER below 1,000 feet elevation for bald eagles. The contract was also to include a survey exposed cliff faces in alpine/subalpine to identify any golden eagle nests.

The 8 hour aerial survey produced 26 bald eagle nests within the JBER boundary and ground survey efforts by C. Latimer verified 3 additional nests. Of the 29 total nests, 17 were active and 12 were inactive. A nest was determined to be active if it had an adult on it in an incubating posture or adults were perched on the nest or nest tree. All nests were in black cottonwood

(*Populus trichocarpa*) trees. We found no evidence of nesting by golden eagles within the JBER boundary during survey of cliff faces in alpine/sub-alpine areas.

C. Latimer made late summer (24 Jul-3 Aug) visits to estimate number of fledglings at each nest. She visited 15 of 17 active nests and identified a minimum of 14 fledglings in 9 nests. Six nesting pairs appeared unsuccessful. The 0.93 fledglings/active nest observed in 2012 compares to 1.07 fledglings/active nest found in 2011. Fifteen fledglings were observed in 14 active nests in 2011; only 3 nesting pairs appeared to be unsuccessful.

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LONG-TERM PASSERINE MONITORING AT CREAMER'S FIELD MIGRATION STATION, FAIRBANKS, ALASKA

Susan Guers, Alaska Bird Observatory

The Alaska Bird Observatory (ABO) has operated a standardized, long-term migration station at Creamer's Field Migratory Waterfowl Refuge in Fairbanks, Alaska since 1992. Creamer's Field Migration Station (CFMS) is the northernmost migration-monitoring station in North America. Objectives of this migration-monitoring study are to: capture and band migrating passerines to examine the timing of life-history events (e.g., migration, reproduction, molt, juvenile dispersal, and seasonal differences in body condition) and to provide public education opportunities.

ABO has worked cooperatively with several state and federal agencies to accomplish goals set by Boreal Partners in Flight to further the conservation of landbirds in Alaska (Boreal Partners in Flight Working Group 1999). These goals include: 1) establish statewide bird inventory and monitoring programs; 2) educate the public about the conservation of birds and their habitats; 3) conduct research on factors affecting the status of northern populations; and 4) provide information about birds to resource managers in Alaska. Additionally, monitoring at CFMS meets the goal of the Department of Fish and Game (ADF&G) to assess changes in status of Alaska landbirds (ADF&G 2006).

Highlights of spring 2012 banding season (23 April—4 June 2012)
Spring captures totaled 520 new and previously banded birds of 32 species. The five most numerous species were Yellow-rumped Warbler (108), American Robin (71), Dark-eyed Junco (61), Swainson's Thrush (41) and Common Redpoll (40); these five species represent 63% of all captures (326/520). One aspect of banding birds is using these data to calculate survival rates by recapturing the same bird year after year. At CFMS this spring, we captured 37 individuals (69 captures) of 10 species banded in previous years, approximately 13% (69/520) of the total number of captures. Noteworthy returns included those of two resident species –a Downy Woodpecker banded as a second-year bird in 2010 by another researcher studying this species on

the refuge and several Black-capped Chickadees first banded as juveniles in 2009. Noteworthy migrant returns include a Swainson's Thrush first banded as an adult in 2007 and a Yellow-rumped (Myrtle) Warbler banded as a juvenile in 2007.

Interesting captures for spring 2012 included a female Boreal Owl (first one captured during a spring banding season and the first one captured since 1996), a Gray Jay, two Ruby-crowned Kinglets (including a returning bird that was banded in 2011), a Golden-crowned Sparrow and two Varied Thrushes. These are species not very common at CFMS in spring. Due to increased water levels in the seasonal wetlands, capture rates of shorebirds increased dramatically this spring—we captured 7 Solitary Sandpipers and 2 Wilson's Snipe. We also captured 3 Pectoral Sandpipers this spring, a species that hasn't been captured since 2003. Our captures of other water-loving species increased as well, especially for Lincoln's Sparrow and Rusty Blackbird.

Timing of the 2012 spring migration seemed on par with those of previous years, if not a bit early for a few species. Greenup occurred at CFMS on May 12th, a full week ahead of 2011. The first migrants in our nets were a several Dark-eyed Juncos. Dark-eyed Juncos and Yellow-rumped (Myrtle) Warblers, both short-distance migrants, are usually among the first migrant species to the Fairbanks area.

Highlights of fall 2012 banding season (25 July—30 September 2012)
We captured a total of 3,003 birds of 34 species (we banded 33 species; species not banded included Green-winged Teal). The top 5 species captured this fall included: Dark-eyed Junco (785), Yellow-rumped Warbler (772), American Tree Sparrow (261), Orange-crowned Warbler (201) and Lincoln's Sparrow (197). These 5 species represent 73% (2,216/3,028) of all captures.

Interesting captures for fall 2012 include: a Bohemian Waxwing, 6 Sharp-shinned Hawks, a juvenile Western Palm Warbler and a juvenile Chipping Sparrow (the first since 2007). The top 5 species captured this fall includes: Dark-eyed Junco (785), Yellow-rumped Warbler (772), American Tree Sparrow (261), Orange-crowned Warbler (201) and Lincoln's Sparrow (197). These 5 species represent 73% of all captures. This fall was interesting in that we didn't have the large fallouts of Common Redpolls, nor did we capture any Black-backed and American Three-toed Woodpeckers, Northern Shrikes or Brown Creepers like we've had in recent years. Another anomaly is that for the first time since 2006, Dark-eyed Junco captures overtook those of Yellow-rumped Warbler.

In 2012, 65 volunteers contributed over 1,725 hours of service at the banding station. The ABO banding staff included: Sue Guers, Toni Taylor-Salisbury, Aaron Spidal and Ben Zyla and our seasonal interns: Cheryl Fisher and Robin Rauch. ABO staff educated over 3,000 people during their time at CFMS.

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LANDBIRD MONITORING UPDATE FROM TETLIN NATIONAL WILDLIFE REFUGE, ALASKA, 2012

W.N. (Bud) Johnson, Hank Timm, Kristin DeGroot, Nate Berg, and Nicole Wells

Phenology - A changing global climate could result in temporal changes in phenological events for many species; especially flowering plants, pollinators, and migratory birds. Around the world many species are shifting the timing of life cycle stages (phenophases) in response to warming temperatures. These temporal shifts in phenologic events, coupled with changes in abiotic factors, could result in a timing mismatch for many species. Despite the obvious connection between phenology and climate change, there is a paucity of long-term phenological data available in Alaska. Tetlin Refuge is presently developing phenology protocols that incorporate legacy data sets while providing rigor for meaningful analysis in the future.

First Arrivals/Spring Phenology – Tetlin Refuge has recorded spring (first) arrival dates for migrants passing through the Upper Tanana Valley since 1982. In the past, most of these records came from refuge staff who recorded incidental observations while participating in other activities and additional observations came from the public. In 1999, a spring phenology route was established to systematically record the annual passage of migrants through the valley. A set route with predetermined stops is driven several times a week in March, April and May. Effort is estimated by recording total survey time and mileage similar to the Christmas Bird Count (CBC). This sampling design allows for estimates of detection probability to be made through the application of occupancy modeling.
We ran our spring phenology route 25 times between 28 March and 30 May 2012. Results of the surveys bolster our first arrival information, provide an index to the annual ‘pulse” of migration, and over the long-term may detect changes in the pattern of migration.

This year we began an effort to analyze this 12-year data set to determine detection rates, as well as estimate changes in arrival dates. We are also exploring possible relationships with changing climate parameters, such as local weather data and climate oscillation indexes, through correlation trend analysis. The results of this work should be available in 2013.

North American Migration Count (NAMC) - The NAMC tallies all birds observed by species within a predefined area on the second Saturday in May. In this way it is similar to the CBC; however, the NAMC is conducted on the same day throughout the continent to provide a "snapshot" of the progress of spring migration. We conduct the survey to bolster our spring phenology efforts and provide additional outreach opportunities for International Migratory Bird Day. We conducted our 21st annual count on 11 May with four parties tallying 940 individuals and 56 species within our count area (GMU 12). Total numbers were comparatively low this year due largely to the absence of Sandhill Cranes flocks which can greatly bolster total numbers during years when large flocks are present.

Breeding Bird Survey – Tetlin Refuge has participated in the BBS program for 23 years and is presently covering four routes in the Upper Tanana Valley. The same observer has been running these routes since 1999. Two of the four routes have been surveyed since 1989. All routes were completed this year and survey conditions were generally good. High counts include: 115 Swainson’s Thrush (Tower Bluffs), 39 Gray-Checked Thrush (Fairplay), 42 Varied Thrush

(Slana), and 46 Alder Flycatcher (Northway). Regional summaries are available at http://www.pwrc.usgs.gov/BBS/

Off-Road Point Count Survey/ALMS – Off-Road Point Counts (ORPC) routes were established on the Refuge in 1994 as part of a regional pilot project to determine the feasibility of using ORPC to monitor trends in landbirds on large roadless areas. Seven routes were randomly established within the major habitat types on the Refuge. After the refinement of the ALMS program we adjusted our protocols to mesh with the new ALMS protocols, and continued to conduct our counts and contribute our data to the statewide effort each year. We successfully completed 7 point counts during June in our 19th year and detected over 1300 birds. American Robin, Swainson's Thrush and Slate-colored Junco were the most commonly detected species. Noteable species include American Pipit, Olive-sided Flycatcher and Rusty Blackbird.

Raptor Nest Occupancy and Productivity Surveys – Between May and August 2012, we conducted aerial surveys of 69 bald eagle and 39 osprey nesting territories for occupancy and productivity. In addition, we conducted ground-based occupancy and productivity surveys of 21 peregrine falcon territories. Results from 2012 indicate well above average occupancy, success and productivity for bald eagles compared with the long term average (1991-2011). Results were mixed for osprey with above average occupancy, but average success and productivity. Peregrine falcon occupancy was well below average, with success and productivity slightly below the long term average, and the average hatching date was 19Jun2012 for 27 nestlings in 11 successful nests. We completed a refuge technical report "Estimation of occupancy, breeding, nesting success and productivity of American Peregrine Falcons (*Falco peregrinus anatum*) in the upper Tanana Valley, Alaska, 2000-2011" with regional biometrician Anna-Marie Benson. The refuge will continue annual falcon monitoring with no further management actions.

Fall Migration Monitoring – Tetlin Refuge runs a landbird migration banding station west of Tok where more than 45,000 birds have been banded since it began operating in 1993. This station is presently one of the longest running landbird banding operations in Alaska (second only to the Alaska Bird Observatory (ABO) in Fairbanks established in 1992). In addition to monitoring for population trend, demographic and morphological data collected at the banding station will be used to examine how climate change affects timing of migration, juvenile dispersal and fat deposition in landbirds.

2012 was our 20th year of operation and we successfully captured and banded over 1500 birds of 30 species. The most common birds caught at the station are Slate-colored Junco, Ruby-crowned Kinglet, Fox Sparrow and Swainson's Thrush. This year, we also banded several Northern Waterthrush, Three-toed Woodpeckers and Sharp-shinned Hawks. In addition to daily banding activities, staff provided interpretation to 5 school groups and supported training/learning opportunities to 6 volunteers.
In collaboration with ABO, our long-term data set was pooled with data collected from Fairbanks over the same time period and analyzed. The location of these 2 stations, near the north and western limits of the continent, provides a unique opportunity to examine the initial stages of long-distance migration. The results of this analysis showed that the timing of migrant passage through ABO and Tetlin NWR were similar when all 17 years were combined. Juveniles preceded adults in 10 of 14 species at ABO and in 13 of 14 species at Tetlin NWR. Because

such a high proportion of captured birds were juveniles (> 75%); these stations are most useful for monitoring an index of productivity. A power analysis indicated that for 6 of 7 species, a 50% decline in relative capture rates could be detected in a 20-year period. More information can be found in Volume 36(2) of The *Wildlife Bulletin*, pages 328-325.

Christmas Bird Count – The Christmas Bird Count (CBC) was started by the National Audubon Society in 1900 and has since grown to be the world's largest all-volunteer bird survey and the longest running database in ornithology. The CBC provides valuable information on the trends of early-winter bird populations across North America. The Tok Count is coordinated by Refuge staff and has been completed every year except one since 1986 (extreme weather precluded the count in 1996). Last year's count (our 24th) took place during relatively balmy conditions with a low of 6 degrees during the day. Participation was about average as were the number of species recorded (13) and number of individuals (346). Regional and national summaries can be found at http://www.audubon.org/bird/cbc/index.html

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BALD EAGLE OCCUPANCY AND PRODUCTIVITY IN NORTHERN LYNN CANAL, ALASKA

Stephen B. Lewis, U.S. Fish and Wildlife Service

The Alaska Department of Transportation and Public Facilities is proposing to construct an all-season highway north from Juneau to provide improved road access to the capital. The exact route for this project has not been set and ADOT is examining alternative routes on either side of Lynn Canal. The ADOT funded an aerial survey to document eagle nests, and estimate occupancy and productivity at those nests on either side of Lynn Canal. On the east, the survey extended from Echo Cove in Berners Bay along the coastline north to Skagway, AK. On the west side, it extended from William Henry Bay to Haines, Alaska. The survey was flown in an A-star Helicopter (i.e., Eurocopter AS350) with 2 observers. The occupancy survey was flown on 16 and 17 April 2012 while the productivity survey was flown on 21 July 2012. I surveyed 164 Bald Eagle nests along Lynn Canal. On the east side, I surveyed 124 nests and found 48 (39%) occupied; 22 (46%) occupied nests successfully fledged (i.e., reached 80% of age to fledging) young. Productivity was 0.63 young / occupied nest, or 1.36 young / successful nest. On the west side, I surveyed 40 nests and found18 (45%) to be occupied; 3 (17%) successfully fledged young. Productivity was 0.22 young / occupied nest, or 1.33 young / successful nest. The values for the east side of Lynn Canal are in the range of 6 years of surveys conducted there since 2003. The values for the west side of Lynn Canal were well below the average seen in previous surveys. While it is unclear exactly caused eagle on the west side to do so poorly, a cooler, wetter microclimate due to eastern exposure mixed with an unusually cool and wet spring may have affected these birds and caused many failures.

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ECOLOGY OF PEREGRINE FALCONS AND BALD EAGLES IN ICY BAY, ALASKA: ASSESSING RAPTOR PREDATION OF KITTLITZ'S MURRELETS

Stephen B. Lewis and Michelle Kissling, U.S. Fish and Wildlife Service

We studied the ecology of Bald Eagles (*Haliaeetus leucocephalus*) and Peregrine Falcons (*Falco peregrinus*) in Icy Bay from 12 May – 12 August 2012. We conducted 1 helicopter survey in Icy Bay to find nests and document nest occupancy and productivity. On 26 June, we conducted a raptor survey in Icy Bay, including a cliff-nesting raptor survey in the upper part of the bay and a Bald Eagle survey in the outer part of the bay. This survey involved revisiting all known nests to check for sign of occupancy and reproductive output (i.e., nestlings). We captured 1 Bald Eagle in Icy Bay in 2012. We did not capture Peregrine Falcons this year but did monitor one female that was banded in 2011 and returned to attempt to breed here. We monitored 6 Bald Eagles tagged with GPS tags in previous years; we documented one mortality of an eagle that died overwinter in Icy Bay. We gathered prey remains from Peregrine Falcon and Bald Eagle nests to document their diet. We are currently working on analysis of diet and movement data from this work. Falcons consistently preyed on murrelets, which were found in the diet at ~80% of the eyries. In contrast, murrelets were only occasionally delivered to eagle nests. Falcons were the most common predator of Kittlitz's Murrelets and this predation likely occurred near the water, not at the nest.

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CLIFF-NESTING RAPTOR SURVEYS IN THE KILBUCK MOUNTAINS, ALASKA

Brian J. McCaffery and Stephen B. Lewis, U. S. Fish and Wildlife Service; Travis L. Booms, Alaska Department of Fish and Game

Between 1991 and 2004, Yukon Delta National Wildlife Refuge conducted annual surveys of cliff-nesting raptors in the Kilbuck Mountains of western Alaska. Because of concerns about both the continental status of golden eagles and the potential impacts of a proposed energy corridor through the Kilbuck Mountains, the location's status as an index area for coordinated statewide monitoring of cliff-nesting raptors, and the potential value of apex predators as sentinel species, we resumed those surveys in 2012. Occupancy and productivity surveys for rough-legged hawks, golden eagles, and gyrfalcons were conducted via R-44 helicopter with both a front and rear seat observer in the first weeks of May and July, respectively.

Golden eagle reproductive metrics in 2012 equaled or exceeded mean values derived from the 1991-2004 surveys. In the core study area within the Kisaralik River-Quicksilver Creek corridor, annual occupancy of 23 territories averaged 66% between 2001 and 2004; in 2012, 61% were occupied. Most metrics of productivity in 2012, including the number of successful pairs, successful pairs/nesting pair, total fledglings, and fledglings/nesting pair, were roughly 50% higher than the historical means, while fledglings/occupied territory in 2012 was more than twice as high. Between 1991 and 2003, 45% of pairs included at least one subadult; no subadults were seen among paired birds in 2012. In the earlier period, 32% of all eagles observed in the survey area during the spring (including territorial birds and birds seen away from known territories) were subadults, but in 2012, only 19% were. The eagle breeding season was protracted in 2012, with population-wide nest initiations apparently spanning 6-7 weeks (i.e., nestlings found in July ranging from 3-10 weeks of age). During the occupancy survey, 15 broods were between 3 and 6 weeks of age; 8 were between 7 and 10 weeks (median age 5-6 weeks; 2 modes [N = 4 each] at 4 and 8 weeks).

Gyrfalcon occupancy rates approached the previous high in the main Kilbuck study area (12 of 18 occupied in 2012; previous high = 13), and equaled the long-term mean within the Kisaralik River corridor (5 occupied in 2012; long-term mean = 5.3). Productivity in the corridor in 2012 exceeded the only previous estimates derived in 2003-2004; in fact, in 2012, all four metrics of reproductive success (number of young fledged, fledged/occupied territory, fledged/laying pair, and fledged/successful pair) were higher than in either 2003 or 2004, with the number of young fledged in 2012 (9) exceeding the combined total in 2003-2004 (8). Including pairs found outside the main study area, 11 of 14 pairs were successful, fledging a total of at least 23 young.

Rough-legged hawks have apparently rebounded from a period of very low occupancy in the early 2000s. Between 1991 and 2004, the Kisaralik River-Quicksilver corridor supported an average of 3.7 nesting pairs per year. From 2000 to 2004, the average was only 2 pairs per year. In 2012, however, 6 pairs nested in the corridor, the highest recorded since raptor surveys began there in the late 1970s. All 6 pairs had nestlings during the occupancy survey, and 2 of 4 pairs elsewhere in the main Kilbuck study area did as well. Overall, 11 pairs were found with 30 young in nests in or near the main Kilbuck study area, for an average brood size during the early to mid-nestling stage of 2.73 young per nest.

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LANDBIRD EDUCATION AND OUTREACH PROGRAMS ON YUKON DELTA NATIONAL WILDLIFE REFUGE

Brian J. McCaffery, USFWS Yukon Delta National Wildlife Refuge; Laurel Devaney, Fairbanks Fish & Wildlife Field Office, USFWS; and Travis L. Booms, Wildlife Diversity Program, Alaska Department of Fish and Game

Several education and outreach programs are conducted by staff of Yukon Delta National Wildlife Refuge each year. In 2012, Education Specialist Brian McCaffery conducted one community bird walk and provided birding expertise on three birding tours that were conducted on the Gweek River by Kuskokwim Wilderness Adventures. He also organized the "Bethel Bird Fest" in conjunction with the Bethel Community Fair on August 25. The Bird Fest was held outside in a community park and included use of binoculars and spotting scopes for bird viewing, tips on bird identification, and a presentation using a live Bald Eagle by the Bird Treatment and Learning Center. Other staff members passed out hot dogs and chips. Brian was also the regional coordinator for the Alaska Migratory Bird Calender Contest involving approximately 50 schools that occur within the boundaries of Yukon Delta NWR. He received more than 290 entries for the contest. One school child from our region (3rd-5th grade category) had a poster accepted for the 2013 statewide calendar.

Laurel Devaney, the Education Coordinator from the Fairbanks Fish & Wildlife Field Office, organized the Andreafsky River Salmon Stewardship Camp near St. Mary's, Alaska. This is a 5-day salmon science and management camp at the Andreafsky River weir for teens from the lower Yukon River communities within the Yukon Delta NWR (ages 13 – 16). Two separate sessions are held each year. The camp offers a program that combines career awareness, salmon management insights, and a deep understanding of the economic, cultural, and ecological importance of Yukon River. Songbird banding is included in the camp as a unique way to emphasize the importance of marine-derived nutrients carried by salmon in enriching Alaska's aquatic and terrestrial ecosystems. For some reason, it was difficult to retain students in 2012. Only six students ended up attending the camp; this is a below average number of students.

ADF&G Biologist Travis Booms conducted a Gyrfalcon productivity survey at the Ingakslugwat Hills (the Volcanoes) in July 2012. He involved 10 students from the University of Wisconsin at Stevens Point and faculty member Bob Rosenfield as part of a field studies class with the University. Additionally, they collected feathers for a mark-resight study using genetics. In 2012, Gyrfalcon productivity was relatively high in comparison to the previous three years.

Melissa Gabrielson, biologist at Yukon Delta NWR, participated in the Women of Science and Technology Day which is sponsored by the Girl Scouts of America. Women with careers in science and technology lead hands-on workshops. The Girl Scouts take this one-day workshop on the road and visit a number of communities around the State, including Bethel. Melissa did a workshop at the Bethel event on camouflage with Willow Ptarmigan as one of the highlighted species.

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MONITORING TERRITORY OCCUPANCY AND REPRODUCTION OF GOLDEN EAGLES IN DENALI NATIONAL PARK AND PRESERVE, ALASKA

Carol McIntyre and Mark Paulson, Denali National Park and Preserve.

From 1988 to 2012, we used two standardized aerial surveys and additional foot surveys to monitor the annual nesting territory occupancy and reproductive success of Golden Eagles (*Aquila chrysaetos*) in the northeast portion of Denali National Park and Preserve, Alaska. In 2012, occupancy of Golden Eagle nesting territories (93%) was similar to the long-term mean. Measurements of Golden Eagle reproductive performance (nesting success and fledgling production) in 2012 were among the lowest recorded in the 25 year study, apparently resulting from the decreased abundance and availability of snowshoe hare (*Lepus americanus*) in the study area. Nesting phenology of Golden Eagles was similar to most other years.

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MONITORING PASSERINE BIRDS IN THE CENTRAL ALASKA MONITORING NETWORK, ALASKA

Carol McIntyre and Mark Paulson, Denali National Park and Preserve, Alaska

As part of the Central Alaska Monitoring Network's passerine monitoring program, we conducted temporal repeat surveys at 300 roadside survey points and 100 off-road survey points in 2012 (n = 1833 point count surveys). We detected 101 species in 2012 including 41 to 63 species on roadside routes and 22 to 33 species on off-road minigrids. Most detections (77%) were of members of three families, *Turdidae* (Thrushes), *Parulidae* (Warblers), and *Emberizidae* (Sparrows). White-crowned Sparrow (*Zonotrichia leucophrys*) was the most commonly detected species on the 3- and 10-minute point counts (n= 2,799 detections, 11.4% of all detections). We also documented the presence of Eurasian Collared Dove (*Streptopelia decaocto* and Cassin's Finch (*Carpodacus cassinii)* along the Nabesna Road. In 2013, we will continue surveys on all

the roadside survey routes and start sampling riverside routes and off-river minigrids along the upper Yukon River in Yukon-Charley Rivers National Preserve.

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POTENTIAL CHANGES IN AVIAN DISTRIBUTION, ABUNDANCE, AND DEMOGRAPHY WITHIN A SHIFTING ECOTONE IN NORTHWESTERN ALASKA

Lance B. McNew and Colleen M. Handel, U.S. Geological Survey, Alaska Science Center

The goal of this project is to model projected changes in distribution and abundance of avian species in response to projected environmental changes associated with a shifting climate in the boreal-arctic transition zone of Alaska. Specific objectives include: 1) evaluating the environmental correlates of distribution, abundance, and richness of landbird and shorebird species, and assessing how distribution, abundance, and community structure of birds have changed relative to changes in habitat over the last 25 years; 2) estimating productivity, recruitment and survival for a subset of species with varying life history traits at a series of sites located across an ecological gradient in the boreal-arctic transition zone; and 3) forecasting avian species, communities, habitats, and core geographic areas likely to be most vulnerable to projected climate changes, and key areas important for preserving biodiversity.

In 2012, we developed two 4-year studies on the Seward Peninsula to address these objectives. The first study relies on replicated point-transect surveys for birds and hierarchical mixture models to evaluate the relationships between climate-driven habitat conditions and avian abundances, occupancy, apparent survival, and recruitment. The second study relies on capture-recapture methods and open population models to evaluate the direct and indirect influences of climate on songbird demography.

Bird Surveys

During 1988–1992 and 2000, point-transect surveys were conducted within 34 randomly-selected 10-km × 10-km sampling blocks on the Seward Peninsula. Point-transects of variable length were created non-randomly within these blocks (number of points = 900). Ten-minute focal counts of targeted species were conducted during daylight hours (0900–2100) at sample points. We conducted replicated point-transect surveys for birds at 5 historical sampling blocks during the pre-breeding and nesting periods in 2012. The 5 selected survey blocks were chosen for accessibility from the Seward Peninsula road network (≤5 km from nearest road) and represented variable habitat types in the southern discontinuous permafrost zone of the peninsula. The plots contained a total of 9 historical transects with 109 focal points. We conducted 10-minute focal observations at each point and recorded the number of individuals of each species detected up to 250 m from the point. Each point-transect was surveyed 2–3 times during a 3-week period corresponding to territory establishment and egg-laying (21 May – 9 Jun). During 2012, we detected 1,576 birds representing 48 species during 287 focal counts. Songbirds were the most detected guild (n = 1,179), followed by shorebirds (n = 173), jaegers (n

= 130), ptarmigan (n = 49), waterfowl (n = 11), ravens (n = 20), raptors (n = 7), and gulls (n = 7). Commonly detected songbirds included Lapland Longspur (*Calcarius lapponicus*; n = 347), redpolls (*Acanthis* spp.; n = 219), Golden-crowned Sparrow (*Zonotrichia atricapilla*; n=150), and Fox Sparrow (*Passerella iliaca*; n=109). Wilson's Snipe (*Gallinago delicata*; n= 66) followed by Western Sandpiper (*Calidris mauri*; n = 29) and American Golden-Plover (n = 27) were the shorebirds detected most often.

Habitat Conditions

During bird surveys, habitat was classified at each point with the Swanson method as per historical surveys. In addition, we collected 20 habitat measures at 10 subsample plots associated with each bird survey point during 27 June – 12 July. Habitat covariates included the average heights and overlapping coverages of dwarf birch, willow, alder, ericaceous shrubs, and lichens within 250 m of each bird survey point. We also measured the average proportion of bare ground, running water, and standing water and distance from the survey point to the nearest shrub in each of the 3 height categories (<50 cm, 50–100 cm, and >100 cm). We recorded elevation, slope, and aspect at each bird point. We recorded air temperature, wind speed, sky condition, and snow cover during each bird survey. We took photographs at each point depicting the habitat conditions in each of the four cardinal directions to compare to historical photographs taken during earlier surveys.

Bird Captures

During 2012, we established 3 mist-netting stations in discrete habitat types (low shrub herbaceous tundra, tall shrub hillside, spruce forest-tundra) and used standardized constant-effort netting protocols to capture birds at each site. Each mist-netting station was composed of 10 12-m mist nets arranged 80–120 m apart and encompassing an area of 8–10 ha. Stations were operated for 3 mornings (0600–1300) at each site in two rounds for a total of 6 capture days per site. During the first round, stations were operated at each site for 3 consecutive mornings and targeted breeding birds during the nesting period (15 – 25 June). The second round of netting targeted juveniles (HY) birds and occurred on 3 consecutive mornings at each site during 16 – 28 July. During 2012, we banded a total of 603 individual songbirds and had 101 recaptures. We banded 283 adults (AHY) and 1 juvenile during the first round of captures and 89 adults and 230 juveniles during the second round.

This project is scheduled to continue for 3 more years (2013–2015).

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DISTRIBUTION OF MALE WILLOW PTARMIGAN IN THE UPPER SUSITNA RIVER DRAINAGE, A PILOT STUDY

Richard Merizon, Alaska Department of Fish and Game

Beginning in May 2012, a small pilot study was initiated to test willow ptarmigan capture methods, test radio collar fit and size, and learn basic case history information on select males (Merizon *In Prep*). In late May, we traveled to a remote airstrip just west of the central Oshetna River valley in game management unit 13A. We used a handmade styrofoam decoy painted like a male willow ptarmigan, a camouflaged Primos game call (www.primos.com, Flora MS) with a pre-recorded territorial male willow ptarmigan call, and a Coda net gun (www.codaenterprises.com, Mesa AZ). Once a territorial male was located, we placed the decoy in the center of its lek alongside the Primos game call and played the recording. The male would quickly return to defend its lek and we slowly approached and used the net gun to capture the bird generally within 10m.

Captured males were weighed, age was determined by primary wing feather pigmentation (Bergerud et al. 1963), and a necklace radio collar was fitted on each bird. We used Advanced Telemetry Systems (www.atstrack.com, Isanti, MN) 3960 necklace collars (16g). Birds were handled for less than 6 minutes and released. All birds were relocated within 24-hours and again within 10 days after capture to document handling effects. Birds have been relocated monthly since mid-June using single engine fixed-wing aircraft. Location, habitat type, group size, and fate of each male are determined with each survey. Males stayed within 1-2km of the capture site through September. However in October and early November birds have ranged up to 10km away to dense riparian willow stands in an adjacent drainage.

This pilot study will benefit a much larger willow ptarmigan distribution study that will commence in April 2013 and continue for three seasons in the vicinity of the future Watana Hydroelectric Project Area. The Department complied with Animal Care and Use Committee protocols (ACUC Protocol No. 2012-027).

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Literature Cited

Bergerud, A. T., S. S. Peters, and R. McGrath. 1963. Determining sex and age of willow ptarmigan in Newfoundland. J. Wildl. Mngt. 27(4):700-711.

Merizon, R. A. *In Prep*. An alternative capture method for territorial male willow ptarmigan. Wildlife Management Report, ADF&G/DWC/WMR-2012-1. Anchorage.

RAPTOR NEST MONITORING AND SURVEYS ON DONNELLY TRAINING AREA (DTA), FORT WAINRIGHT, 2012

Elizabeth Neipert, US Army Garrison Fort Wainwright-Donnelly Training Area, Colorado State University

A raptor nest inventory project was conducted on DTA in 2010 and 2011. The primary goal was to identify and determine occupancy of eagle nests for protection under the Bald and Golden Eagle Protection Act (BGEPA). The secondary goal was to locate, determine occupancy, and species use of other raptor nests for compliance with the Migratory Bird Treaty Act (MBTA).

Twenty-three new nests were identified during the 2010-2011 project, including one Bald Eagle nest and three Peregrine Falcon nests. Historical Golden Eagle nest areas were surveyed but were found to be inactive. These three species are considered Priority Management Species by the Fort Wainwright Ecosystem Management Team and are addressed in the US Army's Integrated Natural Resource Management Plan (2007).

In 2012, only high priority nests were revisited either on foot or by air during the breeding season. A priority nest was determined either by conservation status or the possibility of new development or activities around the nest area. Two areas historically used by Golden Eagles showed no active nesting however birds were observed in the immediate area. A new Golden Eagle nest territory was identified near Black Rapids Training Area (BRTA). This nest too, was not utilized during the 2012 season. Nest revisits verified the Bald Eagle nest was still active as well as a Peregrine Falcon nest on Delta Creek. A nesting pair of Osprey was first observed on DTA in 2009 on a power pole. Since then the pair has successfully moved to a nesting platform. Nest phenology data has been collected annually, including: arrival, incubation, hatch, fledge, and departure dates. This is the third year for this monitoring effort. In 2012 the pair successfully fledged two young.

Both current and historical nesting records are compiled into the DTA Raptor Nest Database. The database is amended annually with any nest updates from revisits as well as any newly identified nesting structures.

Dedicated Golden Eagle surveys are slated to be conducted on DTA and BRTA during the 2013 field season.

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RAPTOR SURVEY OF THE PORCUPINE RIVER, ARCTIC AND YUKON FLATS NATIONAL WILDLIFE REFUGES, ALASKA, 2012

David Payer, USFWS and Fran Mauer, USFWS (ret.)

Raptor surveys were conducted on the Porcupine River in northeastern Alaska during 32 of 37 years from 1976 to 2012. The primary objectives of these surveys are to assess the status, distribution, and productivity of American peregrine falcons (*Falco peregrinus anatum*) and other cliff-nesting raptors. The study area comprises 166 km of the Porcupine River corridor between the U.S.-Canada border and Rock Slough. This includes the entire section of river within the Arctic National Wildlife Refuge (approx. 135 km), and a portion of the river within the Yukon Flats National Wildlife Refuge. Since 1988, Arctic National Wildlife Refuge personnel have conducted the surveys.

In 2012 we conducted a single survey by non-motorized canoe during 11-20 July. We observed 24 pairs of peregrines, including 16 pairs with young, plus 6 single adults apparently associated with territories. We estimated a minimum of 2.1 young per successful pair and 1.4 young per total pairs. The number of occupied peregrine territories increased between 1979 and 1993, and has remained relatively constant since 1994. Between 1979 and 2012 there was significant inter-annual variability but no obvious linear trend in the number of successful pairs per total pairs (i.e., proportion of pairs having young in mid-July). However, the number of young per successful pair may have declined as the population increased (linear regression, adj. R^2 = 0.27, P = 0.01).

We also observed 5 pairs of golden eagles (*Aquila chrysaetos*) at stick nests, including 3 pairs with young. This was the most golden eagle nesting activity observed on the surveyed portion of the Porcupine River since 1999, and is equal to the long-term mean of 3.0 golden eagle nests with young in mid-July for 1979-2012.

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AVIAN PREDATOR PREY DYNAMICS IN KENAI FJORDS NATIONAL PARK: INTEGRATING RAPTOR AND SEABIRD STUDIES

Laura Phillips, Kenai Fjords National Park; Stephen B. Lewis and Angela Matz, US Fish and Wildlife Service

In 2012, we initiated a study to better understand the food-web dynamics that determine upper trophic levels and bioaccumulation of contaminants in the marine environment. In combination with ongoing monitoring surveys for peregrine falcons, bald eagles and colonial seabirds, we collected biological samples to evaluate contaminant levels and diet of falcons and eagles nesting in Kenai Fjords National Park (KEFJ) and adjacent Alaska Maritime National Wildlife Refuge lands. In May, using the M/V Serac (53-ft fiberglass live-aboard boat) and helicopter surveys, we located peregrine falcon and bald eagle nest sites to determine territory status (occupancy.) We

accessed nest areas of raptors from the ground to collect egg and feather samples for contaminant analyses and prey remains to assess diet. We revisited nest sites in July to determine productivity of raptor nests as well as collect additional prey and feather samples. We surveyed 19 falcon nesting territories in the Kenai Fjords study area, 10 of which were occupied by adult peregrine falcons. We confirmed the presence of chicks at 3 of the 10 occupied nest territories. We collected 2 bald eagle and 4 peregrine falcon eggs from nests for a full suite of contaminants analyses. We collected shed feathers from 13 bald eagle and 4 peregrine falcon nest territories for mercury and genetic analyses. We identified 255 individual prey items from raptor nest areas and selected feather samples from 35 of these for mercury content. Initial results suggest that fork-tailed storm petrels and common murres may be important prey for peregrine falcons and bald eagles respectively. Examining the predator-prey dynamics and contaminant burdens of these species will allow us to better understand changes observed in long-term monitoring programs and develop appropriate conservation strategies for KEFJ.

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BALD EAGLE NEST SURVEY KENAI FJORDS NATIONAL PARK, ALASKA

Laura Phillips, Kenai Fjords National Park and Tammy Wilson, Southwest Alaska Inventory and Monitoring Network, National Park Service

As part of a vital sign monitoring program, we conducted two aerial surveys during bald eagle breeding season to determine nest occupancy and productivity following methods outlined in Thompson and Phillips (2011). We surveyed 69 bald eagle nests on transects, 43 of which were occupied by incubating eagles. Twenty-three (53%) of the 43 occupied nests contained at least one nestling during the nest productivity survey in July. Of these, 13 had a single fledgling and 10 had two fledglings.

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Literature Cited

Thompson, W. L., and L. M. Phillips. 2011. Evaluation of a dual-frame design to estimate occupancy and productivity of bald eagle nests in Kenai Fjords National Park. Natural Resource Technical Report NPS/SWAN/NRTR—2011/413. National Park Service, Fort Collins, Colorado.

RAPTOR SURVEYS AT LAKES IN THE OUMALIK-KOKULAK REGION, NPRA, ALASKA, JULY 2012

Robert Ritchie, ABR, Inc. and Debbie Nigro, BLM, Fairbanks, AK

Although there are records of Peregrine Falcons nesting on lakes in North America, they have rarely been identified on lakes in Alaska. In 2012, we surveyed 325 lakes for nesting Peregrine

Falcons in the foothills of northeastern NPRA. This location was chosen because surveys in 1999 found peregrines nesting on lakes, and there were numerous lakes in the area. We used a detailed 5-m Digital Elevation Model for the NPRA and lakes within the National Hydrological Dataset to select lakes >0.25 km^2 that had an elevation range ≥15 m along their shorelines. During helicopter surveys in July 2012, we recorded Peregrine Falcons at 21 lakes, including 15 pairs of which 11 were successful. All nesting pairs were on thermokarst lakes near the Ikpikpuk River. Lakes with steep, eroding aeolian silt banks, underlain by rapidly degrading permafrost with islands of drier soil, were used for nesting. Peregrine observations were limited at lakes east of the Ikpikpuk River where bluffs are better drained. However, non-breeding Gyrfalcons and Golden Eagles were recorded regularly throughout the study area.

Summary and Recommendations

Peregrine Falcons regularly nested on lakes in the Oumalik subregion, west of the Ikpikpuk, an area with numerous steep-sided, thermokarst lakes. This lake type seems to correspond closely with the presence of eolian silts and rapidly degrading ice-rich permafrost (Yedoma). Peregrines were not found successfully nesting on other deep lakes east of the Ikpikpuk River (eolian sands).

In 2013, we recommend revisiting the Oumalik subregion to survey for Peregrine Falcons, mapping additional lake habitats used by peregrines, and conducting additional surveys for Peregrine Falcons in similar habitats farther west of the 2012 study area (e.g, Ishuktak to Meade River.

We were surprised to record so many Gyrfalcons at lakes in the study area and recommend continuing to assess their relative abundance in the study area. Improved estimates of age, sex, and color phase of Gyrfalcons would also be beneficial.
Information on food habits and habitat use in the area would be valuable data to collect, but currently are outside the objectives of this research program

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DISTRIBUTION AND ABUNDANCE OF RAPTORS FOR THE USIBELLI COAL MINE, INTERIOR ALASKA

Robert Ritchie, John Shook, ABR, Inc.–Environmental Research & Services

ABR conducted helicopter-based occupancy surveys of cliff- and tree-nesting raptor species (Bald and Golden Eagles, Peregrine Falcon, Gyrfalcon, Red-tailed Hawk) and Common Raven near new coal mining prospects at Usibelli coal mine, Healy, Alaska. The 2012 report has been prepared.

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PEREGRINE FALCON SURVEYS/MONITORING ON THE TANANA RIVER, INTERIOR ALASKA

Robert Ritchie, John Shook, ABR, Inc.–Environmental Research & Services

Using a motorized inflatable raft, ABR resurveyed cliffs along a section of the Tanana River (Robertson River to Fairbanks) to meet long-term monitoring objectives of the USFWS. Most known nesting sites were accessed using a boat. Surveys were conducted during May to determine occupancy and during July to determine nesting success and productivity. Information will be used to continue to determine status of this formerly listed species. Forty-six occupied territories were located in 2012; 38 (83%) were successful, producing means of 2.2 young/occupied nest and 2.6 young/successful nest. A database has been prepared for the USFWS.

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DISTRIBUTION AND ABUNDANCE OF RAPTORS FOR THE PROPOSED FOOTHILLS WEST ROAD CORRIDOR, NORTHERN ALASKA

Robert Ritchie and Ann Wildman, ABR, Inc.–Environmental Research & Services

ABR conducted helicopter-based occupancy surveys for cliff-nesting raptor species (Golden Eagle, Peregrine Falcon, Gyrfalcon, Rough-legged Hawk) and Common Raven along potential road corridors between Trans-Alaska Pipeline System and Umiat for the ADOT, Alaska. The 2012 report is being prepared.

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DISTRIBUTION AND ABUNDANCE OF RAPTORS FOR THE GVEA EVA CREEK WIND PROJECT, INTERIOR ALASKA

John Shook, Robert Ritchie, ABR, Inc.–Environmental Research & Services.

ABR conducted helicopter-based occupancy surveys for Bald and Golden Eagles near the GVEA Eva Creek Wind Project, Healy, Alaska. The 2012 report has been prepared.

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DISTRIBUTION, ABUNDANCE, PRODUCTIVITY AND WINTER CONCENTRATIONS OF RAPTORS AT THE PROPOSED SUSITNA-WATANA HYDROELECTRIC PROJECT, INTERIOR ALASKA

John Shook, Robert Ritchie, Joe Welch, ABR, Inc.–Environmental Research & Services

ABR conducted helicopter-based occupancy, productivity, and winter roost surveys for large cliff- and tree-nesting raptor species (Bald and Golden Eagles, Peregrine Falcon, Gyrfalcon, Rough-legged Hawk, Red-tailed Hawk) and Common Raven in the Susitna-Watana Hydroelectric Project area. The 2012 report is being prepared and should be made available to the public on the Susitna-Watana project website: http://www.susitna-watanahydro.org/.

This project is scheduled to continue for two more years (2012–2014).

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ASSESSING THE STATUS OF THE DECLINING RUSTY BLACKBIRD ACROSS ALASKA

David F. Tessler, Alaska Department of Fish and Game; Steven M. Matsuoka and James A. Johnson, U.S. Fish and Wildlife Service; April Harding-Scurr and David Shaw, Alaska Bird Observatory; Erin Cooper, Chugach National Forest; David Loomis, Oregon State University

This abstract is intended to provide an overview of a large collaborative effort, not take credit for the excellent work of individual researchers whose specific projects may also appear here in the BPIF annual summary or elsewhere.
We initiated a collaborative research effort to determine if demographic deficits in Alaska are contributing to the long-term decline of the Rusty Blackbird. This collaborative effort ran from 2008 until 2012, and included study sites in Anchorage, Fairbanks, Joint Base Elmendorf-Richardson, Fort Wainwright, Tetlin and Yukon Flats National Wildlife Refuges, and the Copper

River Delta. Summer 2012 was the last planned season for band resighting efforts in Anchorage, Fort Wainwright, and Tetlin. We employed a coordinated banding and resighting strategy to determine breeding site and mate fidelity, natal philopatry, and adult survival. We collected data on nesting effort, nest survival, hatching and fledging success, gross productivity, and causes of loss. While analyses of data from many of the constituent study sites are nearing completion, synthetic analysis of the statewide data sets will begin winter 2013. Preliminary results suggest relatively high levels of productivity throughout the state, variable but moderate levels of apparent overwinter adult survival, and low levels of natal philopatry, juvenile survival, or both. Synthesis of these statewide data collections is necessary to determine what demographic parameters, if any, are limiting Rusty Blackbird populations in Alaska.

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INVENTORY OF BREEDING BIRDS OF THE ALAGNAK WILD RIVER

Kelly Walton, Tracey Gotthardt, and Jennifer McGrath, Alaska Natural Heritage Program; David Tessler, Alaska Department of Fish and Game

As part of the National Park Service's Inventory and Monitoring Program, biologists from the Alaska Natural Heritage Program, National Park Service, and Alaska Department of Fish and Game, conducted an inventory of breeding birds along the Alagnak Wild River. The Alagnak Wild River is the only park unit within the Southwest Alaska Network (SWAN) of parks that has not been inventoried for avian fauna. While the Alagnak Wild River is the smallest of the SWAN park units, it preserves the upper 90 km of riverine habitat in a pristine, free-flowing condition as well as the surrounding riparian and upland environment, which are extremely valuable habitats for avian species.

Point count surveys were conducted within appropriate habitats along the Alagnak River corridor from June 1 to 14, 2011. We detected 76 species, including 13 species of conservation concern. Overall, we detected 73 (59%) of the 123 species on the parks avian species checklist. Additionally, we detected three species previously not recorded within the Alagnak Wild River boundaries, the American Kestrel, Bar-tailed Godwit, and Arctic Warbler. The most commonly detected species were Wilson's Warbler, American Tree Sparrow, Savannah Sparrow, and White-crowned Sparrow. These species were also the most widely distributed species at locations where we conducted point counts and were often associated with shrub communities. This inventory represents the first systematic ground survey of birds within the Alagnak Wild River and complements recent work conducted in other SWAN parks. Each of these inventories has greatly contributed to our understanding of the distribution and abundance of birds in southwestern and southcentral Alaska. Results from this inventory will be published in an NPS report in the spring of 2012 and will be available on the Alaska Natural Heritage Program and SWAN websites.

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FUTURE BIRDERS? THIRTY STUDENTS LEARN BIRDING BASICS IN RURAL ALASKA

Dara Whitworth, Innoko National Wildlife Refuge; Cari Eggleston, Alaska Department of Fish & Game; Kevin Whitworth, MTNT Limited; and the teachers at the Iditarod Area School District

It can be challenging to get thirty elementary and middle school students excited about songbirds, especially at 7:00 am on a summer morning. That was the goal for a group of 5th to 8th grade students from seven interior Alaska villages that attended the first Iditarod Area School District Science/Art Camp in early June. On day two of the camp, Bird Day, dew still clung to the grasses and fog obscured the far bank of the river at a local birding hotspot in McGrath, Alaska. A Lesser Yellowleg landed with a flurry of wings on a nearby sandbar, Bank Swallows flitted overhead, and a lone Herring Gull rode the current on a drifting log. The students noticed the mosquitoes right away, but it took a little coaxing for them to notice the birds.

Dara Whitworth, a wildlife biologist for the Innoko National Wildlife Refuge, planned a day of learning about birds for students attending the camp. The students were split into three groups and alternated between field study activities, games, and bird related art. For those in the field, the morning began with a challenge. Even earlier that morning, Dara had set up eight printed and laminated images of local birds commonly found along the river, in order to help the kids practice using binoculars to spot birds. Thanks to some low-tech packing tape; there were fake birds clinging to tree branches, perched on logs, standing openly on the shore, and hidden in various other locations. She challenged the kids to find as many birds as they could. “Now who can find the bright yellow bird?” she asked the students after they had found three of the most obvious. They were surprised that a yellow bird lived in Alaska and began their diligent search, scanning the willow brush and river shore for the hidden Yellow Warbler. Eventually, a cry went out “Hey, I found it!” and the others scrambled to look where one of the kids was pointing. The next challenge, who could find all eight? The kids spent the next twenty minutes trying to locate the rest of the laminated birds. Until one boy called excitedly, “Hey look, a loon!” and pointed to a large bird flying overhead. Everyone quickly focused their binoculars on the passing bird; it was, a Red-throated Loon.

After learning how to handle binoculars and identify birds, the kids were told they would get to become biologists and conduct their own bird survey. Dara, along with two guest instructors (Cari Eggleston, from the Alaska Dept. of Fish & Game and Kevin Whitworth, from MTNT Limited, the local Native Corporation), taught the kids how biologists collect weather data when conducting a bird survey. The kids used hand-held thermometers and wind meters to record the data in their field journals. It was then explained that many bird surveys, in interior Alaska, rely on identifying bird songs rather than actually sighting birds because the vegetation is often too thick to spot birds. So the instructors had the kids listen to and memorize a CD recording of an Alder Flycatcher’s song. The goal was to count the number of times they heard the real alder flycatchers calling around them during one minute of survey, and to see if they could identify

how many individuals were there. The kids recorded their data on a rough, hand-drawn compass circle, with their position as the center; putting a mark where they heard individual Alder Flycatchers. The kids were excited to share their results and see if they were right about the number of birds.

The final activity of the morning was a bird walk to look for the birds that had been hiding in the area all along. The kids were eager to listen for songs and to be the first to spot birds. They searched for bird tracks in the mud, asked the identity of birds that were calling, and talked about the birds they knew from back in their home villages. They were able to explore and discover; searching carefully for a hidden nest when a pair of Spotted Sandpipers flushed suddenly from the grass.

After lunch, the students returned to learn about bird nests, migration, bird banding, and the different types of birds. They marveled at the different sizes, shapes and colors of bird eggs, and many of the children were surprised by the diverse colors of the birds themselves. It was apparent by the end of the day that many of the children left with an enthusiasm and desire to learn more about the birds in their local environment.

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HOW MANY SMITH'S LONGSPUR ARE IN ALASKA'S BROOKS RANGE: ESTIMATING BREEDING DENSITY OF A POLYGYNANDROUS SPECIES

Teri Wild, University of Alaska Fairbanks; Steve Kendall, U.S. Fish and Wildlife Service; and Abby Powell, U.S. Geological Survey

Smith's Longspur (*Calcarius pictus*) is a species of concern, yet few studies have been conducted on their breeding grounds in Alaska. To date, monitoring programs have not adequately evaluated the densities or abundance of this patchily-distributed species. We surveyed 32 point transects for breeding Smith's Longspur at five sites in the Brooks Range in June 2006 - 2009. Using distance-sampling methods, we modeled detection of 246 males pooled across all sites for an average density estimate of 0.16 bird/ha ($CI_{95\%}$ = 0.09 - 0.3), with site-stratified estimates ranging from 0.04 - 0.32 birds/ha ($CI_{95\%}$ = 0.03 – 1.5). Repeated surveys at Atigun Gorge suggest that peak detectability of males is during the first two weeks of June, with detections decreasing after incubation commences (Fig. 1).

Point surveys were more practical in rough terrain and were better suited for evaluating habitat associations. While line surveys detected more birds, the histogram of detections across distance intervals showed some evidence of heaping between 40-80 meters. This may indicate that birds were moving prior to detection, a violation of an important assumption for distance sampling analyses. From this study we gained a better understanding of the Smith's Longspur numbers in northern Alaska and explore issues important to future survey/monitoring efforts.

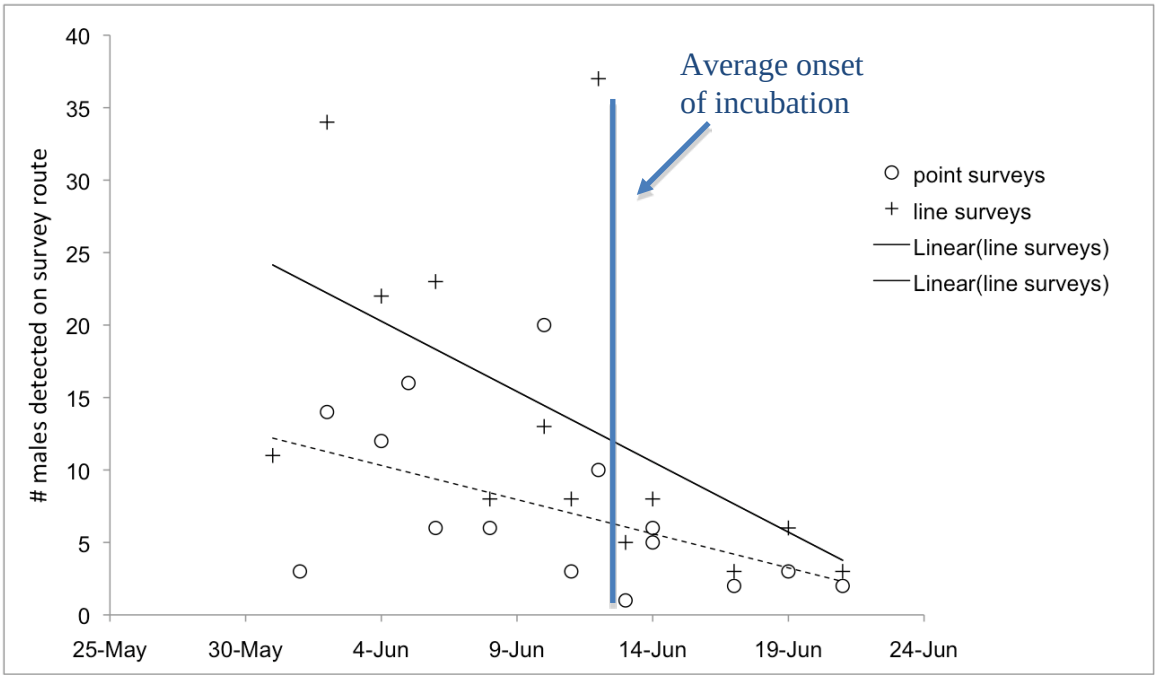

Figure 1. Counts of Smith's Longspur males from repeated point and line surveys of three routes conducted in Atigun Gorge, Alaska during June 2007-2009.
Evaluation of point and line count surveys resulted in different estimates showed the effectiveness and potential shortcomings of each method.

Table 1. Density estimates for male Smith's Longspurs from point and line surveys conducted during June 2007 and 2009 in Atigun Gorge, Alaska.

	detections (n)	density (males/ha)	95% confidence interval	%CV
point surveys	98	0.22	0.10 - 0.51	34%
line surveys	138	0.11	0.08 - 0.15	13%

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APPENDIX 1. LIST OF LANDBIRD PUBLICATIONS IN 2011–2012 THAT WERE AUTHORED BY BPIF MEMBERS OR DEALT WITH SPECIES SHARED WITH BPIF.

Breeding Behavior & Ecology

Booms, T. L., P. F. Schempf, and M. F. Fuller. Preening behavior of adult Gyrfalcons tagged with backpack transmitters. Journal of Raptor Research 45:264–267.

Johnson, J. A., L. H. DeCicco, S. M. Matsuoka, and A. Sowls. Nesting ecology of McKay's Buntings (*Plectrophenax hyperboreus*) on St. Matthew Island, Alaska. Wilson Journal of Ornithology: In press.

McIntyre, C.L., and J.H. Schmidt. 2012. Ecological and environmental correlates of territory occupancy and breeding performance of migratory Golden Eagles *Aquila chrysaetos* in interior Alaska. Ibis 154:124–135.

Disease, Parasites, & Contaminants

D'Alba L, Van Hemert C, Handel CM, Shawkey MD (2011) A Natural Experiment on the Condition-Dependence of Achromatic Plumage Reflectance in Black-Capped Chickadees. PLoS ONE 6(10): e25877. doi:10.1371/journal.pone.0025877

Matz, A., T. Swem, P. Johnson, T. Booms, and C. White. 2011. Potential for climate change to increase contaminants exposure and effects in Gyrfalcons. Pages 161–176 in R. T. Watson, T. J.Cade, M. Fuller, G. Hunt, and E. Potapov (Eds.). Gyrfalcons and Ptarmigan in a Changing World, Volume I. The Peregrine Fund, Boise, Idaho, USA. http://dx.doi.org/10.4080/gpcw.2011.0115

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