Boreal Partners in Flight

2006 Annual Meeting

Proceedings and Project Descriptions

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Anchorage, Alaska

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A NOTE FROM THE COMPILER

I won't waste everyone's time with a lot of text here; there's plenty of text to absorb in the following pages. However, I would like to take a moment to remark on the wide diversity of topics and contributors represented at this year's meeting and in the submitted project descriptions. Over 50 projects are represented in this document when presentation abstracts and project descriptions are combined. The actual number of individual projects is much greater if you consider that many submissions summarize multiple projects. When broken down by affiliation of the lead author, federal agencies are responsible for 56% of all contributions, but the breadth of the effort is inspiring. For those of you keeping tabs on the "war between the sexes" (I think we get along quite nicely, actually), the gender split between lead authors is 50:50. The list below is an imperfect summary because a large number of these projects were collaborative enterprises involving many partners. Thank you all for your contributions toward understanding and conserving birds and their habitats in Alaska. *David F. Tessler*

Affiliation of Lead Author	***Number of Contributions***
Federal Agencies	**28**
Department of Defense	1
National Park Service (including)	6
Denali NP	
Gates of the Arctic NP	
Lake Clark NP	
Wrangell St. Elias NP	
USDA Forest Service (including)	4
Chugach National Forest	
Tongass National Forest	
US Fish and Wildlife Service (including)	13
Migratory Bird Management	
Alaska Peninsula NWR	
Arctic NWR	
Becharof NWR	
Kanuti NWR	
Kenai NWR	
Kodiak NWR	
Innoko NWR	
Tetlin NWR	
Yukon Delta NWR	
US Geologic Survey	4
Canadian Wildlife Service	1
State Agencies	**4**
Alaska Department of Fish and Game	4
Universities	**9**
Colorado State University	1
Cornell Lab of Ornithology	1
University of Alaska Anchorage	2
University of Alaska Fairbanks	3
University of Washington	2
NGOs	**7**
Alaska Audubon	3
Alaska Bird Observatory	3
Biodiversity Research Institute	1
Private Firms	**2**
Sandhill Company	1
Willson Consulting	1

PRESENTATION ABSTRACTS

Landscape drying, spruce bark beetles and fire regimes on the Kenai Peninsula, Alaska

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Prior to 1977, La Niña cycles brought cool summers and cold winters to the Kenai Peninsula. Warm El Niño summers would initiate spruce bark beetle (SBB) outbreaks, which were soon extinguished returning La Niñas. Since 1977 warm El Niño years have become much more frequent, and even the cool La Niñas are warmer. The warmer summers are drying out the landscape. Peatlands that have been wet Sphagnum fens for 8-13,000 years are for the first time being invaded by woody shrubs and black spruce. In the past these wetlands were fire excellent firebreaks; as the climate dries they are becoming fuel bridges. Longer runs of warm summers have allowed SBB populations to grow exponentially by shortening the 2-year beetle life cycle to 1 year. The 11-year run of warm summers from 1987 to 1997, for example, produced the largest SBB outbreak ever recorded in North America. The outbreak ended only when the beetles had exhausted available host material, not because the summers had cooled. In the past there was no connection between SBB outbreaks and wildfire. Our fire and SBB outbreak history studies indicate that white/Lutz spruce forests burn with a mean fire return interval (MFI) of 400-600 years, whereas the beetles thin the forests every 50 years on average. Black spruce – which is not affected by the SBB - is the dominate fire regime on the Kenai, with an MFI of c.80 years. With a warmer climate we expect that bark beetles will kill white/Lutz spruce before continuous mature conifer forests can be re-established, and that the resulting grasslands and hardwoods will provide a more heterogeneous vegetation cover in upland areas. The absence of conifers will make the upland areas more fire resistant, at least after spring green up. The lowland areas, on the contrary, will become more flammable with increased shrub and black spruce cover.

Gyrfalcon Site Fidelity on the Yukon Delta National Wildlife Refuge: The Rest of the Story

Travis Booms, University of Alaska Fairbanks, Biology and Wildlife Dept., 211 Irving I, Fairbanks, AK 99775. travisbooms@hotmail.com

Preliminary results from genetic analysis of adult Gyrfalcon molted feathers on the Yukon Delta National Wildlife Refuge (YDNWR) in 2003 and 2004 are consistent with a population exhibiting high turnover rates and low nest site fidelity. This is surprising and contra to conventional thought, limited published data, and raptor biology theory. In 2005, I collected 197 additional molted feathers from 16 Gyrfalcon nest areas on the

YDNWR. Genetic analysis of these samples is ongoing. Recent results will be discussed and used to confirm or refute the lack of site fidelity and rates of turnover found in the 2003 and 2004 data.

What's new with Audubon Alaska's education program

Rich Capitan, Education Specialist
Audubon Alaska, 715 L Street, Suite 200, Anchorage, AK 99501

Rich Capitan, education specialist with Audubon Alaska is continuing to deliver its Audubon Bird Academy to students statewide, but is also driving the program in new directions. eBird Alaska, a portal to the greater eBird online database developed by the Cornell Lab of Ornithology and National Audubon Society is currently in development. This online resource provides a simple way to keep track of birds seen anywhere in North America. This summer saw a pilot project for a Westchester Lagoon interpretive program. An intern was stationed at the lagoon 4 days a week to interact with the public and raise awareness of birds and wildlife in the Anchorage area. Working with community programs and festivals has also been a priority in Audubon's education program, as well as judging the Alaska Migratory Bird Calendar, presenting public presentations at the Alaska Public Land Information Center in Anchorage. The Anchorage Daily News recently began a weekly news feature, highlighting at risk species on Audubon Alaska's Watch List.

Nesting Dynamics of Rusty Blackbirds on Innoko National Wildlife Refuge, Alaska – A Preliminary Study, Spring 2006.

Robin Corcoran, U.S. Fish and Wildlife Service, Innoko National Wildlife Refuge, PO Box 69, McGrath, AK 99627, (907) 524-3251, robin_corcoran@fws.gov

Due to long-term population declines, the Rusty Blackbird has been designated a *species of continental concern* by Partners in Flight. Although this decline is well documented, both their general ecology and causes for declines remain unstudied. In 2006, we collected preliminary data on Rusty Blackbirds to determine the feasibility of conducting a breeding ecology study on Innoko National Wildlife Refuge in west-central Alaska. We located 5 Rusty Blackbird nests during 3 days of nest searching a 22 km stretch of Hather Creek from June 6-12. Most nests (4) were located early in the nestling phase by observing adults with food. Nests were initiated from May 19-24. One nest was found during nest construction and was most likely a re-nest attempt since it was located when other Blackbird nests in the area had already hatched. Apparent nest survival was 60%, 3 of 5 nests successfully fledged at least 1 young. All nested were located in tall willow shrubs (average shrub height = 4.3m); 4 out of 5 nests were in diamond-leaf willow (*Salix planifolia* ssp. *pulchra*) - the most common willow species found on the refuge, and the

fifth was in sandbar willow (*Salix exigua*). Average nest height was 1.5m. The shortest distance between 2 nests was approximately 250m, and the average distance to nearest neighboring nest was 940m. Four out of the 5 nests were located in a 1 square km area near the confluence of Hather Creek and the Innoko River. As has been reported previously, during most nest checks observers were mobbed by 3 to 5 adult Blackbirds, indicating that pairs nesting in close proximity often group together to alarm call in the presence of perceived nest predators. Nestlings from 2 of the 3 successful nests on Hather Creek were banded just prior to fledging with federal bands only. The female at one nest and both adults at a second nest were mist netted and color banded when nestlings were banded. We failed to band at the third successful nest because the young fledged prior to the date predicted based on our observation of nest chronology. In 2007, we plan to devote more time in late-May and June to locating and monitoring Blackbird nests on Hather Creek and to expand our search efforts to 3 additional tributaries of the Innoko River; Hammer, No-Name, and Grouch Creeks.

University of Alaska Anchorage Ornithology: Research and Collections

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The University of Alaska Anchorage Avian Collection (UAAAC) was established in 2004. The purpose of the collection is education, research, and preservation of the record of avian biodiversity and environmental conditions through time. The primary focus of the collection is Holarctic avifauna. The collection currently contains over 2300 specimens representing 17 orders, 46 families and over 250 species from Palearctic (over 2000 specimens) and the state of Alaska (over 250 specimens). At UAAAC specimens are prepared as round skins, skeletons, or combination of both. Virtually all specimens have associated extended wings and tissue samples. In 2006, we began preserving avian influenza samples (lower portion of large intestine with feces) from all specimens. Skins, skeletons and extended wings are kept in drawers in special airtight cases. Tissue and AI samples are stored in an ultra cold freezer at -80^{o}C. Preparators record date and place of collection, habitat description, geographic coordinates, sex, age, breeding status, molt, body condition, body mass, etc. All these data are then entered into the computerized database, capable of generating a variety of reports, tags, and labels. UAAAC website: http://ornithology.uaa.alaska.edu/ provides information on birds of AK and detailed guide (with step by step photos) for preparation of avian specimens. UAAAC is one of the few collections in the world that preserves extended wings associated with specimens. Extended wings provide unparallel opportunities for studies of molt and aerodynamics of avian flight, and represent an important resource for wildlife illustrators and artists.

The UAA's population genetics lab (http://afsvd.uaa.alaska.edu/), which is associated with UAAAC, conducts research in three main areas: population genetics and phylogeography of Holarctic birds, mitochondrial genomics of adaptation to cold, and

ecology and evolution of Avian Influenza in terrestrial birds. Currently we are working on phylogeography of Ptarmigan (*Lagopus*), rosyfinches (*Leucosticte*), horned larks (*Eremophila*), prairie grouse (*Tympanuchus*), boreal warbler (*Phylloscopus borealis*), redpolls (*Carduelis flammea/hornemanni*), and common murre (*Uria aalge*). In collaboration with A. Kitaysky, UAF, we are conducting study of comparative mitochondrial genomics of adaptation to cold in black-capped chickadee (*Poecile atricapilla)*. This study compares mitochondrial efficiency of birds that exhibit different physiological reactions to cold on a local scale, as well as along a large-scale latitudinal transect. Finally, we just began a study of ecology and evolution of Avian Influenza in terrestrial birds. A series of willow ptarmigan from Cold Bay is being tested for presence of a variety of AI types.

In conclusion, UAAAC would like to establish collaborations with other organizations studying birds in Alaska. We can contribute a great deal of expertise in avian surveys and populations genetics, as well as build and provide access to collections to all interested researcher and students.

Mercury Levels in Passerines

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See notes in APPENDIX: MEETING MINUTES

Alaska Landbird Monitoring Survey (ALMS)

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See General Landbird Projects: *2006 update of the Alaska Landbird Monitoring Survey (ALMS) and Alaska Off-road Breeding Bird Survey*

Smith's Longspur Studies in the Arctic National Wildlife Refuge and Gates of the Arctic National Park and Preserve, June 2006.

Steve Kendall[1] and Melanie Wike[2]

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As one of the least known North American birds with a restricted range and population size, Smith's Longspur (*Calcarius pictus*) has been listed as a species of conservation concern by Boreal Partners in Flight, the U.S. Fish and Wildlife Service and the Canadian Wildlife Service. Effective conservation requires an understanding of population dynamics, habitat requirements, and threats throughout a species annual cycle. However, little work has been done investigating this species on their breeding grounds in Alaska. In 2006, the U.S. Fish and Wildlife and National Park Service initiated preliminary studies on Smith's Lonspurs in the Arctic National Wildlife Refuge (Arctic Refuge) and Gates of the Arctic National Park and Preserve (GAAR).

The goal of this project was to gather preliminary information to design future studies with the following objectives: 1) document the distribution and abundance of Smith's Longspurs and identify areas where Smith's Longspurs occurred in numbers sufficient to support more in-depth studies, 2) assess methods to measure abundance and distribution, 3) document breeding chronology to allow us to focus on the appropriate time periods for future studies, 4) collect habitat association data to help determine appropriate locations of future studies, 5) collect any additional behavioral data on Smith's Longspurs that could be useful in designing future studies.

To meet these objectives we conducted point counts on randomly distributed points following modified Alaska Landbird Monitoring (ALMS) protocols. On these points we used distance sampling techniques to record all birds heard within a 10 minute period and classified surrounding habitat to Verrick level-III. We also collected more detailed information on non-random points placed in areas of observed Smith's Longspur concentrations. On these points 15 minute point counts were conducted focusing only on Smith's Longspurs. We mapped locations and movements of these birds, as well as recorded notes on behaviors. Habitat information was collected using the ALMS protocols, which in addition to Verrick classification, included National Wetlands Inventory and Kessel classification.

We conducted surveys 2 to 12 June at Sunset Pass in the Sadlerochit Mountains on the Arctic Refuge. We surveyed 5 sets of 10 random points and 6 non-random points. We detected 38 Smith's Longspurs on random points and recorded behaviors of 22 birds on the non-random points. There were 35 Smith's Longspurs observed between points. Birds were establishing territories and somewhat ephemeral during this time period. We

mostly observed groups of males utilizing large, loosely defined territories (neighborhoods) in tundra habitats. Few females were observed, and no nests were located, indicating we were present during early stages of the breeding cycle. Birds were primarily utilizing areas of mixed tundra and dwarf shrub within 1 km of streams or rivers.

In GAAR, we conducted Smith's Longspur surveys from 12 to 24 June in conjunction with avian point-count transects along the Itkillik River corridor. These avian point-count transects were surveyed in 2005 and replicated in 2006. In 2006, we returned to areas where Smith's Longspurs had been previously detected and survey both randomly and non-randomly selected points. As with the Arctic Refuge, non-random surveys were conducted in areas where we observed Smith's Longspurs outside of the random survey area. We used 2005 and 2006 observations to select these points. Similar methods were used on the GAAR and Arctic Refuge non-random Smith's Longspur points, except in GAAR we only used Verrick to classify habitat.

At the Itkillik River we surveyed 65 randomly selected points along 9 transects during the avian point-count surveys. Nineteen non-randomly selected Smith's Longspur points were surveyed. A total of 165 Smith's Longspurs were detected on non-random and random points. Of these, we recorded (mapped) the behaviors of 91 birds on the non-random points.

The Smith's Longspurs at the Itkillik River appeared to have established territories and initiated breeding and incubation, later stages of nesting chronology than observed on the Arctic Refuge. We observed many single males utilizing the shrubby river bars, rather than occurring in groups in tundra habitats as in the Arctic Refuge. This could indicate that they were foraging for aquatic insects to feed their young. Other behaviors observed included; mate-guarding, sentinel behaviors, and females and males foraging together and exchanging contact calls. We found 1 nest by flushing an incubating female. The nest had 4 eggs and was located in mesic, graminoid herbaceous habitat approximately 300 m from the locations where extensive sentinel behavior among males was observed.

In GARR, all Smith's Longspurs were detected in the broad Itkillik River valley on gentle slopes of ≤ 5 degrees and within 1 km of flowing water (e.g. either ephemeral streams, established streams or the river). Male birds were primarily detected in areas of dryer, tundra and dwarf shrub (*Salix* and *Betula*), which they used for perches. Female birds were found in larger areas of wet or mesic graminoid herbaceous habitats intermixed with dryas, which surrounded the tundra/shrub habitat. Females were typically observed calling from and foraging on the ground.

Additional observations are needed to fully document the chronology and behaviors associated with arrival to the breeding grounds, breeding, nesting, incubation and fledging. Smith's Longspurs have demonstrated strong breeding-site fidelity and only rear one brood per year. This behavior will allow for the observations of a few neighborhoods in one area for the duration of the breeding season (late May throughout June). Mist-netting some birds for the placement of color bands and the collection of

buccal swabs for genetic analyses could also be useful to refine population estimation methods and examine the relatedness of neighborhoods, regional populations and paternity.

The results of this preliminary work show that areas on the north side of the Brooks Range have adequate numbers of Smith's Longspurs present to merit continued, expanded studies. We hope to do this in future years, by expanding to other suitable areas in the National Petroleum Reserve – Alaska and possibly seeking a University of Alaska, Fairbanks graduate student to lead on studies the Arctic NWR.

Virology and demography of Eastern Yellow Wagtail in the Askinuk Mountains, Alaska

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The Eastern Yellow Wagtails is the highest ranking species for HPAI surveillance in Alaska. In this study, we targeted Eastern Yellow Wagtails for surveillance sampling in the Askinuk Mountains, Alaska—the location where this species reaches its highest breeding densities in North America. We sampled wagtails at two locations in the Askinuk Mountains: Cape Romanzof and Kagankaguti Lake. We targeted the capture of wagtails during both breeding and post-breeding periods. We captured and sampled for influenza viruses a total of 123 adult and 122 juvenile Eastern Yellow Wagtails. The majority (93%) of these birds were captured at Kagankaguti Lake as we only observed 8 nesting pairs of wagtails at Cape Romanzof in 2006. We captured most adult wagtails (89%) on or near nests (n = 8 nests at Cape Romanzof; n =100 nests at Kagankaguti Lake). We captured and sampled all juvenile and post-breeding adult wagtails in mist net arrays. Incidental to our work on wagtails we captured and sampled for HPAI 264 individuals of 15 bird species. Most notably, we captured and sampled 130 Gray-cheeked Thrushes (n = 55 adults, 75 juveniles), 8 Northern Wheatears, and 1 Arctic Warbler. All of these species are on the list of high priority species for HPAI surveillance sampling. During the post-breeding period we also captured 100–300 birds/day; a mixture of several other passerine species whose migrations are limited to the Americas. We collected HPAI samples from a small number of individuals of several of these species. We exceeded our goals of sampling 100 adult and 100 juvenile Eastern Yellow Wagtails for HPAI. We found wagtails to be particularly abundant at Kagankaguti Lake, a site with no prior research on birds. The large numbers of passerines we capture at Kagankaguti Lake suggest that this site is important for passerines staging for migration. We were surprised at the low numbers of birds breeding at Cape Romanzof in 2006. The 8 pairs of Eastern Yellow Wagtails that we observed in this area were far below the 18–34 pairs monitored at Cape Romanzof from 1996–1999. We found, in 2006, that many of the areas at Cape Romanzof used for nesting by wagtails in past years were covered in snow well into June. Thus, we suspect

that heavy snow and cold spring conditions at Cape Romanzof limited the number of breeding wagtails, wheatears, and Bluethroats in the area in 2006.

See full description under General Landbird Projects: *Virology and demography of Eastern Yellow Wagtail in the Askinuk Mountains, Alaska*

Rusty Blackbirds on the Copper River Delta, AK

Paul Meyers, Wildlife Biologist, Chugach National Forest, Cordova Ranger District
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We conducted nest searches for rusty blackbirds on the Copper River Delta to determine the feasibility of a larger-scale nesting study. We found 17 nests and concluded that a nesting study is logistically feasible in this area. Main access was by canoe along beaver sloughs. First eggs were laid 16 May and 75% of those nests found were initiated before 1 June. Mayfield nest success was 21%, with the bulk of predation occurring in the egg stage. We were able to candle eggs to within one day using a candling guide for red-winged blackbirds. We estimated a 27-day nesting cycle from first day of laying to fledge.

Species Ranking Project and Implementation of the Alaska Comprehensive Wildlife Conservation Strategy (CWCS)

Mary L. Rabe,[1] Tracey A. Gotthardt,[2] and Tamara Fields[2].

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[2] Alaska Natural Heritage Program, Environment and Natural Resources Institute, University of Alaska Anchorage, 707 A St., Anchorage, 99501.

The Alaska Department of Fish and Game's (ADF&G) Comprehensive Wildlife Conservation Strategy (CWCS) was approved by the Director of the U.S. Fish and Wildlife Service in December, 2005. With the completion of CWCS, ADF&G is responsible for allocating State Wildlife Grant funds to projects that address species of concern. In order to appropriately allocate funds to species with the greatest conservation need in the state, ADF&G partnered with the Alaska Natural Heritage Program to develop a vertebrate species ranking system to objectively assess conservation priorities in Alaska in a consistent and transparent manner.

Due to its long-standing, explicit and traceable approach, we modeled our ranking system after Millsap et al (1990), a ranking system designed to help prioritize vertebrate conservation efforts in Florida. We adjusted the Millsap et al. (1990) process to better assess conservation priorities in Alaska. The Alaska ranking system includes 8 biological variables, 4 action variables, and 2 supplemental variables. The biological variables measure population status and life history characteristics as an indication of biological vulnerability to extirpation. Action variables measure the current state of knowledge and conservation efforts. Supplemental variables are not used directly in the ranking process; instead, they are used to sort or categorize taxa based on biogeographic, taxonomic, and/or political attributes. We conducted a pilot study for 26 vertebrate species to assess the effectiveness of the modified Millsap approach. Future efforts will include ranking over 300 species included in the CWCS Nominee Species list. The results of the ranking effort will be used to make recommendations and prioritize efforts for the implementation of Alaska's CWCS.

Using Remote Sensing to Examine Changes in Surface Water Area in Interior Alaska from 1950–2002

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Over the past 50 years, Alaska has experienced a warming climate with longer growing seasons, increased potential evapotranspiration, and permafrost warming. Research from the Seward Peninsula and Kenai Peninsula has demonstrated a substantial landscape-level trend in the reduction of surface water and number of closed-basin ponds. We investigated whether this drying trend occurred at nine other regions throughout Alaska. One study region was from the Arctic Coastal Plain where deep permafrost occurs continuously across the landscape. The other eight study regions were from the boreal forest regions where discontinuous permafrost occurs. Mean annual precipitation across the study regions ranged from 100 to over 700 mm yr_1. We used remotely sensed imagery from the 1950s to 2002 to inventory over 10,000 closed-basin ponds from at least three periods from this time span. We found a reduction in the area and number of shallow, closed-basin ponds for all boreal regions. In contrast, the Arctic Coastal Plain region had negligible change in the area of closed-basin ponds. Since the 1950s, surface water area of closed-basin ponds included in this analysis decreased by 31 to 4 percent, and the total number of closed-basin ponds surveyed within each study region decreased from 54 to 5 percent. There was a significant increasing trend in annual mean temperature and potential evapotranspiration since the 1950s for all study regions. There was no significant trend in annual precipitation during the same period. The regional trend of shrinking ponds may be due to increased drainage as permafrost warms, or increased evapotranspiration during a warmer and extended growing season.

All-Bird Conservation Plan for BCR4 Update

Susan Sharbaugh, Alaska Bird Observatory, PO Box 80505 Fairbanks, AK 99708

The Alaska Bird Observatory is coordinating the development of an All-Bird Conservation Plan for the Northwestern Interior Forest (Bird Conservation Region 4). This large conservation region includes land in interior Alaska, the Yukon Territory, western Northwest Territories, and northern British Columbia. This is an international effort to coordinate conservation efforts across a vast stretch of relatively unaltered boreal habitat. Half of the birds found in North America regularly use or breed in the boreal forest. We have compiled a draft priority species list from the current conservation plans (landbird, waterfowl, shorebird, etc.). These species have been assigned to broad habitat categories into focal species suites. We are developing a BCR4 landcover map using Fleming's Alaska Statewide Vegetation/Landcover map (1991) and Canadian Forest Service data from the Earth Observation for Sustainable Development of Forests (EOSD). We are also exploring the possibility of using this landcover map as the base for an interactive website that will make multiple GIS layers and additional information available. Conservation concerns and management recommendations are also addressed. Our current partners include the Canadian Wildlife Service, U.S. Fish and Wildlife Service, Alaska Natural Heritage Program, and True North GIS. Funding for this project is provided by the Alaska Department of Fish & Game Non-game Program, the Mountaineers Foundation, and the Alaska Conservation Foundation. Further discussion and opportunities for input will available during a BPIF associated meeting on Thursday afternoon from 2:30 – 4:30.

Rusty Blackbird research across the continenet

David Shaw, Research Biologist, Alaska Bird Observatory.
Phone: (907) 451-7159; Email: dshaw@alaskabird.org

Due to a steep decline in population, the Rusty Blackbird has been the subject of much concern in recent years. However, until very recently, it has seen little quantitative study. In response, the International Rusty Blackbird Technical Group (IRBTG) has been formed to lead efforts to understand the species' natural history, look for possible causes of declines, research survey and monitoring methods, and make recommendations for management and conservation. As part of that effort, there are currently numerous studies of the breeding and wintering ecology of the species underway. This presentation will outline some of these efforts, present preliminary findings, and describe plans for future research.

Icterids and Asiatics: Research into the breeding ecology of Arctic Warblers and Rusty Blackbirds in interior Alaska.

David Shaw, Research Biologist, Alaska Bird Observatory.
Phone: (907) 451-7159; Email: dshaw@alaskabird.org

The North American subspecies of the Arctic Warbler/ /(/Phylloscopus borealis kennecotti/) has never been studied in detail and little is known about its breeding ecology, habitat requirements or natural history in Alaska. During the summers of 2004, 2005, and 2006 the Alaska Bird Observatory conducted a study of the breeding ecology and habitat preferences of the species along the Denali Highway. Observed nest success of Arctic Warblers was 84% overall, but when failures resulting from an unseasonable summer snowstorm in 2006 are removed nest success increases to 92%. Our study indicates that the species is plastic in its habitat requirements but that the highest density of nests occurs in mosaics of short, alpine willows and open grassy areas. This finding differs from previous assumptions that the species prefers tall riparian willows.

During the fall of 2005 and summer of 2006 ABO studied the migration and breeding ecology of Rusty Blackbirds (/Euphagus carolinus/) in the Fairbanks area. We found and monitored fifteen nests during May and June and determined that fifty percent of nests fail due to predation. All nests were found in or adjacent to wetlands (often seasonal) with large areas of flooded grass and many willows and alders. Migration of Rusty Blackbirds in the Fairbanks area peaked in early September but flocks move in an unpredictable fashion making fall migration monitoring difficult. Future research on the species should focus on factors influencing habitat selection and nest predation.

Update on the Canadian Landbird Program

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See full description in General Landbird Projects: *Landbird update from Canadian Wildlife Service, Yukon, 2006*

AKN: The Avian Knowledge Network, Federating Data Across the Western Hemisphere; and, eBird: a Level 1 monitoring tool.

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Globally, hundreds if not thousands of federal, state, and private organizations are collecting basic occurrence information, in the form of observations, on the distribution

of wild birds. This has created one of the largest and most comprehensive data sets of biodiversity in existence. For example, the number of bird records for the U.S. and Canada is estimated to approach 60 million, and spans over one century of data collection. A primary goal of the AKN is to organize these data into a unified structure. Some estimates indicate that basic occurrence data on birds are being lost at an annual attrition rate of approximately 5%, resulting in a tremendous cumulative loss of critical data. The AKN provides a secure and persistent archive for bird data. The AKN is actively building a discovery resource for anyone interested in finding out what bird monitoring projects exist across North America. These are stored within the Bird-monitoring Data Registry. The AKN is also federating the distributed data resources of the bird-monitoring community and making them available. This is being accomplished through the Bird-monitoring Data Exchange. All data are filtered through an appropriate rights management infrastructure. While anyone can view and explore the data via intuitive and interactive data visualizations through maps, graphs, and tables, only those datasets that are open to the public can be downloaded. Intuitive and interactive presentations of the data stored within the AKN are the most important feature of the AKN. These visualizations provide students and educators with accurate representations of bird populations, and allow land managers, researchers, and politicians to find insight into the rich data resources being gathered. The AKN and its community of users are developing visualizations of the dynamics of bird populations. Initially, these can be divided into three categories: viewing the patterns of bird migration, distribution and abundance maps, and species occurrence bar graphs. Our goal is to identify those variables, whether natural or anthropogenic, that impact the distribution and abundance of bird populations. To this end, the AKN is developing new analytical tools that combine the flexibility and predictive capacity of data mining and machine learning with formal means to estimate uncertainty through statistical analysis. The results of these analyses can now be viewed in a graphical format for the 9 most significant variables that predict the occurrence of birds during the winter.

eBird is a data collection tool feeding observational data collected by birders and scientists directly into the AKN. Much more than a simple data collection tool, eBird allows each user to personalize their experience, building recurring participation and a sense of ownership into the already important concept of contributing your personal observations to a unified scientific database.

Bill Deformities in Northwestern Crows

Caroline Van Hemert and Colleen M. Handel, USGS Alaska Science Center, 1011 E. Tudor Road, Anchorage, AK 99503. Phone: 907-786-3512;
Email: caroline_vanhemert@usgs.gov

Northwestern Crows (*Corvus caurinus*) may provide an important link in understanding the etiology of beak deformities in southern Alaska and current research will be expanded to include this study species. Ongoing study of beak deformities among Black-capped Chickadees (*Poecile atricapillus*) has identified nearly 1,500 deformed individuals in

south-central Alaska, which is the highest prevalence (8.1%) ever recorded in a wild population. In addition, we have recently documented increasing numbers of other resident species, including corvids, nuthatches, and woodpeckers, with similar deformities. Northwestern Crows with beak deformities have been reported in startling numbers all along the coast from south-central Alaska to Puget Sound. Presence of deformities in this species, which forages extensively in intertidal areas, indicates that factors contributing to bill abnormalities occur in both terrestrial and marine systems. Due to their larger size, crows would be better candidates than small-bodied chickadees for toxicological analyses that require sufficient quantities of blood or other tissue. In addition, comparisons between species may help elucidate patterns of toxic exposure. Although the cause of the deformities is not known, existing leads point to environmental contaminants as probable agents. Future research will incorporate several components of both field and laboratory work. We will map distribution and estimate the prevalence of beak deformities in local crow populations; sample birds and identified prey items for toxicological analysis; and test the effects of suspected contaminants on bill growth. We will also involve the public in this research through continued education and outreach.

Isotope (18O & D) characteristics of precipitation and migratory bird studies

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See notes in APPENDIX: MEETING MINUTES

Repeatability of Riparian Avian Point Counts along the Itkillik River Corridor in Gates of the Arctic

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See full description in General Landbird Projects: *Repeatability of Riparian Avian Point Counts along the Itkillik River Corridor in Gates of the Arctic*

GENERAL LANDBIRD PROJECTS

Project: Annual Summary of Land Bird Projects for Fort Wainwright, AK, 2006

Investigator: Amal R Ajmi, Wildlife Biologist FWA.

Little Salcha Breeding Bird Survey: The Little Salcha survey route was started in 1982. The Little Salcha route has been run annually for a total of twenty-four years. In 2006, a total of 448 birds (24 species) were detected and counted on the Little Salcha Route. Six species comprise the majority, 75%, of the birds counted during the 2006 survey.
ALFL (65)
SWTH (57)
AMRO (24)
OCWA (100)
MYWA (47)
SCJU (43)
GPS locations were obtained at each survey point during 2006, and an update of vegetative information at each survey point is planned for 2007.

Yukon Training Area (YTA) / Brigadier Road ALMS: An Alaska Landbird Monitoring Survey was initiated along Brigadier Road in the Yukon Training Area (YTA) north of Eielson AFB and east of Fort Wainwright. Seventeen points were completed during the 2006 survey. The bird survey portion took four days to complete in June, while the vegetative survey took three days to complete in July. The 2006 ALMS data was compiled, copied, and sent to USGS. A second ALMS plot is planned for 2007.

Birch Hill Boreal Owl Box Project: The Birch Hill Boreal owl box project was started sometime in 1994. Limited information suggests that thirteen owl boxes were placed along the ski trails on Birch Hill, north of the main post of Fort Wainwright. Twelve owl boxes were found during the time period between December 2005 and January 2006. The twelve Boreal owl boxes were cleaned out, and prepared for nesting. The owl boxes were visited monthly to observe for possible nesting. No nesting occurred during 2006. The boreal owl boxes will be monitored in 2007 for nesting activity. Monitoring may also entail auditory surveys during the early spring.

FWA / YTA Duck Box Project: In 2000, a nesting duck box project was initiated at Fort Wainwright, along the Chena River, and the Yukon Training Area, at Horseshoe and Manchu Lakes. The duck boxes are checked for nesting activity each spring. During the spring checks, the boxes are also cleaned out, and prepared for the following summer breeding season. No activity was documented for the three Chena River duck boxes during the 2005 season. Goldeneye's did use three, out of a total of four, nesting boxes at Horseshoe Lake, and all three nesting boxes at Manchu Lake.

Christmas Bird Count: In 2005, Fort Wainwright contributed to the annual Audubon Christmas Bird count. Bird observations were taken from 10am to 2:30pm. Twenty-eight birds were counted during the survey, the majority being BCCH (15).

YTA Ruffed Grouse Drumming Surveys: RUGR drumming surveys were initiated in the Yukon Training Area in 2004. Drumming surveys were repeated in 2006. Data was compiled and sent to Bill Taylor for statewide assessments.

YTA Winter Owl Pilot Survey: Winter owl surveys were initiated in October 2006, for the purpose of investigating over-wintering owl use of the Yukon Training Area. The survey route consists of 20 stops spaced roughly .5 mile apart. The route is surveyed twice a month, roughly every two weeks, on calm nights with little precipitation. Four runs have been made of the route to present.
The Yukon Training Area is located north of Eielson AFB, east of Fort Wainwright. The YTA has seen little development in the past, however as military readiness necessitates continued development of training areas, baseline information is needed for environmental impact assessments, and management.

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Project: Annual Summary of Land Bird Projects, USFS, Seward Ranger District, 2006

Investigator: Mary Ann Benoit, Chugach National Forest, Seward Ranger District

BCR5 Broad-scale monitoring projects

Breeding Bird Survey-- USFS (Seward Ranger District). We participated in the Breeding Bird Survey (BBS), completing the Hope BBS route. (Mary Ann Benoit, USFS, mbenoit@fs.fed.us).

BCR5 Research and fine-scale monitoring projects

Bald Eagle Nest Surveys –- USFS (Seward Ranger District). Aerial and ground Bald Eagle nest surveys were conducted to monitor occupancy of known nests and identify new nest trees. Out of 89 nest records, 61 were monitored. Of these 18 were determined to be active, 6 were destroyed and 15 nests were not found and 22 were inactive. (Mary Ann Benoit, USFS, mbenoit@fs.fed.us).

Trumpeter Swan Surveys----- USFS (Seward and Glacier Ranger Districts).
We conducted the third year of spring nest surveys and fall reproductive surveys on the Seward and Glacier Ranger Districts. We surveyed 700 km of potential swan nesting habitat to identify individuals, nesting and foraging habitat, and reproduction. The spring survey documented 29 swans and 3 nesting pairs, while the fall survey documented 23 swans (16 adults and 7 cygnets), and 2 successful nests. The proportion of young in the early fall population was 0.30. (Mary Ann Benoit, USFS, mbenoit@fs.fed.us).

Neotropical Bird Surveys--USFS (Seward Ranger Districts). USFS (Seward Ranger District). We conducted neotropical migratory bird surveys on seven routes (two on secondary roads and five on trails) using the point count method identified in the USFS " Handbook of Field Methods for Monitoring Landbirds". We surveyed 93 points, documented 909 birds, including 15 Olive-sided flycatchers. (Mary Ann Benoit, USFS, mbenoit@fs.fed.us).

Northern Goshawk Nest Inventory and Monitoring. USFS (Seward Ranger District). We monitored known nest sites using the Dawn Acoustical Survey protocol in 15 territories (4 occupied). Broadcast Acoustical Surveys were conducted in project areas with potential nesting habitat, and noted goshawks in three areas. (Mary Ann Benoit, USFS, mbenoit@fs.fed.us).

Education notes

South-Central Alaska Owl Network – The USFS (Seward Ranger District) and eleven volunteers from four communities conducted owl surveys on the eastern Kenai Peninsula on six routes (Mary Ann Benoit, USFS, mbenoit@fs.fed.us). Twenty five owl responses were recorded from five species (BOOW, GHOW, WSOW, NHOW, and NPOW).

Birdhouse Network – USFS (Seward Ranger District) collaborated with local citizens from four communities in a citizen-science project with Cornell University. We monitored a portion of our 150 bird boxes, including owl boxes in our "Adopt and Owl box" program. Results included 9 Northern Saw-whet hatchlings. (Mary Ann Benoit, USFS, mbenoit@fs.fed.us).


Northern Saw-whet Owl hatchlings and adult

Bird Academy
USFS (Seward Ranger District) presented mist netting and banding demonstrations, and presentations on bird predator/prey relationships for 118 kids at the Alaska Sea Life Center for the "Bird Academy". This multi-day environmental education event for local schools is a cooperative effort by the US Forest Service, National Park Service and the Alaska SeaLife Center. (Mary Ann Benoit, USFS, mbenoit@fs.fed.us).

Bird Academy II – USFS (Seward Ranger District) conducted a follow up presentation for 54 students in the Seward Elementary 4th grade class on owl pellets, and an 11 step bird ID activity. A separate bird academy was also put on for the Cooper Landing School over an 11 week period **(**Katie Toth-Stauble**,** USFS, ktothstauble@fs.fed.us).

Bird Presentations and Field Trips-- USFS (Seward Ranger District) led 32 students from the Seward Elementary 4th grade class on a bird watching field trip to the Seward Airport. We also put on presentations for the Seward and Moose Pass Elementary Schools, for 110 students on Owl Pellets, Why do owls have feathers on their feet?, and Home Tweet Home: Nests. **(**Katie Toth-Stauble**,** USFS, ktothstauble@fs.fed.us).

Webpage-- USFS (Seward Ranger District). We developed natural history pages for 5 species of owls (NPOW, NSOW, SEOW, SNOW, and the WSOW) and a newsletter to be linked to our district wildlife website. (Mary Ann Benoit, USFS, mbenoit@fs.fed.us).

Contact: Mary Ann Benoit, Wildlife Biologist, Chugach National Forest, Seward Ranger District. Phone: (907) 224-4122; Email: mbenoit@fs.fed.us.

Project: Nesting Dynamics of Rusty Blackbirds on Innoko National Wildlife Refuge, Alaska – A Preliminary Study, Spring 2006.

Investigator: Robin Corcoran, U.S. Fish and Wildlife Service

Due to long-term population declines, the Rusty Blackbird has been designated a *species of continental concern* by Partners in Flight. Although this decline is well documented, both their general ecology and causes for declines remain unstudied. In 2006, we collected preliminary data on Rusty Blackbirds to determine the feasibility of conducting a breeding ecology study on Innoko National Wildlife Refuge in west-central Alaska. We located 5 Rusty Blackbird nests during 3 days of nest searching a 22 km stretch of Hather Creek from June 6-12. Most nests (4) were located early in the nestling phase by observing adults with food. Nests were initiated from May 19-24. One nest was found during nest construction and was most likely a re-nest attempt since it was located when other Blackbird nests in the area had already hatched. Apparent nest survival was 60%, 3 of 5 nests successfully fledged at least 1 young. All nested were located in tall willow shrubs (average shrub height = 4.3m); 4 out of 5 nests were in diamond-leaf willow (*Salix planifolia* ssp. *pulchra*) - the most common willow species found on the refuge, and the fifth was in sandbar willow (*Salix exigua*). Average nest height was 1.5m. The shortest distance between 2 nests was approximately 250m, and the average distance to nearest neighboring nest was 940m. Four out of the 5 nests were located in a 1 square km area near the confluence of Hather Creek and the Innoko River. As has been reported previously, during most nest checks observers were mobbed by 3 to 5 adult Blackbirds, indicating that pairs nesting in close proximity often group together to alarm call in the presence of perceived nest predators. Nestlings from 2 of the 3 successful nests on

Hather Creek were banded just prior to fledging with federal bands only. The female at one nest and both adults at a second nest were mist netted and color banded when nestlings were banded. We failed to band at the third successful nest because the young fledged prior to the date predicted based on our observation of nest chronology. In 2007, we plan to devote more time in late-May and June to locating and monitoring Blackbird nests on Hather Creek and to expand our search efforts to 3 additional tributaries of the Innoko River; Hammer, No-Name, and Grouch Creeks.

Contact: Robin Corcoran, U.S. Fish and Wildlife Service, Innoko National Wildlife Refuge, PO Box 69, McGrath, AK 99627, (907) 524-3251, robin_corcoran@fws.gov

Project: 2006 update of the Alaska Landbird Monitoring Survey (ALMS) and Alaska Off-road Breeding Bird Survey

Investigators: Colleen Handel, USGS–Alaska Science Center; Melissa Cady, USDA Forest Service; Steve Matsuoka, U. S. Fish and Wildlife Service; BPIF collaborators

Boreal Partners in Flight (BPIF) established the Alaska Off-road Breeding Bird Survey (ORBBS) in 1992 to determine the status and trends of landbird populations and to document patterns of breeding distribution in relation to habitat. ORBBS was created to complement the existing road-based North American Breeding Bird Survey (BBS) by sampling areas away from the road system. Further modifications, including random stratified sampling, distance sampling, and detailed information on habitats at survey sites, were proposed at BPIF meetings and incorporated into a new program called the Alaska Landbird Monitoring Survey (ALMS). The most recent modification of the program involves stratifying the sampling universe into two strata based on accessibility: (1) more accessible (via foot, road, trail, boat, fixed-wing aircraft, etc.) and (2) less accessible (via helicopter). These strata were defined because of budget limitations and policy restrictions in many areas on use of helicopters. Information on the pilot program, protocols, data forms, and sampling areas can be found on the BPIF website: <http://www.absc.usgs.gov/research/bpif/Monitor/alms2.html>

Summary of ALMS activities in 2006.—Six agencies participated in 2006: Alaska Department of Fish and Game, Department of Defense, Chugach National Forest, Kanuti NWR, Innoko NWR, and Tongass National Forest. This season, cooperators surveyed 16 ALMS blocks, including 6 new blocks and 10 replicates of blocks first surveyed in 2004. They conducted bird surveys and collected habitat data at 256 points within these blocks. This was the fourth year of data collection for the ALMS program; the following table summarizes survey effort to date by cooperators. To date, participants have completed 1,110 10-minute point-transect surveys across 42 10-km x 10-km sampling blocks in Alaska, recording more than 12,000 detections of birds.

Table. Number of ALMS blocks surveyed to date.

	Number of blocks surveyed				
Land Unit	2003	2004	2005*	2006*	Total unique
Alaska Department of Fish & Game	0	1	0	1	2
Alaska Peninsula/Becharof NWR	0	7	0	0	7
Chugach NF	3	2	3*	2*	6
Department of Defense				2	2
Innoko NWR				2	2
Kanuti NWR	3	0	1*	1*	3
Kenai NWR	1	0	1*	0	1
Tongass NF	5	7	8*	8*	16
Yukon Delta NWR	3	0	0	0	3
TOTAL	15	17	13*	16*	42

*Includes blocks replicated in planned biennial rotation.

Summary of Alaska ORBBS activities in 2006; routes run using the old protocols.—Six cooperators replicated 23 of the original ORBBS routes in 2006, surveying a total of 297 points (see table below). Almost all of the surveys incorporated distance sampling to conform with the ALMS protocol; the others recorded bird detections inside and outside a fixed radius of 50 m. Analyses of count data and habitat variables are currently underway.

Table. Summary of Alaska ORBBS routes surveyed in 2006.

Land Unit	Route Number	Route Name	Distance/ Fixed radius	Number of Points
Alaska Maritime NWR	315	Buldir Island	Fixed	12
Alaska Maritime NWR	316	Ugamak Island	Fixed	12
Alaska Maritime NWR	331	Kasatochi Island	Distance	12
Klondike-Gold Rush	817	Chilkat	Distance	12
Klondike-Gold Rush	818	Dyea	Distance	12
Koyukuk NWR	526	Two Lakes Burn	Fixed	12
Koyukuk NWR	527	Caribou Woodland	Fixed	12
Tetlin NWR	429	Deeper Lake	Distance	12
Tetlin NWR	430	Ten Mile Hill	Distance	14
Tetlin NWR	431	Northway Road	Distance	28
Tetlin NWR	433	Fish Camp Lake	Distance	14
Tetlin NWR	434	Hidden Lake	Distance	12
Tetlin NWR	435	Chisana River	Distance	12
Tetlin NWR	518	Mt. Fairplay	Distance	12
Tongass NF	834	Perseverance Lake	Fixed	12
USGS ASC	601	Service High	Distance	12
USGS ASC	602	Sunrise Knoll	Distance	12
USGS ASC	604	Hillside Park	Distance	12
USGS ASC	606	Basher Lake	Distance	12
USGS ASC	607	Beach Lake	Distance	12
USGS ASC	609	Campbell Tract	Distance	13
USGS ASC	613	Kincaid Park	Distance	12
USGS ASC	615	Wolverine Peak	Distance	12

Survey routes on Tetlin NWR and USGS routes around the Anchorage bowl were selected randomly from within accessible strata, so they will be incorporated into the new ALMS sampling design. Distance-sampling surveys on islands of the Alaska Maritime NWR (Buldir, Kasatochi, and Shemya islands thus far) and in Klondike-Gold Rush National Historic Park will also be incorporated into ALMS. Because of the geographical clustering of the routes, those in Tetlin NWR, Klondike-Gold Rush NHP, and Anchorage will need to be weighted accordingly for statistical analysis of population trends.

Table. ORBBS surveys incorporating distance sampling that will be incorporated into the ALMS program for monitoring population trends. Survey routes within each land unit encompass varying numbers of 10-km x 10-km ALMS sampling blocks. Compared with other ALMS blocks distributed across Alaska, these are more geographically clustered and thus will be need to be weighted as such when estimating regional population trends.

BCR	Land Unit	Surveys	ALMS Blocks	Clusters
1	AMNWR	3	3	3
4	Tetlin NWR	7	7	1
4	Anchorage	15	9	1
5	Klondike-Gold Rush NHP	2	1	1

Recommendations for 2006.—We encourage all collaborators to identify the accessible strata within their land units so that we can select potential survey blocks for the ALMS program. On-going ALMS participants should continue to survey their blocks in the prescribed rotation. Collaborators from Tetlin NWR and Alaska Maritime NWR should continue to survey the routes previously established under ORBBS but with the new distance-sampling protocols. We have established an initial goal to monitor 50 blocks each year, for a total of 100 every two years on a biennial rotation for replication (see table below). These have been allocated among Bird Conservation Regions (BCRs) to match the current effort of the roadside BBS, with which they will be analyzed jointly for regional population trends. Congratulations to the Forest Service and Klondike-Gold Rush NHP for almost reaching the goal for BCR 5! We are about halfway to our goal for BCRs 1 and 4 but still have a long way to go for BCRs 2 and 3.

Table. Targeted allocation of biennial ALMS surveys by Bird Conservation Region to be established by 2010. Target goal for Alaska is 100 sampling blocks (50 blocks monitored biennially). To date, cooperators have committed to replicating surveys in 50 blocks. These include some ORBBS routes that are surveyed following ALMS protocols but are geographically clustered.

Bird Conservation Region (BCR)	Goal	Established	Needed
1 Aleutian/Bering Sea Islands	7	3	4
2 Western Alaska	17	0	17
3 Arctic Plains and Mountains	6	0	6
4 Northwestern Interior Forest	45	24*	21
5 Northern Pacific Rainforest	25	23*	2
Total	100	50*	50

*Includes ORBBS routes in geographically clustered blocks in Tetlin NWR, the Anchorage bowl, and Klondike-Gold Rush NHP.

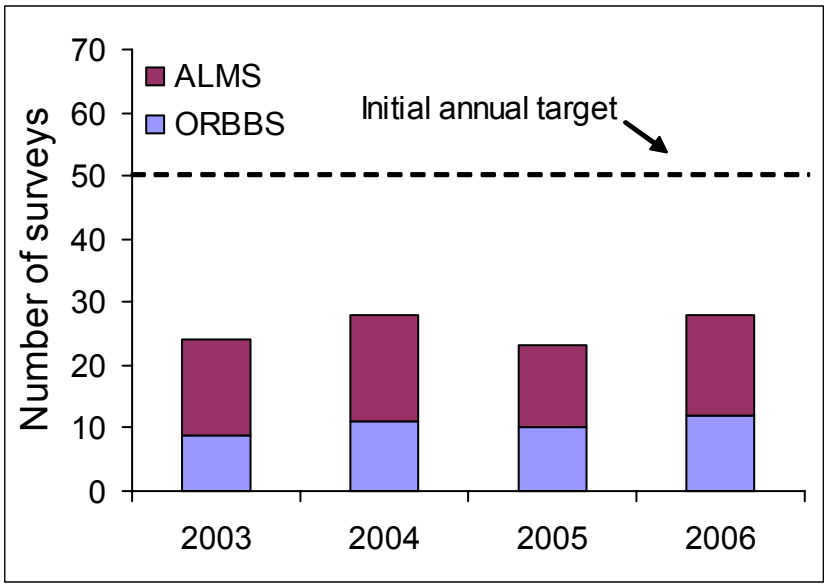

Figure. Number of 10-km x 10-km sampling blocks surveyed from 2003–2006 for the Alaska Landbird Monitoring Survey (ALMS). The initial monitoring goal is to replicate 100 ALMS surveys every two years, with 50 completed each year. This figure excludes ALMS blocks surveyed only once with no current commitment to long-term monitoring. It includes some of the original ORBBS routes that have been incorporated into ALMS.

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Project: Bill deformities in Black-capped Chickadees and other birds in Alaska

Investigators: Colleen Handel, Lisa Pajot, John Terenzi, Julie Stotts, Caroline Van Hemert, and S. L. Talbot, USGS–Alaska Science Center; Steve Matsuoka and Kimberly Trust, U. S. Fish and Wildlife Service

During 2006 we completed a final report for the U. S. Fish and Wildlife Service detailing the results of this research project to date. We are continuing to monitor the prevalence of deformities in Black-capped Chickadees and estimate the birds' seasonal survival. We are also beginning a comparative study of Northwestern Crows with similar beak deformities throughout the Pacific Northwest. We continue to solicit and document observations of all species of birds with beak deformities globally.

Our final report can be obtained either electronically or in print by contacting Colleen Handel (see contact information below). The citation is:

Handel, C. M., L. M. Pajot, S. M. Matsuoka, K. A. Trust, J. M. Stotts, J. Terenzi, and S. L. Talbot. 2006. Potential Role of Environmental Contaminants in the Pathology of Beak Deformities among Black-capped Chickadees in South-central Alaska. Unpublished final report. Project ID: 1130-7F22. U. S. Geological Survey, Alaska Science Center, Anchorage, Alaska

The extended abstract of our final report follows:

ABSTRACT.—More than 1,400 individual Black-capped Chickadees (*Poecile atricapillus*) with beak deformities were recorded in south-central Alaska between 1991 and 2005. Over 200 individuals of 27 other species of birds were also recorded in Alaska with similar beak deformities. Affected birds included 17 resident species and 11 migrants. Beak deformities among chickadees generally involved overgrowth of the keratin sheath of the maxilla, the mandible, or both, with variable amounts of curvature and crossing. The keratin was often thickened with irregular growth ridges or flaking. In one case the underlying bone was notably deformed, being strongly curved laterally from the base of the beak. Some chickadees with beak deformities also had scaly legs or patches of dry or reddened skin or missing feathers, mostly in the head or neck region.

Five deformed adult chickadees were sent to the USGS National Wildlife Health Center for necropsy, histopathological examination, and viral testing in comparison to two normal adults. There was no evidence of disease, parasites, or chronic vitamin or mineral deficiency relating to the deformities. Two nestlings with leg deformities and one with a slightly overgrown beak were also sent in for examination. The two nestlings had folding leg fractures and all three showed epithelial disorganization in the overgrown beak with possible inclusions of excess keratin. No cause of the deformities was determined. Analysis of blood samples using flow cytometry suggested that adults with deformed beaks had higher rates of chromosomal damage than adults with normal beaks.

In 1999 a study was initiated to determine the prevalence of beak deformities among Black-capped Chickadees in south-central Alaska, determine at what age the deformities were developing, and investigate contaminants as a potential cause of the deformities. From 1999–2005 chickadees were captured and banded at three to five sites in the Anchorage and Mat-Su Valley region every two months between September and April. From 2000–2004 about 500 nest boxes were erected in parks and residential areas within the region and were monitored to estimate prevalence of beak deformities among breeding adults, examine nestlings for evidence of deformities, and determine the effects of beak deformities on reproductive success.

Among 1,820 12-day-old nestling chickadees examined, only 0.05% had a crossed beak; an additional 0.6% had slight maxillary overgrowth of the keratin sheath. Among 2,186 hatching-year and after-hatching-year birds captured during all banding efforts, 8.1% had moderate to severe beak deformities; an additional 2.3% had possible incipient deformities. Prevalence varied seasonally, with lowest rates following the coldest winter months, and overall prevalence increased annually over the five years. Of the 178 deformed birds captured, 46% were male and 54% were female, which were not significantly different from the proportions of normal male and female chickadees captured. The youngest bird captured with a beak deformity was about six months old. Fifty-four cases were documented in which a chickadee that was first captured with an apparently normal beak was subsequently recaptured with a deformed beak. For some chickadees the deformities developed during their first year of life; others were known to be at least two years old. The probability of developing a deformity appeared greatest in late winter. Six cases were documented in which a chickadee with a beak deformity was subsequently recaptured with an apparently normal beak.

Reproductive success of Black-capped Chickadees in south-central Alaska was similar to that documented within other portions of their breeding range, but there were significant differences between normal and deformed birds. Clutch sizes averaged 7.8 ± 0.08 eggs across all pairs, but clutches tended by deformed males were significantly larger than those of pairs in which both adults were normal or the female was deformed. Genetic analysis of parentage showed that deformed males were cuckolded more often than normal males and also had more eggs dumped in their nests by unrelated females.

Almost all nests of normal pairs (96%) hatched at least one egg; among pairs in which the female was deformed, only 86% hatched any eggs. In nests that did hatch, the proportion of eggs hatching was also lower for deformed females than normal females. Several deformed females exhibited aberrant incubation behavior, with eggs strewn erratically across the nest, which may have contributed to lower hatching success. About 94% of all pairs with broods raised at least one young to fledging. Among these, broods tended by deformed males had proportionately fewer young fledge than broods tended by pairs in which both adults were normal or the female was deformed. Deformed males likely had more difficulty procuring enough food for young.

Thirty-six adult chickadees, 49 nestlings, and 39 eggs were screened for metals, trace elements, and organochlorine compounds to determine if there was an association

between beak deformities or hatchability and any of the contaminants. Selenium, polychlorinated biphenyls (PCBs), polychlorinated dibenzo-*p*-dioxins (PCDDs), and polychlorinated dibenzofurans (PCDFs) were of particular interest because they were known to have caused congenital beak malformations in other species of birds. γ-Hexachlorocyclohexane (HCH–lindane) was also of interest because of its use to control spruce beetles during a recent epidemic in south-central Alaska. Contaminant concentrations were compared between normal and deformed adults; normal adults and nestlings; nestlings and eggs from nests of normal and deformed adults; and nestlings and eggs from nests in which all eggs hatched vs. those in which at least one egg failed to hatch. Separate comparisons involving eggs and chicks were made for nests in which the female parent was deformed and those in which either parent was deformed to test for trans-generational and environmental effects, respectively.

Concentrations of heavy metals, other potentially toxic elements, and methylmercury were all below levels of concern. There was no association between selenium, any other element, or methylmercury and the presence or absence of beak deformities in adult chickadees. Concentrations in nestlings were not related to hatchability of the clutch or to the presence or absence of a deformity in a parent.

Organochlorine pesticide residues most frequently detected in tissues of adults, nestlings, and eggs were DDT and its metabolites; hexachlorobenzene (HCB); dieldrin; heptachlor epoxide; and *trans*-nonachlor. γ-HCH (lindane) was rarely detected. PCBs, including the highly toxic, coplanar congeners, were detected in almost every bird and egg tested. Concentrations of the coplanar congener PCB 123 and of heptachlor epoxide were significantly higher in adults with beak deformities than in normal adults. Concentrations of total PCBs, HCB, and metabolites of DDT were all higher in eggs from clutches with eggs that failed to hatch than in those from clutches in which all hatched. Compared to nestlings with normal parents, those with deformed parents had higher concentrations of PCB 126 and PCB 77, two of the most toxic congeners.

Laboratory detection limits for PCDDs and PCDFs were too high to test for meaningful differences between normal and deformed adults. Concentrations of these highly toxic compounds in eggs and nestlings were not associated with hatchability of clutches. Concentrations of 1,2,3,4,6,7,8-HpCDD were higher in eggs of normal parents than those of deformed parents for no explainable reason, but high rates of extra-pair paternity and egg-dumping made trans-generational comparisons suspect.

Eighteen samples of sunflower seeds, commonly eaten by chickadees at residential feeders, were tested for contaminants. None had detectable concentrations of 24 organophosphate or 6 carbamate pesticides. Concentrations of most organochlorines were very low, with HCB being the most commonly detected. All 19 metals and trace elements except mercury had detectable concentrations. A few samples had high concentrations of arsenic, selenium, and lead. Chickadees may be ingesting HCB and lead from sunflower seeds but are more likely accumulating PCBs from other sources.

There was no support for selenium as the cause for beak deformities among chickadees. We propose to test the hypothesis experimentally that low levels of PCBs contribute to beak deformities. PCBs were ubiquitous in chickadee eggs, nestlings, and adults, and were correlated with beak deformities in adults and with decreased hatchability. Deprivation of sunlight and reliance on a calcium-deficient seed diet during winter may trigger development of beak deformities among chickadees exposed *in ovo* to low concentrations of PCBs or to the PCDDs and PCDFs associated with them.

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Project: Migration monitoring activities in Alaska and the Yukon, 2006

Investigators: Bud Johnson, U.S. Fish and Wildlife Service; Sue Guers, Alaska Bird Observatory; David Tomeo, Brad Ogle, Tricia Rodriguez, Moose Creek Migration Station; Bruce Seppi, Bureau of Land Management; Ted Murphy-Kelly, Albert Creek Banding Station, Ben Schonewille, Teslin Lake Banding Station

Migration banding stations were operated at six locations in Alaska and the Yukon during 2006. The Alaska Bird Observatory (ABO) Creamer's Field Migration Station (CFMS) in Fairbanks completed its 15th year of monitoring and captured 410 birds over 5,485 net hours during spring and banded 5,272 birds in 9,821 net hours during fall. A large influx of Common Repolls and American Tree Sparrows led to a busy fall at CFMS with several 200-300 plus bird days and one 412-bird day! A migration station near Tok has been operated by Tetlin National Wildlife Refuge (NWR) since 1993. In contrast to CFMS, this station had a relatively slow fall season banding 1,701 birds over 6,555 net hours. Conspicuously absent were the large numbers of Slate-colored Juncos normally banded at this station. The Moose Creek Migration Station in Denali National Park and Preserve banded 889 individuals of 31 species during 3,420.75 net hours. The BLM Campbell Tract banding station in Anchorage operated for 19 days during fall migration banding 661 birds in 884 net hours. Two stations continued operations in Southeast Yukon in 2006. The Albert Creek Station in Southeast Yukon has been in operation since 2001 and banded 2,704 birds (51 species) over 4,376 net hours during spring and 2,592 birds (46 species) over 6,002 net hours in the fall. The Teslin Lake Station completed its second year of operation banding 802 birds over 2050 net hours during spring migration. This station was also open for six days during the fall and banded 115 birds during that period.

Capture highlights for 2006 include: **CFMS** - Merlin, Bohemian Waxwing, Brown Creeper, Belted Kingfisher and 4 HY Tennessee Warblers; **Tetlin -** 2 previously banded Sharp-shinned Hawks (returns), Bohemian Waxwing, 2 Three-toed Woodpecker; **Moose Creek -** Belted Kingfisher, Three-toed Woodpecker, 2 Pine Siskins; **Albert Creek –** Ovenbird, Townsend's Warbler, Bay-breasted Warbler, Black and White Warbler; **Teslin Lake** – 3 Horned lark, 2 Say's Phoebe, Western Tanager, and hybrid Chickadee

(Mountain X Boreal).

A number of collaborative projects were completed in association with on-going monitoring efforts in 2006. Several stations collected samples as part of the state-wide efforts to test for the presence of H5N1 avian influenza in migratory birds. Over 2,000 fecal samples were collected at CFMS in the second year of collaboration with the University of Alaska Institute of Arctic Biology. CFMS also collected samples for a similar effort lead by USFWS that focused on Gray-cheeked Thrush. Tetlin NWR contributed to this later effort and collected 43 fecal swabs from Grey-cheeked Thrushes during fall migration.

In the Yukon, staff at the Albert Creek and Teslin Lake banding stations continued their collaboration with the Canadian Wildlife Service and collected feather samples and banded 118 Rusty Blackbirds with color bands. CFMS also collected Rusty Blackbird feather samples for stable isotope analysis.

Biologists from several banding stations in Alaska collaborated on a paper entitled "Differential timing of Wilson's Warbler migration in Alaska" that will be published in Volume 118, Issue 4 of the Wilson Journal of Ornithology in December 2006. Tetlin NWR and CFMS completed a comparative migration analysis of pooled data collected between 1993 and 2004. A paper entitled "An evaluation of autumn mist-netting data for monitoring songbird populations in interior Alaska" is currently out for review.

In addition to collecting biological information, all migration stations operating in 2006 utilized many volunteers and provided on and off-site interpretation regarding landbird conservation to scores of visitors.

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Project: Using mitochondrial DNA sequence and nuclear microsatellite markers to recontruct the evolutionary histories and study the dynamics of genetic exchange between Townsend's and Hermit Warblers.

Investigator: Meade Krosby, Department of Biology and The Burke Museum, University of Washington

Hybrid zones have long been of interest to evolutionary biologists because they act as conduits for gene flow across species boundaries. Analysis of gene flow across hybrid zones can offer insight into the ecological, morphological, and genetic composition of reproductive barriers and adaptive traits. For example, previous research has revealed striking patterns of mitochondrial gene flow between sister-species Townsend's (*Dendroica townsendi*) and hermit (*D. occidentalis*) warblers, which hybridize along

narrow contact zones in Washington and Oregon (Rohwer and Wood 1998). While hermit populations south of the hybrid zone and Townsend's populations east of the Rockies are fixed for species-specific mitochondrial DNA (mtDNA) restriction fragment length polymorphism (RFLP) haplotypes, coastal populations of Townsend's warblers as far north as Valdez, Alaska exhibit mtDNA RFLP haplotypes characteristic of both species (Rohwer et al 2001). This pattern was interpreted as representing a genetic "wake" behind a moving hybrid zone, such that the hybrid zone originated far north of its current location and has moved south, leaving hermit mtDNA behind as a "wake" of past hybridization (Rohwer et al 2001).

Our objective is to determine the mechanism underlying the phenotypic and mtDNA discordance seen in the hermit/Townsend's hybrid zone by comparing the observed pattern of hermit warbler mtDNA haplotype variation in coastal populations of Townsend's warblers to the patterns predicted by the competing hypotheses. A major challenge is presented by the fact that all three processes may in fact produce the same pattern.

METHODS

A total of 55 hermit and 105 Townsend's warblers representing 21 locations were used in this study. Putative ancestral ranges of the two species were heavily sampled using newly collected specimens. In addition, specimens previously analyzed for mtDNA RFLP haplotypes were compiled to form two transects: one along the Pacific coast from California to Valdez, Alaska; and one east of the Rockies from Idaho north to Fairbanks, Alaska. Included were 20 samples known to be hermit mtDNA haplotypes from coastal populations of Townsend's warblers (Rohwer 2001). These corresponded to five individuals each from 4 locations between Vancouver Island, BC and Valdez, Alaska. The complete 1,041 base pairs of the mitochondrial ND2 gene were sequenced for all samples. Population genetic summary statistics and Tajima's D were measured for both species as well as for hermit mtDNA haplotypes present in coastal populations of Townsend's warblers. A maximum parsimony haplotype network was computed and a Nested Clade Analysis (NCA) was conducted for both species (Templeton 1998).

MAJOR RESULTS

A. Phylogeography of hermit and Townsend's warblers

Results from the Nested Clade Analysis (NCA) support the hypothesis that hermit and Townsend's warblers diverged in coastal and interior glacial refugia, respectively. Hermit NCA inferences point to a pattern of multiple contiguous northern range expansions along the coast from northern California and western Washington. A long-range colonization event from northern California to Valdez, Alaska followed by fragmentation and isolation may suggest additional northern glacial refugia. In addition, NCA found significant geographic structure for higher-level hermit clades, which along with a non-significant Tajima's D (-1.495, $P>0.10$) and the deeply structured pattern exhibited by the hermit haplotype network suggests a stable historical population for hermit warblers, consistent with a large, high quality coastal refugium.

NCA of Townsend's mtDNA haplotypes indicates a northern range expansion from southern British Columbia east of the Rockies towards interior Alaska. In addition, the star-like pattern exhibited by the Townsend's haplotype network and a significantly negative Tajima's D (-2.5327, $P<0.001$) suggests a small ancestral population size and subsequent population expansion (Slatkin and Hudson 1991), consistent with divergence in the small, poor quality glacial refugia available east of the Rockies followed by a post-glacial range expansion.

B. Mechanism for mitochondrial gene flow between hermit and Townsend's warblers
NCA analysis reveals significant geographic structure for hermit mtDNA haplotype clades found in coastal populations of Townsend's warblers, and a non-significant value of Tajima's D (-1.757, $0.10>P>0.05$) suggests the lack of a major selection event or population expansion. This is consistent only with the predictions of a genetic wake behind a moving hybrid zone if hermit warblers were present in a large glacial refuge south of the hybrid zones as well as additional northern refugia, and are inconsistent with the lack of geographic structure anticipated in the event of a selective sweep or genetic drift following a colonization event by a hermit female.

SCIENTIFIC SIGNIFICANCE
This study illustrates that hybrid capture of inter-specific mitochondrial DNA is a plausible mechanism for the nuclear and mitochondrial DNA discordances seen in hybrid zones. Compelling evidence for historical hybrid zone movement is rare indeed and offers unique opportunities for evolutionary investigation. In addition, the results of this research support the presence of glacial refugia along the northern Pacific Coast. Future studies will seek to characterize these refugia more fully and to confirm the site of secondary contact between hermit and Townsend's warblers in order to estimate the rate of hybrid zone movement, and will explore the nuclear genetic composition of coastal populations of Townsend's warblers in an effort to elucidate the genetic basis of phenotypic differences between the two.

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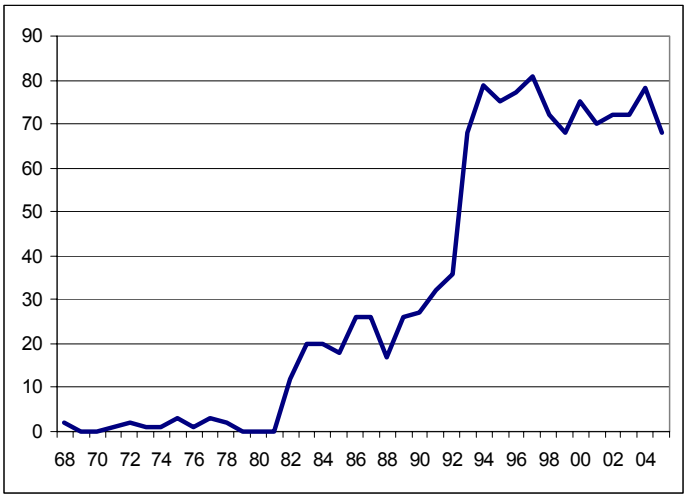
Project: 2006 update on the North American Breeding Bird Survey, Alaska

Investigators: Boreal Partners in Flight

Fig. 1. BBS routes run annually in Alaska, 1968–2005.



Boreal Partners in Flight began supporting the BBS program in Alaska in 1992 after which participation in the program grew quickly to its current level (Fig. 1). Through the dedication of many observers the program has now run 100 routes for ≥5 years and 66 routes for ≥10 years. Trends in abundance in Alaska are now available for a wide diversity of 106 species on the web (Table 1, Sauer et al. 2006). Notably, 5 species showed populations declines and 12 species population increases ($P \leq 0.15$, $n \geq 14$ routes) from 1980–2005 (Table 2). The lower numbers of species with declines compared to increases reflects the greater difficulty in estimating declines because of the diminishing number of birds available to survey over time.

Declining birds included uncommon species with very steep declines (Rusty Blackbirds, -5.3% per year, $P = 0.04$), fairly common species with moderate declines (Blackpoll Warbler, -2.9% per year, $P = 0.01$), and still abundant species with smaller declines (White-crowned Sparrow, -1.3% per year, $P = 0.09$). The causes of such declines should be the focus of research or conservation, particularly for the former two cases where declines exceed 2% per year and mirror those observed at the continental level (Table 1). The list of increasing birds notably includes some of the *Boreal Partners in Flight's* priority species: Red-breasted Sapsucker (+8.2% per year, $P < 0.01$), Northwestern Crow (+5.7% per year, $P < 0.01$), and White-winged Crossbill (+8.5% per year $P = 0.08$).

At the continental scale, *Partners in Flight* recently evaluated monitoring coverage for the 448 species of landbirds that breeding in the U.S. and Canada (http://www.partnersinflight.org/pubs/ts/). They concluded that 100 or the 128 species of species that breed in Alaska (78%) were not adequately covered throughout the U.S. and Canada by existing programs, including the BBS. Most BBS routes in boreal North America are concentrated along the U.S.–Canada boarder. Thus poor northern coverage by the BBS was the principal reason for the shortfall in continental monitoring of most landbird species that breed in Alaska. In their report, *Partners in Flight* also recommended the primary and secondary techniques for meeting the monitoring needs of these 100 species. For primary techniques, 51 or the 100 species would be monitored continentally if boreal point-count surveys were instituted broadly. This would include surveys proposed by the Alaska Landbird Monitoring Survey (ALMS) and Canada's

National Plan for Monitoring Birds in the Boreal Forest. For secondary techniques, a network migration monitoring stations would help meet the continental monitoring needs of 36 of the 100 species. These continental recommendations are the same as those that were brought forward by *Boreal Partners in Flight* in the early 1990s and are the reason our group has spent considerable effort developing ALMS and setting up long-term migration monitoring stations such as those run by the Alaska Bird Observatory and Tetlin National Wildlife Refuge. Increases in coverage of the BBS in Alaska have been vital in monitoring several species of landbirds in the state. However, we need grow other monitoring programs such as ALMS to work in concert with the BBS and increase the number of species we are effectively monitoring in Alaska.

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Project: Virology and demography of Eastern Yellow Wagtail in the Askinuk Mountains, Alaska

Investigators: James Johnson, Steven Matsuoka, and Brian McCaffery, U.S. Fish and Wildlife Service

The Eastern Yellow Wagtails is the highest ranking species for HPAI surveillance in Alaska. In this study, we targeted Eastern Yellow Wagtails for surveillance sampling in the Askinuk Mountains, Alaska—the location where this species reaches its highest breeding densities in North America. We sampled wagtails at two locations in the Askinuk Mountains: Cape Romanzof and Kagankaguti Lake. We targeted the capture of wagtails during both breeding and post-breeding periods. During the breeding period, we captured adults on or near nests with mist nets or bow traps from 27 May–12 July. During the post-breeding period, we captured staging or migrating adults and juveniles at three arrays of 10–15 mist nests at Kagankaguti Lake from 15 July–10 August. Each wagtail (or other priority species targeted for surveillance) that we captured was aged, sexed, banded, and sampled for HPAI virus. We placed a unique combination of colored-leg bands on each adult wagtail to help us re-sight birds in subsequent field season to estimate adult survival and dispersal. We also collected tissue samples for genetics and stable isotopes analyses of population linkages and recorded data on nesting ecology to assess fecundity and nest survival.

We captured and sampled for influenza viruses a total of 123 adult and 122 juvenile Eastern Yellow Wagtails. The majority (93%) of these birds were captured at Kagankaguti Lake as we only observed 8 nesting pairs of wagtails at Cape Romanzof in 2006. We captured most adult wagtails (89%) on or near nests (n = 8 nests at Cape

Romanzof; *n* =100 nests at Kagankaguti Lake). We captured and sampled all juvenile and post-breeding adult wagtails in mist net arrays. Incidental to our work on wagtails we captured and sampled for HPAI 264 individuals of 15 bird species. Most notably, we captured and sampled 130 Gray-cheeked Thrushes (*n* = 55 adults, 75 juveniles), 8 Northern Wheatears, and 1 Arctic Warbler. All of these species are on the list of high priority species for HPAI surveillance sampling. During the post-breeding period we also captured 100–300 birds/day; a mixture of several other passerine species whose migrations are limited to the Americas. We collected HPAI samples from a small number of individuals of several of these species.

We exceeded our goals of sampling 100 adult and 100 juvenile Eastern Yellow Wagtails for HPAI. We found wagtails to be particularly abundant at Kagankaguti Lake, a site with no prior research on birds. Bow traps had not been previously used to capture adult wagtails on nests. We found them to be quite effective compared to mist nets placed around nests, particularly in windy conditions. The large numbers of passerines we capture at Kagankaguti Lake suggest that this site is important for passerines staging for migration. We were surprised at the low numbers of birds breeding at Cape Romanzof in 2006. The 8 pairs of Eastern Yellow Wagtails that we observed in this area were far below the 18–34 pairs monitored at Cape Romanzof from 1996–1999. We also captured lower numbers of Northern Wheatears and Bluethroats at Cape Romanzof than we had anticipated because, like wagtails, they bred at extremely low numbers compared to previous years at this site. In fact, we did not encounter Bluethroats at Cape Romanzof in 2006. Neither Northern Wheatears nor Bluethroats were encountered at Kagankaguti Lake due to the lack of suitable breeding habitat. We found, in 2006, that many of the areas at Cape Romanzof used for nesting by these species in past years were covered in snow well into June. Thus, we suspect that heavy snow and cold spring conditions at Cape Romanzof limited the number of breeding wagtails, wheatears, and Bluethroats in the area in 2006. We anticipate that numbers of these species will increase in subsequent years when conditions are more favorable for breeding.

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Table 1. Numbers of birds sampled for avian influenza viruses by location, species, and age group, Askinuk Mountains, Alaska, 2006.

	Cape Romanzof		Kagankaguti Lake		Total	
Species	AHY	HY	AHY	HY	AHY	HY
American Pipit	1			1	1	1
American Tree Sparrow	1		5	16	6	16
Arctic Warbler*	1				1	0
Common Redpoll	2		3		5	0
Eastern Yellow Wagtail*	17		106	122	123	122
Fox Sparrow			1	8	1	8
Golden-crowned Sparrow	5		1	4	6	4
Gray-cheeked Thrush*	3		52	75	55	75
Hermit Thrush	1				1	0
Hoary Redpoll	1		2		3	0
Northern Waterthrush			3	6	3	6
Northern Wheatear*	8				8	0
Redpoll sp.				2	0	2
Savannah Sparrow	5		2	47	7	47
Tree Swallow	1				1	0
Western Sandpiper	2		4		6	0
White-crowned Sparrow	1				1	0
TOTAL	49	0	179	281	228	281

* Birds on the list of high priority species for HPAI surveillance sampling in Alaska.

Project: Evaluating the effects of timber harvest and subsequent forest management on bird and vegetation communities on Prince of Wales Island.

Investigators: Steve Matsuoka and Jim Johnson, U.S. Fish and Wildlife Service and Dominick DellaSala, National Center for Conservation Science & Policy.

Timber harvest is the largest form of active land management in Alaska that threatens terrestrial bird populations, many of which are of conservation concern, particularly in southeast Alaska. In particular, harvest of the highest volume stands of old-growth conifers has reduced such stands by 70% in southeast Alaska. The area most heavily affected by this harvest strategy is Prince of Wales Island, Alaska. The island now has the dubious distinction of being the most highly fragmented forest system in the state. Left alone, more than 100 years are needed for harvested stands in southeast Alaska to recruit the vegetation and bird communities that were present prior to harvest. To hasten succession of harvested stands towards pre-harvest condition, the USDA Forest Service has invested considerable time and money in thinning strategies. However, the long-term

efficacy of these silvicultural treatments in maintaining old-growth plant and wildlife communities in southeast Alaska has not been assessed.

From 1991-1993, Dominick DellaSala studied the effects of timber harvest and subsequent management of harvested stands on bird and plant communities on Prince of Wales Island. Specifically, bird communities, forest structure, and understory composition were compared among two types of young growth stands (non-modified and pre-commercially thinned) and old growth (150 years). In 2005 and 2006 we replicated the DellaSala study to assess the longer term effects of the harvest and post-harvest treatment on bird and vegetation communities on Prince of Wales Island. As these stands now approach the age for commercial thinning, this work will provide an important assessment of the efficacy of these silvicultural practices in meeting the longterm management goal of maintaining old-growth bird communities within harvested landscapes.

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Project: Summary of 2006 Landbird Projects for Chugach National Forest, Cordova Ranger District

Investigator: Paul Meyers, Chugach National Forest, Cordova Ranger District

Rusty Blackbirds on the Copper River Delta, AK
We conducted nest searches for rusty blackbirds on the Copper River Delta to determine the feasibility of a larger-scale nesting study. We found 17 nests and concluded that a nesting study is logistically feasible in this area. Main access was by canoe along beaver sloughs. First eggs were laid 16 May and 75% of those nests found were initiated before 1 June. Mayfield nest success was 21%, with the bulk of predation occurring in the egg stage. We were able to candle eggs to within one day using a candling guide for red-winged blackbirds. We estimated a 27-day nesting cycle from first day of laying to fledge.

ALMS: Chugach National Forest, Cordova Ranger District
In 2006 we surveyed 2 ALMS plots, one on the West Copper River Delta near Alaganik Slough and the other at Okalee Spit on the East Copper River Delta. Twenty-seven species were found at the Alaganik plot and twenty-five at Okalee. The most abundant species at Alaganik were Lincoln's Sparrow, Orange-crowned Warbler, and Ruby-crowned Kinglet. One Brown Creeper as detected. The most abundant species at Okalee were Savannah Sparrow, Lincoln's Sparrow, and Wilson's Warbler. One short-eared owl was seen, and a previously unknown colony of Aleutian Terns was found.

BBS

We conducted two BBS routes in the Cordova area.

CBC
We conducted the annual Christmas Bird Count

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Project: Assessing changes in species composition, frequency of occurrence, and peak singing times of passerines along the Denali park road.

Investigator: Kristen Bartecchi and Carol McIntyre, Denali National Park and Preserve, Alaska.

From late April to early July 1994 to 1996, the Alaska Bird Observatory conducted bird surveys using Breeding Bird Survey (BBS) methodology every seven to ten days along four on-road survey routes along the Denali park road. We are repeating these surveys on two of the roadside routes in 2006, 2007, and 2008 to determine if species richness, frequency of occurrence, and peak singing time has changed along these survey routes since the mid-1990's. This project is conducted in cooperation with the NPS Central Alaska Network Vital Signs Monitoring Program.

We conducted two on-road bird surveys using BBS methodology in Denali each week from 3 May to 6 July 2006. The first on-road survey route started at the junction of the Parks Highway and the Denali park road; the second survey route started at the Sanctuary River bridge. Each survey route was 24.5 miles long and contained 50 sampling points spaced 0.50 miles apart. At each survey point, we conducted a 3-minute survey following BBS protocols; we recorded all birds detected within 0.25 mile of the survey point on standardized survey sheets. Surveys started within ½ hour of sunrise. One observer conducted the surveys and a volunteer recorded the data.
We will complete our data analysis in winter 2006-2007, and continue the weekly surveys in 2007 and 2008. We hope to repeat the surveys every 10-years to detect changes in species composition, frequency of occurrence, and peak singing times. Additionally, we hope that results of this study will help us calibrate the timing of our off-road passerine point-transect surveys.

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Project: Long-term monitoring of passerine birds in Denali National Park and Preserve, Alaska.

Investigator: Carol McIntyre, National Park Service

We conducted 10-minute point transect surveys for passerine birds in Denali National Park and Preserve, Alaska (Denali) in 2006 as part of the Central Alaska Network Vital Signs Monitoring Program. A primary objective of the program is to assess the response of bird communities (composition, distribution, and abundance) to landscape-scale changes in their habitat. Data were collected on a series of minigrids (a probabilistic sampling design developed by Carl Roland, NPS, Karen Oakley, USGS, and Trent MacDonald, WEST) in the northeastern region of Denali. Each minigrid was located 10 to 20 km apart and contained 25 sampling points located 500-m apart.
Mike Knoche and Jeff Wells (NPS), and Anna Jensen and Kate Simons (ABO) conducted the surveys in Denali in 2006. Each team member completed a two-week distance estimation and bird identification course in late May 2006. We started surveys on 1 June and completed them on 30 June. Our sampling protocol followed the Alaska Land Bird Monitoring (ALMS) protocol; we used 10-minute point-transects with data grouped by distance and time interval at each accessible sampling point.
We sampled 210 of 225 points (93%) on 9 minigrids in 2006. Most detections were of singing or calling birds (86%). We detected 73 species in 2006, including 55 species on the 10-minute counts and 18 species on the minigrids but not on the 10-minute counts. Hermit Thrush, American Robin, Orange-crowned Warbler, Wilson's Warbler, American Tree Sparrow, Savannah Sparrow, Fox Sparrow, White-crowned Sparrow, and Redpoll spp. were detected on most grids. We detected White-crowned Sparrows on all grids and at 83% of all points.

Unseasonable cold temperatures (hovering between 20 to 25F during survey hours) in early June presented challenges to our fieldwork in 2006. Our observations suggest that the unseasonably cold temperatures had a negative effect on songbird singing frequency and on the thermodynamics and energy demands of the field crew.

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Project: Yakutat Ranger District Landbird Project Summary

Investigator: Susan Oehlers, Tongass National Forest, Yakutat Ranger District

Trumpeter swan surveys were conducted on March 2nd, July 6th, and August 29th, 2006. The March survey resulted in the highest ever total count of swans, with 548 adults and 98 cygnets. This was the third largest number of cygnets observed in a winter survey for the forelands. Productivity was high for the summer surveys as well, with 27 young

observed in both surveys. It appears from the winter and early summer surveys that the population size of Trumpeter Swans is stable to increasing.

Goshawk surveys were completed to determine the presence or absence of goshawks within proposed small-scale timber units and other potential goshawk habitat. No new goshawk nest sites were identified, but there were goshawks observed by USDA Forest Service wildlife technicians near two of the proposed timber units

Breeding Bird Surveys were conducted on our 2 established routes (Harlequin Lake and Yakutat). Between the two surveys, 1173 birds were observed, with 638 birds observed on the Yakutat route and 535 observed on the Harlequin Lake route. Forty seven different species were observed, from the abundant Varied Thrush (*Ixoreus naevius*) to a lonely Sandhill Crane (*Grus Canadensis*). A summary of the results by route for this year and past years can be accessed on the BBS website: http://www.pwrc.usgs.gov/bbs/

Five individuals volunteered for the Christmas Bird Count on December 18th, 2006. Observers noted 993 individual birds representing 37 species during the survey. Observations included 357 northwestern crows, 87 mallards, 69 common mergansers, 50 trumpeter swans, 50 pine siskins, 42 harlequin ducks, and many others. The results of this year's Christmas Bird count can be found at: http://www.audubon.org/bird/cbc/

In cooperation with the USDI Fish and Wildlife Service, annual owl breeding surveys were continued this year to monitor owl populations along the road system of Yakutat. Vehicle transects were used to listen for owl calls at stops one-half mile apart along Forest Highway 10. Surveys were conducted starting two hours after sunset, and were completed in three hours. Each stop was surveyed for eight minutes, and the elapsed time to the call of an individual owl was recorded. This year's survey was conducted after the recommended time period. Forest Highway 10 was not cleared of snow until the second week of May. Additionally, phenology of most plant and bird species seemed to be a couple of weeks behind previous years. Nine Northern Saw-whet Owls (*Aegolius acadicus*), two Barred Owls (*Strix varia*), one Northern Pygmy-Owl (*Glaucidium gnoma*), and one Boreal Owl (*Aegolius funereus*) were observed this year.

We also participated in a local kids' activities program to teach children about local raptors.

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Project: The link between salmon and birds: Reproductive success and stable isotopes of Tree Swallows in Wood-Tikchik State Park

Investigator: Laura X. Payne, Alaska Salmon Program - University of Washington

2006 marks the first (and pilot) year of this project. The larger objective is to understand the importance of salmon to birds, with this study focusing on Tree Swallows. Specific questions are: (1) is it possible to differentiate, using stable isotopes, among swallow juveniles raised along salmon versus non-salmon streams? (2) Do juvenile tree swallows from salmon versus non-salmon streams grow at different rates?

In 2006, we monitored 45 Tree Swallow nest boxes located along 5 streams (with and without salmon) and around 2 muskegs in Wood-Tikchik State Park. Nest boxes were built and installed the previous summer so as to accommodate breeding swallows by spring 2006. Nest-box occupancy was modest this first year (as expected); however, it should increase markedly over the next few years. Most sites showed early evidence of nesting activity (i.e., partial to complete nests), however many nests were abandoned (due to late spring & poor insect availability ??). All chicks produced came only from sites with salmon (and from one muskeg nest). Chick growth rates were variable (probably related to age/experience of parents) but growth rates did not differ between the two salmon sites nor from the muskeg site. Larger sample sizes are needed so we built and installed 35 more nest boxes in anticipation of the 2007 season.

The larger objective of this project is to determine the importance of salmon to the avian community in Wood-Tikchik State Park. This research is conducted in collaboration with the University of Washington-Alaska Salmon Program (UW-ASP), which has been studying the ecology and management of salmon for 50+ years. More recent UW-ASP studies emphasize the link between salmon and the surrounding ecosystem. Although it is well known that salmon are an important food source for certain species (e.g., grizzly bears), the extent to which salmon and salmon-derived nutrients are consumed by birds (especially, songbirds) is poorly understood.

Tree swallows feed on salmon indirectly, by consuming aerial insects that have taken up nutrients originating from salmon carcasses. Because salmon body tissues contain a unique chemical “signature” that can be differentiated from freshwater sources (using stable isotopes), it is possible to trace “salmon nutrients” into food webs in the surrounding ecosystems. For this study, we will quantify the extent of salmon-derived nutrients in Tree Swallow diets using a few feathers taken from juvenile tree swallows. This relatively non-invasive technique is adequate because all nutritional inputs to juveniles (and therefore, into their feathers) necessarily originates from localized food sources around their nest box; tree swallows feed within 400m of their nest boxes. We will also explore the link between salmon subsidies and the ecological dynamics of Tree Swallows by monitoring growth rates and fledgling mass to estimate the effects of salmon on swallow recruitment rates.

We anticipate that swallows along salmon streams will have significantly higher $\delta^{15}N$ levels than swallows along non-salmon streams; values of $\delta^{13}C$ are likely to vary as well, indicating different sources of carbon in the birds' diets. Growth rates may vary between stream types, with swallows growing faster along salmon streams. This study of ecosystem linkages, in a relatively pristine area with healthy salmon runs and intact bird communities, is also important because it provides a baseline for understanding and comparing with degraded ecosystems, or with ecosystems under uncertain climate scenarios. We share all data with the international network 'Golondrinas de las Americas', a collaborative group studying swallows throughout the Western Hemisphere.

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Project: Southeast Spruce Grouse Study

Investigator: Dale Rabe, Alaska Department of Fish and Game

The research study to evaluate the taxonomic classification and distribution of spruce grouse in Southeast Alaska continued to collect samples over the past year. During the spring of 2006 field work focused on Prince of Wales Island (POW) to evaluate methods of live-capturing birds and extract a blood samples for DNA studies. Species experts from Washington and British Columbia also visited the island to help with capture of birds and compare breeding behaviors and habitat usage with spruce grouse in other parts of their range. Inclement spring weather hampered much of our efforts and resulted in the capture of only four birds. The wing collection survey continued with significantly fewer submissions from hunters this year; only two additional spruce grouse were submitted, both from POW. Field work will continue in 2007. We hope to expand our efforts to include evaluation of techniques for estimating population abundance in addition to collecting more DNA samples from islands where birds are known to occur. Beginning in 2007, we expect a graduate student from University of Alaska, Fairbanks to begin working on this project as part of a Master's degree program.

Dale Rabe, Alaska Department of Fish and Game, PO Box 240020, Douglas, AK 88824

Project: Summary of 2006 Landbird Activities for the Alaska Peninsula and Becharof National Wildlife Refuges

Investigator: Susan Savage, US Fish and Wildlife Service

Landbird/Raptor Surveys/Investigations Conducted:

- King Salmon Breeding Bird Survey (6 June 2006)
- Attempt to enter the Cornel Nest Box monitoring program resulted in dead birds from nest boxes constructed with smooth interiors. Sample of birds sent to Madison Wildlife Health Lab were negative for AI
- Genetic samples were taken from three Northern Goshawks that have been in the freezer at the refuge for several years. They were sent to ASC geneticist Sandra Talbot.

General Surveys / Outreach Conducted:

- Point Counts and all bird incidental surveys on 14 shorebird plots (227 points) in May 2006
- Christmas Bird Count (17 Dec. 2005) or planned for 16 Dec. 2006 - don't remember what our reporting year is!
- North American Migration Count (13 May 2006)
- Transport of Injured and recovery of dead Raptors, public education and outreach
- Outreach programs on Avian Influenza (University of Alaska-Fairbanks (Bristol Bay Campus) biology class on April 11, to staff on April 14, to the Bristol Bay Borough high school biology 1 class on April 18, and for the general public at the Bristol Bay Borough school auditorium on April 25)

Other Projects of Import to Landbirds:

- Completed phase II of ground truthing for a land cover map. Phase I (King Salmon south and west of Katmai to Meshik drainage) map will be completed in winter 06/07. Phase II (Meshik to Nelson Lagoon) map will be completed in winter 07/08. Map covers all lands of the Alaska Peninsula and is not restricted to Refuge Lands.

Contact: Susan Savage, US Fish and Wildlife Service, Alaska Peninsula / Becharof National Wildlife Refuges, PO Box 277, King Salmon, Alaska, 99613. Phone: (907) 246-1205; Email: Susan_Savage@fws.gov

Project: Avian Influenza Surveillance in Tundra Swans on the Northern Alaska Peninsula

Investigator: Susan Savage, US Fish and Wildlife Service

INTRODUCTION

The Bristol Bay coastal plain of the Alaska Peninsula supports significant breeding, molting and migrating populations of tundra swans. Birds breeding in western Alaska migrate in the Pacific Flyway (Moermond and Spindler 1997, Ely et al. 1998). In spring 2006, tundra swans were identified as a priority species (number 11 out of 26) for sampling for detection of highly pathogenic Asian avian influenza (HPH5N1 - AI) in Alaska because of their distribution in Asia, and the seemingly high susceptibility of swans to HPH5N1 as evidenced by the prevalence of swans in AI die-offs in Asia and Europe (Interagency Avian Influenza Working Group 2006). Many tundra swans winter in California, a state particularly at risk to an AI outbreak because of a large human population and poultry industry. The Bristol Bay region may also be important for monitoring AI because mixing may occur there between birds migrating up the Aleutian chain from Asia and eastward across the Bering Straits from Chukotka. Because birds would be captured during an AI sampling effort, USGS-ASC Wildlife Biologist Ely (coordinating the state tundra swan effort) and Refuge staff proposed to band and collar birds. The Alaska Peninsula effort was incorporated into a statewide marking effort with broader population goals.

METHOD

Aerial reconnaissance using the Refuge aircraft was used to locate molting flocks of swans within 80 miles of the Refuge office in King Salmon. Refuge aircraft and a contracted Beaver were used to transport crew and inflatable boats to molting flocks daily. Birds were captured using techniques employed at Izembek NWR; birds were captured using dip nets from inflatable boats. Birds were restrained by electrical taping their legs together until they could be transported to the processing crew on shore. Once on shore, birds were further restrained using swan "vests" designed by Dau during previous swan captures.

Captured swans were aged, sexed, measured (mid-toe, total tarsus, culmen, skull, lore length and width, and 9th primary to 1/10 mm), weighed, and fitted with USGS metal leg bands and blue plastic neck collars engraved with white numbers. A photo was taken of the collar number and the face to further describe the lore. Feathers were collected from the head, breast, and wing coverts for genetic and isotopic studies. Genetic samples will also be able to confirm sex. Cloacal swabs were taken from each captured swan and placed into National Wildlife Health Center (NWHC) media in vials which were placed into nitrogen shippers. NWHC protocols were followed for protection of field personnel as well as for collection, storage, and shipping of samples. Aviation Management (formally Office of Aircraft Safety) office procedures were followed for decontamination of materials that were transported in aircraft

RESULTS

Tundra swans were captured and cloacae swab taken at seven ponds on the Northern Alaska Peninsula from 21 – 25 July (Figure 1). We captured 95 birds (Table 1) and 94 AI samples were recorded (one sample was either not taken or was not recorded). This included 84 after hatch year birds, seven second year birds, and four cygnets. Photos of the head and neck collar were taken for 84 birds and feather samples were taken for 76 birds. All birds were banded with USGS standard metal leg bands and all adults were collared with plastic neck collars (blue with white letters). Preliminary means and standard deviation were calculated for the morphometric data by sex and by location (available in summary report: Savage and Sowl In Prep). Except for lore measures (which were highly variable), males measured on average larger than females, however there was much overlap. We have had no indication of positive AI results to date.

DISCUSSION

We collected 94 samples out of a target of 100. Together with the Izembek tundra swan effort, we exceeded our total goal (total goal was 150 birds and we sampled 157). As capture proceeded on the Northern Alaska Peninsula, fewer accessible ponds with more than five birds were available and birds were beginning to fly toward the end of July. Besides the primary goal of collecting samples for influenza testing, 95 birds were banded and 91 birds were collared. Ely (USGS-ASC) has made arrangements to search for birds south of Alaska during fall migration and wintering; these observations will increase information about migratory paths between molting, staging, breeding, and wintering areas of Alaska Peninsula tundra swan and timing of migration for various populations, age groups, and breeding vs. non-breeding birds. Marking will also increase our ability to avoid or target (to be determined) already tested birds if we repeat this work in 2007. Marked birds will also be visible to the interested public. Morphometric information, genetic information (from feather samples), and isotope analysis (from feather samples) will supplement studies being conducted by Dau (USFWS-MBM) and Pearson (USGS-ASC) to delineate populations of swans. One goal is to determine if these populations mix or segregate in staging and wintering areas.

Contact: Susan Savage, US Fish and Wildlife Service, Alaska Peninsula / Becharof National Wildlife Refuges, PO Box 277, King Salmon, Alaska, 99613.
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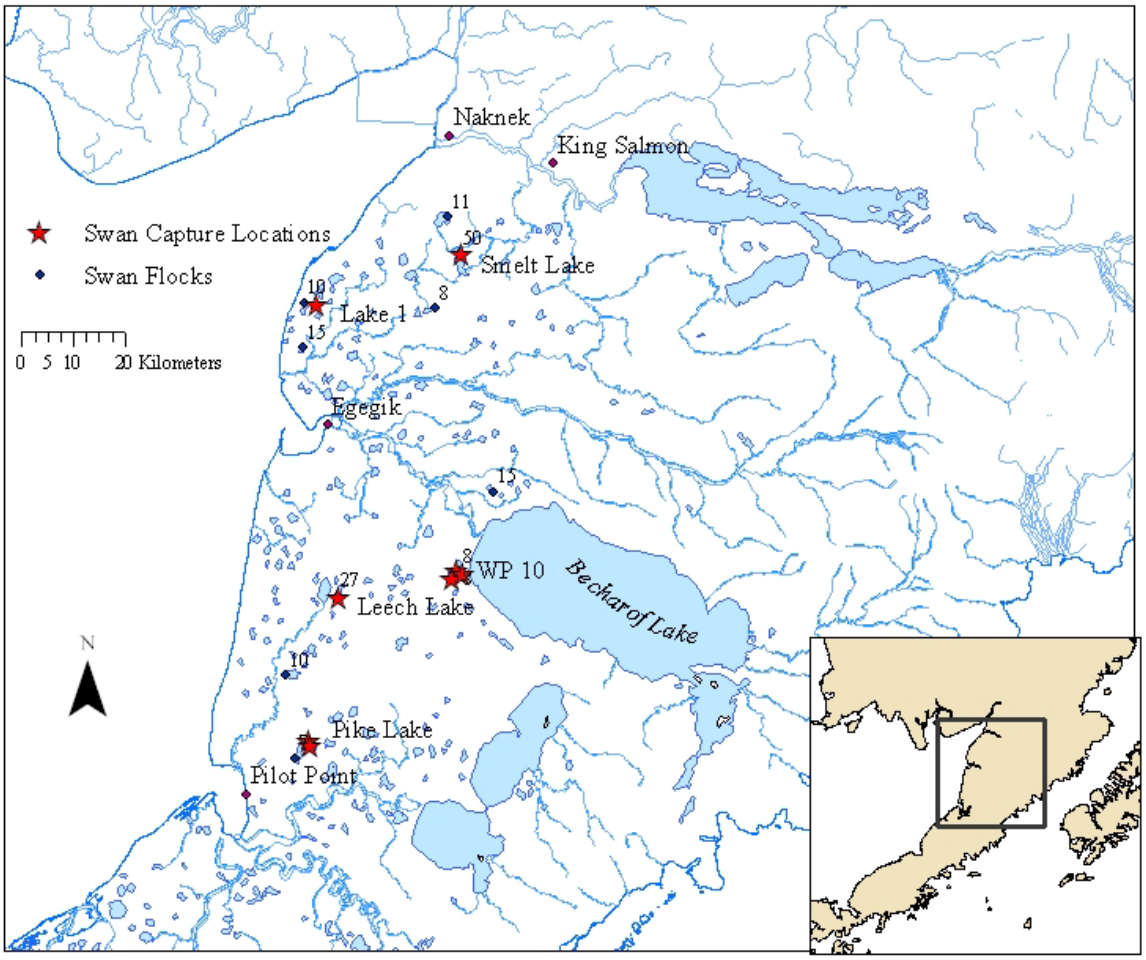

Figure 1 Tundra swan capture locations and locations of un-sampled flocks for Avian Influenza sampling on the Northern Alaska Peninsula, July 2006.

Table 1. Summary of tundra swan banding locations, dates of capture, and number of captures by sex, Alaska Peninsula tundra swan project 2006.

Lake Name (Recon WP)	Latitude	Longitude	Date	Female	Male	Undet	Total
NAKP, near Becharof Lake (WP 10) Loc 1	57.9709	-156.9234	7/21/2006		2		2
NAKP, near Becharof Lake (WP 10) Loc 2	57.9588	-156.9362	7/21/2006	4	4		8
NAKP, near Becharof Lake (WP 10) Loc 3 (Same pond as Loc 1)	57.9655	-156.9028	7/21/2006	1	5		6
NAKP, Smelt Lake (WP 3)	58.5228	-156.9535	7/22/2006	20	14		34
NAKP, Leech Lake (WP 13)	57.9158	-157.3093	7/23/2006	10	8		18
NAKP, Lake 1 (WP 1)	58.4243	-157.4340	7/24/2006	10	5	1	16
NAKP, Pike Lake (WP 9)	57.6641	-157.3855	7/25/2006	3	3		6
NAKP, Pike Lake - East	57.6547	-157.3787	7/25/2006	5			5
NAKP Total				**53**	**41**	**1**	**95**

Project: Landbird update from Alaska Department of Fish and Game, Region II

Investigator: David Tessler, Nongame Program, Alaska Department of Fish and Game

We completed one ALMS plot and attempted another on Kesugi Ridge in Denali State Park. We did not complete the primary site due to difficulty in reaching the minimum number of points. The recent changes to ALMS protocols that allow stratification by access, significantly reduced the time and expense for participation in the program. Changes in protocol also make it easier for managers to target areas of specific interest. As a result, Alaska Department of Fish and Game will continue to conduct between two and four ALMS plots per year on state administered lands in Region II. The locations of future ALMS plots on state lands will be determined in part by their contribution to the overall ALMS sampling effort, and the longterm economic repeatability of the sites. We also conducted two BBS routes and intend to begin monitoring one or two additional routes per year.

Contact: David Tessler, Alaska Department of Fish and Game, Dvision of Wildlife Conservation, Region II, Nongame Program. 333 Raspberry Road, Anchorage, 99518. Phone: (907) 267-2332; Email: david_tessler@fishgame.state.ak.us

Project: Landbird update from Canadian Wildlife Service, Yukon, 2006

Investigator: Pamela Sinclair, Wildlife Biologist, Canadian Wildlife Service

MONITORING/INVENTORY

Migration Monitoring: Albert Creek and Teslin Lake Banding Stations, Yukon
CWS (Whitehorse) continues to support the Albert Creek and Teslin banding stations in southern Yukon. At Albert Creek, a total of 5287 birds were banded this year, including 2695 in spring and 2592 in fall. The most common birds were Wilson's Warbler, Myrtle Warbler, Yellow Warbler, Ruby-crowned Kinglet, and Orange-crowned Warbler in spring; and Ruby-crowned Kinglet, Common Yellowthroat, American Tree Sparrow, Wilson's Warbler, and Alder Flycatcher in fall. At Teslin Lake, 917 birds were banded, including 802 in spring and 115 in fall. The most common birds banded there in spring were Slate-coloured Junco, Common Redpoll, Myrtle Warbler, Wilson's Warbler, and Ruby-crowned Kinglet. These two stations are also colour-banding Rusty Blackbirds and collecting feather samples for stable isotope analysis as well as detailed information on the timing of moult. (Pam Sinclair)

Yukon Spring Roadside Waterbird Survey includes Rusty and Red-winged blackbirds
As of 2004, Rusty Blackbirds and Red-winged Blackbirds, along with Sora and three boreal shorebirds, are being recorded on the annual Yukon Spring Roadside Waterfowl Survey conducted by CWS (Whitehorse) in partnership with the Yukon Department of Environment and Yukon College. In 2006 these surveys covered 291 wetlands in

southern Yukon, each surveyed weekly for 5 weeks, from early May to mid June. Of the 291 wetlands surveyed in 2006, Rusty Blackbird was recorded 93 times at 61 wetlands, and Red-winged Blackbirds were recorded 98 times at 44 of the wetlands. Since 2004, the percentage of wetlands at which Rusty Blackbirds have been recorded has decreased each year (32% of wetlands in 2004, 24% in 2005, and 21% in 2006). At the same time, the percentage of wetlands with Red-winged Blackbird has increased slightly (12% in 2004, 14% in 2005, and 15% in 2006). These preliminary results will be further investigated over the winter. (Pam Sinclair)

PRISM Shorebird Surveys on Yukon North Slope includes tundra nesting songbirds
PRISM shorebird surveys were conducted on the Yukon North Slope, 8-13 June 2006. Although these surveys were designed for tundra-nesting shorebirds, songbirds are also recorded. PRISM (Program for Regional and International Shorebird Monitoring) is a long-term monitoring program designed to track trends and estimate populations sizes, and covers the entire North-American Arctic. In 2006 we surveyed 34 plots, each 12ha in area, across the entire Yukon North Slope. Common songbirds included Lapland Longspur, Savannah Sparrow, and Common Redpoll; also recorded in small numbers were Horned Lark, American Pipit, American Tree Sparrow, White-crowned Sparrow, and Smith's Longspur. (Pam Sinclair)

RESEARCH
Rusty Blackbird Population Connectivity
Feathers ("P1") were collected from 255 Rusty Blackbirds in southern Yukon in 2006, including 81 in spring (25 April-15 May) and 174 in fall (23 August-21 September). Stable isotope analysis will be performed on the feathers, which are grown on the breeding grounds in late summer. Birds were trapped using mist nets at three sites, and were colour banded. Feather moult was occurring during almost the entire fall banding season (15 moulting adults 24 August - 7 September, 53 moulting hatch-year birds 23 August – 18 September), with 36% of hatch-year birds and 47 % of adults still growing flight feathers when captured. However, all birds captured in fall had new P1 feathers which were completely grown, except for one hatch-year female captured on 30 August, which had retained all of its juvenile primaries and secondaries. Birds were easily sexed by plumage, and age was determined by degree of skull ossification. (Pam Sinclair)

National Boreal Bird Habitat Modelling Project
CWS (Whitehorse) is a partner in the National Boreal Bird Habitat Modelling Project. Models are being developed to describe relationships between bird distribution/abundance and climate, vegetation, land use, and other variables. These models will be used to predict species distribution/abundance in areas without survey data, and responses of boreal birds to different conservation scenarios. We have contributed Yukon point count data to the project, and are currently working on geo-referencing older point count data. (Fiona Schmiegelow)

POLICY AND PLANNING

International All-bird Conservation Plan for Bird Conservation Region #4 (Northwestern Interior Forest)
Alaska Bird Observatory (Fairbanks) secured funding and spearheaded this effort in 2005. BCR4 spans most of the Yukon, interior Alaska, a large portion of northern B.C., and part of the mountainous western section of NWT. A first draft is planned for July 2007. (Pam Sinclair)

Incidental Take Working Group
CWS Yukon directly participates on Environment Canada's Incidental Take Core Working Group; activities of the group include developing a consultation strategy and implementation models for the management and regulation of the incidental take of migratory birds in Canada. CWS Yukon is currently reviewing Yukon land and resource management processes, including the existence of management or conservation plans, to identify opportunities and challenges related to the implementation of a new incidental take management and regulatory process. (Scott Herron)

Migratory Bird Conservation Information for Yukon Forestry Planning Processes
CWS Whitehorse provides migratory bird information to sustainable forest management planning working groups in the Yukon. For example, we have provided information packages to the technical working group for the Kaska Forest Resource Stewardship Council in southeast Yukon; to the Resource and Monitoring Technical Working Group for the Champagne and Aishihik Traditional Territory Strategic Forest Management Plan in southwest Yukon; and the Teslin Sustainable Forest Management Plan. These packages include a list of birds which occur in the planning region, highlighting Species at Risk, COSEWIC candidate species, species of high stewardship or conservation priority, and a suite of suggested focal species. We also provide information related to ecosystem-based planning, and possible effects of climate change on birds. (Shawn Taylor)

STAFF NEWS
We welcome Dr. Fiona Schmiegelow to Environment Canada and to the Whitehorse CWS office; she began work here as Research Scientist earlier this year. Fiona brings a wealth of expertise and experience on landbird research, monitoring, and conservation.

Wendy Nixon is now working on international caribou issues and will not be involved with the landbird committee for the next while (but we still consult with Wendy on landbird issues!).

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Project: Life-history evolution in Orange-crowned warblers (Vermivora celata)

Investigators: Helen Sofaer, Cameron Ghalambor, Jongmin Yoon, Colorado State University; Scott Sillett, Smithsonian Migratory Bird Center

Studies of avian life history evolution have generally focused on food limitation and nest predation as explanations for variation in life histories, whereas adult mortality rates have received relatively little attention. Long distance migration is a major source of mortality for migratory birds, but its role in life history evolution has rarely been investigated. To understand how migration distance and other ecological factors affect reproductive investment and adult survival rates, we are comparing three breeding populations of Orange-crowned warblers: long-distance migrants in Alaska, medium-distance migrants in Arizona, and residents on the California Channel Islands.

During the 2006 breeding season, we initiated a study of Orange-crowned warblers breeding along the Tanana River in Fairbanks, Alaska. We mist-netted and color banded warbler adults and monitored reproductive behavior and nest success. Clutch size (mean ± SE = 5.56 ± .145) was higher in Alaska than in the other populations, daily nest mortality (.02 ± .007) was lower, and the nestling period (9.1 ± .10 days) was shorter. We measured feeding rates, controlling for developmental stage, and found that feeding rates per nestling per hour (1.9850 ± .19824 trips) did not differ between individuals breeding in Alaska and Arizona, but were higher on the Channel Islands. Our future research will focus on feeding rates, growth rates, and population demography.

Contact: Helen Sofaer, Graduate Student, Biology Department, Colorado State University, 1878 Campus Delivery Fort Collins, CO 80523, (970) 491-2781, helen@lamar.colostate.edu

Project: Identifying and cataloging the Important Bird Areas of Alaska

Investigator: Iain Stenhouse, Audubon Alaska

The Important Bird Area (IBA) concept was developed in Europe in the 1980s by BirdLife International, and IBAs are now recognized around the world as a valuable tool in bird conservation. To qualify as an IBA, sites must satisfy at least one of a series of strict criteria: they must support (1) species of conservation concern, (2) species with restricted ranges, (3) species with particular habitat requirements, and/or (4) species, or groups of species, which are vulnerable because they congregate at specific sites. IBAs are usually discrete sites that stand out from the surrounding landscape as having local, continental or global significance for birds.

Over the course of 2006, a total of around 40 IBA nominations were either completed or are currently in progress. A number of these sites were specifically nominated due to

their use by landbirds as breeding or wintering areas, or migratory corridors. After review by local and national technical committees, most of these sites are expected to be recognized as IBAs of global significance.

This work is highly dependent on the collaboration and cooperation of a range of partnering organizations and communities across Alaska, including Boreal Partners In Flight. Anyone can nominate a site as a potential IBA, and, if we are to reach our goal of identifying all the globally and continentally significant sites in Alaska by the end of 2007, we urgently require more researchers and other interested individuals to take on a nomination. If you do not have a specific site in mind, but would like to contribute to this global conservation project, we can provide a list of potential sites across the state. To request an IBA nomination package, or for further information,

Contact: Iain Stenhouse, Audubon Alaska, 715 L Street, Suite 200, Anchorage, AK 99501. Phone: (907) 276-7034; Fax: 907-276-5069; e-mail: istenhouse@audubon.org.

Project: Update of the Alaska WatchList

Investigator: Iain Stenhouse, Audubon Alaska

The Alaska WatchList was first published by Audubon Alaska in 2002. The list is intended to serve as an early warning system to focus attention on species at risk before they are in jeopardy of extinction. Species or subspecies on the WatchList are faced with a combination of population decline, small population size, limited geographic range, or threats to their breeding or wintering habitats or migration stopovers. Subspecies are included because Alaska has unique responsibility for stewardship of these important regional populations. It is our hope that the Alaska WatchList will stimulate discussion and actions that will prevent further declines in these vulnerable bird populations.

In late 2005, we published an updated version of the WatchList, with 52 species in all included on the new list. Collectively, landbirds represent the second largest group on the list, with a total of 13 species or subspecies considered at risk. Most of these species or subspecies were included due to an unfortunate combination of small populations and observed population declines. To request a copy of the Alaska WatchList, or for further information,

Contact: Iain Stenhouse, Audubon Alaska, 715 L Street, Suite 200, Anchorage, AK 99501. Phone: (907) 276-7034; Fax: 907-276-5069; e-mail: istenhouse@audubon.org.

Project: American Dipper Nesting and Productivity in the Juneau area.

Investigator: Mary Willson, Willson Ecological Consulting

Dippers in the Juneau area nesting on virtually all streams above a critical estimated size (discharge), including glacial streams. Nesting was delayed in 2006 (unusually cold and wet). Nest success was > 90% in two years, but dropped to 65% in 2006. Renesting after failure was more common in 2006 and second broods were especially uncommon then. The frequency of second broods appears to be related not only weather but also to access of adult dippers to small fish. Annual survival is estimated at 57-57% in two years, but 38% from 2005 to 2006. In winter, dippers move regionally and locally. Some birds habitually foraging on stream deltas, where the principal prey is amphipods.

Contact: Mary Willson, Willson Ecological Consulting, 5230 Terrace Place, Juneau, AK, 99801. Phone: 907-789-1412; Email: mwillson@gci.net

RAPTOR PROJECTS

Project: American Peregrine Falcon Monitoring along the Upper Yukon River, Alaska, 2006

Investigators: Skip Ambrose[1], Nikki Guldager[2], Chris Florian[1], Angela Matz[2], Steve Ulvi[3], Melanie Wike[3]
Sandhill Company[1], U.S. Fish and Wildlife Service[2], National Park Service[3]

American Peregrine Falcons were selected by the Central Alaska Network (CAKN) as one of the vital signs to be monitored within Yukon-Charley Rivers National Preserve (YUCH), Alaska to determine ecosystem health (MacCluskie and Oakley 2005). These raptors have been monitored within YUCH, in the Upper Yukon River corridor for 31 consecutive years. This area is 1 of 2 index study areas for Alaska (*National Monitoring Plan for the American Peregrine Falcon,* U.S. Fish and Wildlife Service, 2003). The population within the Upper Yukon River corridor is believed to be one of the densest populations in North America, and also has one of the longest and most complete recorded datasets for the species. The survey is conducted between Circle, Alaska and the border of Yukon Territory, Canada and is accessed by boat. Survey methods followed Standard Operating Procedure (SOP) #5, Version 1.0, *American Peregrine Falcon Monitoring Protocol for the Central Alaska Network Units of the National Park System,* National Park Service, 2004). This SOP is designed to provide annual information from a contiguous study area containing both known territories and potential habitat along the Upper Yukon River. Additionally, it provides a framework from which the CAKN designed databases in Microsoft Access and ArcGIS that reflect and georeference the data recorded on the nest cards. Currently, 31 years of data are being archived into these new databases. From 20 May to 1 June 2006, all known territories along the study area were surveyed to identify occupied territories. Nest success and productivity were determined during the second survey period, conducted from 5 to 18 July 2006. The number of occupied territories within the study area has shown a steady increase since the species neared extinction in the early 1970's because of nest failure caused by DDT contamination. Fifty-four occupied territories were observed in 2006, which is nearly a 5-fold increase since 1975. The number of nestlings, though variable among years, has also increased from 17 in 1975 to 67 in 2006. Recent contaminants analyses of Peregrine Falcon eggs from YUCH suggest that mercury is currently at levels that may affect reproduction, and trends suggest that mercury levels may be increasing (Ambrose et al. 2000). Mercury is a persistent compound which bio-accumulates at high trophic levels causing toxic effects (similar to DDT). Additionally, DDT and other pesticides are still being used on wintering grounds, which may cause continued risk to the population. In response to these threats, addled eggs and nestling feathers are collected annually to monitor population health. In 2006, 2 addled eggs and nestling feathers were collected from 2 eyries. In addition, a cracked egg-shell fragment and four shed, adult feathers were collected for genetic analysis.

Contact: Skip Ambrose, Sandhill Company, HC 64, Box 2205, Castle Valley, UT 84532
Phone: (435) 259-0401; E-mail: skipambrose@frontiernet.

Project: Distribution and abundance of cliff-nesting raptors in selected areas in northwest Alaska: Seward Peninsula, 2006.

Investigator: Peter Bente, Alaska Department of Fish and Game.

Aerial surveys of the Southern Seward Peninsula study area were completed using an R-44 helicopter during a total of 19.5 hours of flight on three survey days in late June 2006. The study area was the same as 2004 and 2005 and included an area extending approximately 75 km east, 65 km west, and 140 km north of Nome (approximately 16,000 km^2). Previously mapped nest sites and new areas of nesting habitat (N = 495) were checked for occupancy by slow-speed fly-by survey techniques using GPS navigation to move efficiently from site to site. No landings or ground inspections were made during the survey and remote fuel caches were required to allow extended surveys away from Nome. Total nest site occupancy (raptors attending nest sites or nests with eggs/young) was documented as follows: Common Raven – 26; Golden Eagle – 33; Goshawk – 1; Gyrfalcon – 38; Peregrine Falcon – 8; Rough-legged Hawk – 55. Additionally, a single adult Bald Eagle was located (no apparent nest) and Canada Goose occupied nests on 4 cliffs. Total raptor abundance (including ravens) was 162 occupied nest sites, yielding an approximate occurrence of 1 pair per 98 km^2. Vacant sites were counted and classified, as follows: empty sticknest – 184; empty rock ledge – 23; nest scar on cliff – 34; cliffs with color – 72; artificial structures (e g. gold dredges) – 10. Nesting success was variable and substantially lower than previous years for several species: Common Raven – 75% successful; Golden Eagle – 30%; Goshawk – 100%; Gyrfalcon – 55%; Peregrine Falcon – undetermined; and Rough-legged Hawk – 49%. There was evidence showing that severe winter winds ripped many sticknests from exposed cliffs. Late snow-melt and cold wet spring/summer weather affected nesting success of raptors as well as many avian species groups, including waterfowl, shorebirds, gulls and song birds. Trends of abundance based on occupied sites show Gyrfalcons and Golden Eagles are stable, Rough-legged Hawks have wide annual variation, and Peregrine Falcons are slowly increasing (although their numbers still remain low due to limited availability of suitable nesting habitat).

Contact: Peter Bente, Division of Wildlife Conservations, Alaska Department of Fish and Game, Pouch 1148, Nome, Alaska, USA. Phone: (907) 443-2271; Email: peter_bente@fishgame.state.ak.us

Project: 2006 Yukon Delta NWR Gyrfalcon Breeding Ecology

Investigators: Travis Booms, Kevin McCracken, and Falk Huettmann, University of Alaska Fairbanks; Brian McCaffery and Phil Schempf, U.S. Fish and Wildlife Service; Sandy Talbot, U.S. Geological Survey (Alaska Science Center); Mark Fuller, U.S. Geological Survey (Snake River Field Station) and Boise State University's Raptor Research Center

The project goal is to elucidate aspects of Gyrfalcon (*Falco rusticolus*) ecology that contribute to Gyrfalcon monitoring and conservation capabilities. These research areas include: 1) Breeding dispersal/site fidelity, 2) Population genetic structure at local and statewide scales, 3) Adult movements during the breeding and non-breeding season, 4) Survey detectability and design, 5) Statewide nesting distribution, and 6) Contaminants.

The 2006 field season (18 April - 24 July) on the YDNWR marked the fourth consecutive year of data collection at the Volcanoes (our intensive study site), the second consecutive year in the Kilbuck Mountains, and the first year of sampling in the Askinuk Mountains. In total, we surveyed 148 historical nest sites via helicopter or ground survey, detected at least one adult at 20 sites, and observed eggs or young at 16. Overall, cliff occupancy and productivity appeared lower and phenology was 2-3 weeks later than previous years. We collected 431 genetic samples (adult molted feathers) from 23 nest areas. We also collected samples from 39 young in 12 nests (see table below).

Study Area	# Young Present	#Sampled for AI	# Sampled for Contaminants	# Young Banded
Volcanoes	11	11	-	10
Kilbuck Mountains	14	14	-	10
Askinuk Mountains	14	10	10	10
Totals	39	35[a]	10	30

a. Discrepancies in totals are from nestlings too young to sample or band.

We deployed a satellite transmitter on one adult female Gyrfalcon and re-sighted a previously color banded adult, the first confirmed breeding dispersal on the Refuge using color bands. Three of 10 Gyrfalcons carrying transmitters from 2005 were relocated near the Volcanoes during the 2006 field season; all appeared to be mortalities. Hampered by poor weather, we completed 9 of 24 km of Willow Ptarmigan (*Lagopus lagopus*) line transect surveys at the Volcanoes. Preliminary data from an experiment investigating the longevity of molted feathers near nest sites suggest feathers < 10 cm are unlikely to persist between years. This should strengthen our ability to investigate site fidelity using genetics from molted feathers.

2007 Priorities: 1) Repeated aerial surveys to estimate detectability, 2) Begin genetic sampling in other parts of the state, 3) Continue genetic sampling on the YDNWR for dispersal/site fidelity trends, and 4) Collate known nest locations throughout Alaska to create a nest distribution map and model.

The project is funded and supported by the YDNWR, USFWS Office of Migratory Birds, US Geological Survey, National Science Foundation, Environmental Protection Agency, University of Alaska Fairbanks (UAF) Biology and Wildlife Department, and UAF's Idea Network of Biomedical Research Excellence (INBRE) Program. The project is the focus of Travis Booms' doctoral dissertation at the University of Alaska Fairbanks.

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Project: Distribution, abundance, and ecology of forest owls in southeast Alaska

Investigators: Michelle Kissling, U.S. Fish and Wildlife Service, Juneau, *and* Stephen B. Lewis, Alaska Department of Fish and Game, Douglas.

This project was divided into three phases, each scheduled to last approximately one year. During 2006, we completed Phase 2. Objectives of Phase 2 were to (a) refine the survey protocol used by volunteers of the Southeast Alaska Owl Network; (b) estimate detectability and effective area surveyed for western screech-owl; and (c) describe aspects of natural history and ecology for western-screech owl.

Southeast Alaska Owl Network

We continued to work closely with Juneau Raptor Center to maintain the Southeast Alaska Owl Network. We recruited 57 volunteers in 13 communities throughout Southeast Alaska to conduct monthly surveys in or near their communities. The majority of volunteers conducted silent surveys, but we also selected 10 volunteers to conduct broadcast surveys along established routes. From January through September 2006, 299 points were surveyed (172 silent surveys and 127 broadcast surveys), resulting in 68 detections of six species of owls and a detection rate of 23% (increased from 13% in 2005). Because routes were surveyed monthly throughout the reporting period, the points used to estimate the detection rate were not independent of one another. Volunteers detected barred owl (*Strix varia*; *n*=14), boreal owl (*Aegolius funereus*; *n*=1), great horned owl (*Bubo virginianus*; *n*=3), northern pygmy-owl (*Glaucidium gnoma*; *n*=3), northern saw-whet owl (*Aegolius acadicus*; *n*=40), and western screech-owl (*Megascops kennicottii*; *n*=7) during systematic surveys. In addition to the six species mentioned above, northern hawk-owl (*Surnia ulula; n*=1), short-eared owl (*Asio flammeus; n*=14) and snowy owl (*Bubo scandiacus; n*=4) were reported by volunteers as opportunistic observations (*n*=105).

Detectability and effective area surveyed

To estimate detectability and evaluate survey methods, we radio-marked 8 western screech-owls (5 males and 3 females). These birds were captured over 24 capture nights using mist nets and affixed with backpack-mounted radio transmitters. No mortalities occurred during capture activities. We conducted 144 detectability surveys and detected

responses from 5 western screech-owls, 1 barred owl, and 1 northern saw-whet owl; therefore, detectability of the target species was extremely low (0.05).

Breeding status is known to influence singing behavior, and therefore detectability, of several owl species. Additionally, proximity to nest location may influence territorial behavior of a bird, and therefore detectability. To determine breeding status, we conducted 27 evening watches to record vocalization behavior and presence/absence of mate. We confirmed that 6 of 8 birds were paired and 5 of 8 successfully reproduced (i.e., fledged at least one young). We located 2 nest holes and identified 3 nest stands. One pair apparently failed to nest successfully and 1 bird moved from the area where it was located with a mate.

Natural history of western screech-owls
Using the radio-marked western screech-owls, we recorded 126 day locations by triangulation, 153 day roost locations by walking in on radio-tagged birds, and 144 night locations (total=423). These locations will allow for estimation of home range during breeding season, and identification of important physical characteristics for roosting and foraging sites. In addition, we collected 101 pellets which will allow for an assessment of the diet and 17 owl feathers for genetic analysis. We partnered with Dave Tallmon at University of Alaska Southeast to conduct genetic analyses of western screech-owls and northern saw-whet owls. In addition to blood samples collected from radio-marked birds, we are also collecting carcasses of all owl species and are partnering with Juneau Raptor Center, Alaska Raptor Center (Sitka), and Ketchikan Raptor Center to obtain blood samples from injured owls. If you have an owl carcass or one is reported to you, please contact Michelle Kissling (contact information below).

This project is scheduled to continue for one more year (2007).

Contact: Michelle Kissling, U.S. Fish and Wildlife Service, 3000 Vintage Blvd., Suite 201, Juneau, Alaska, 99801, 907-780-1168, michelle_kissling@fws.gov; or, Stephen Lewis, Alaska Department of Fish and Game, Division of Wildlife Conservation, P.O Box 240020, Douglas, Alaska, 99824-0020, 907-465-4348, steve_lewis@fishgame.state.ak.us.

Project: Raptor Population Inventory-Bald Eagles, Lake Clark National Park and Preserve, Alaska, 2006.

Investigator: Buck Mangipane and Judy Putera, National Park Service

Data on Bald Eagle nest occupancy and productivity have been collected in Lake Clark National Park and Preserve (LACL) since 1992. Due to habitat differences, data from coastal and interior nests are analyzed separately within LACL. An early occupancy survey was flown with a PA-18 fixed-wing aircraft on 10 May and 83 Bald Eagle nests were evaluated. Productivity surveys were flown on 27 and 28 July observing 27 Bald

Eagle chicks in 18 nests (1.5 chicks per successful nest). The interior region typically has higher estimates of nest success and productivity, but 2006 results found the active/occupied nest success to be higher on the coast (50%) than in the interior (32%). Productivity for the coastal nests was 0.85, while the interior nests produced 0.40 young per active/occupied nest. The recorded productivity of coastal nests was the second highest for that region, with only the 1997 estimate of 0.90 being higher. Unfortunately, the estimates of nest success and young per occupied/active nest in the interior were the lowest recorded during any LACL survey. Additional flight time will be utilized in 2007 to extensively search the interior for new nests, hoping to find distribution changes as one of the factors for the declines of 2006.

Contact: Buck Mangipane, National Park Service, Lake Clark National Park and Preserve, 1 Park Place, Port Alsworth, AK 99653.

Project: Monitoring Occupancy of Nesting Territories and Reproductive Success of Golden Eagles and Gyrfalcons in Denali National Park and Preserve, Alaska.

Investigator: Carol McIntyre, Denali National Park and Preserve, Alaska.

As part of the NPS Central Alaska Network Vital Signs Monitoring Program, we monitored the occupancy of nesting territories and reproductive success of Golden Eagles (*Aquila chrysaetos*) and Gyrfalcons (*Falco rusticolus*) in the northeast region of Denali National Park and Preserve (Denali) for the 20th consecutive year. We collected data using two standardized aerial surveys conducted from a Robinson R-44 helicopter, and additional ground observations and foot surveys. We conducted the occupancy survey in late April, additional foot surveys from May through July, and the productivity survey in mid-July 2006. We also visited a sample of occupied Golden Eagle nesting territories in early July to collect shed feathers for ongoing DNA analyses.
It was a banner year for Golden Eagles in Denali in 2006; 64 of the 75 territories that we monitored were occupied (85% occupancy rate) and rates of laying (94%), nest success (83%), and production of fledglings (n = 75; fledglings per occupied territory = 1.17; mean brood size = 1.50) were among the highest recorded in study's history. We attributed the high eagle reproductive success to high numbers of snowshoe hare (*Lepus americanus*) in the study area.

Gyrfalcon reproductive success in Denali was lower than most years despite apparently high numbers of Willow Ptarmigan (*Lagopus lagopus*) in the study area. We monitored 15 Gyrfalcon nesting territories in 2006, and occupancy (47%), success rate (43%), and production of fledglings (n = 9) were lower than most years.
We noted an unusually high number of nonbreeding subadult Golden Eagles in the study area from June through August this year, and observed many interactions between them and breeding adult Golden Eagles during July and August. These interactions often concluded with the adult Golden Eagle hitting the subadult in midair and driving it to ground.

Other notable observations of raptors and owls in and near the study area in 2006 included at least 18 nesting pairs of Great-horned Owls (*Bubo virginianus*), including 1 successful pair in a cliff-nest historically used by Golden Eagles, discovery of 3 previously undocumented occupied Peregrine Falcon (*Falco peregrinus*) nesting territories, and frequent observations of Northern Harriers (*Circus cyaneus*) and Short-eared Owls (*Asio flammeus*). Additionally, we unintentionally found 12 Northern Harrier and 4 Short-eared Owl nests during our routine fieldwork in 2006; in comparison, we found 2 or 3 Northern Harrier nests and rarely found Short-eared Owls nests annually in the past 19 years.

Contact: Carol McIntyre, Denali National Park and Preserve, National Park Service, 4175 Geist Road, Fairbanks, Alaska, 99709; 907-455-0671, Carol_McIntyre@nps.gov.

Project: Raptor survey of the Porcupine River, Arctic and Yukon Flats National Wildlife Refuges, Alaska, 2006.

Investigators: David Payer and Gary Wheeler, U.S. Fish and Wildlife Service

Raptor surveys have been conducted on the Porcupine River in northeastern Alaska annually since 1979, with the exception of 2004 when access was prevented by wildfire smoke. 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 includes the Porcupine River corridor between the U.S.-Canada border and Rock Slough, approximately 166 km downstream. 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. This long-term monitoring program is included in the Arctic Refuge's Ecological Inventory and Monitoring Plan.

In 2006 we conducted our boat-based survey during 11-20 July. We observed 28 pairs of peregrines, including 20 pairs with young, plus 6 single adults associated with territories. We estimated a minimum of 2.2 young per successful pair and 1.6 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 2006, 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 with young in mid July). However, the number of young per successful pair may have declined as the population increased (linear regression, $\underline{R^2} = 0.14$, $\underline{P} = 0.05$).

We also observed 1 pair of golden eagles (*Aquila chrysaetos*) and 2 single adults associated with previously used stick nests. However, no eagle young were observed. Only 1 case of successful golden eagle reproduction has been recorded along the

Porcupine River since 2001, compared to an average of 3.7 successful eyries per year during 1979-2000.

Contact: David Payer, Arctic National Wildlife Refuge, 101 12th Ave., Rm 236, Fairbanks, AK 99701. Phone: (907) 455-1830; e-mail: david_payer@fws.gov

Project: Occupancy and Productivity of Nesting Bald Eagles, Wrangell-St. Elias National Park and Preserve, 2006.

Investigator: Mason Reid, National Park Service

As part of the National Park Service Vital Signs Monitoring Program (Central Alaska Network), the distribution and abundance of bald eagles was identified as a "vital sign" in the assessment of ecosystem dynamics. During May and July, occupancy and productivity surveys were conducted along the Copper River and two tributaries (Chitina and Bremner rivers) within Wrangell-St. Elias National Park and Preserve (500km of waterways). During the occupancy surveys (15-18 May), a total of 104 territories with incubating birds were located and later checked for productivity (19-21 July). Of these, 38 nests (36% nest success) produced a total of 51 chicks (1.3 young per successful nest). Productivity is slightly lower than previous data (mean 1.4 young per successful nest, 1989-1997), but well within the observed range (1.0 – 2.0) for this period.

Contact: Mason Reid, Wrangell-St. Elias National Park and Preserve, P.O. Box 439, Copper Center, AK 99573.

Project: Raptor Monitoring in the Upper Tanana Valley, Game Management Unit 12, Alaska, 2006.

Investigator: Hank Timm, U.S. Fish and Wildlife Service, Tetlin National Wildlife Refuge

As part of its Wildlife Inventory Plan, Tetlin National Wildlife Refuge has collected raptor nesting territory occupancy and productivity data in Game Management Unit (GMU) 12 annually since 1991. Bald eagle, osprey and peregrine falcon nests accounted for over 80% of over 520 raptor nests documented since 1961 and are the 3 species of primary concern in this project. Aerial surveys for bald eagles and osprey were completed between 19-26 May for occupancy and between 24-26 July for productivity. Additionally a pilot study was initiated to compare observer bias between aerial platforms for 22 bald eagle and osprey nests on 26 July, when observations were made by both Aviat Husky and Hughes 500 helicopter with different observers. River and ground based surveys on foot for peregrine falcons were conducted between 13 June-6 May for occupancy and between 10-12 July for productivity.

Bald eagles were above the 1991-2005 means for 60 nesting territories surveyed for all 4 parameters: occupancy (71.7%; x= 66.54% ± 3.69 (mean ± 95% C.I.), success (53.7%; x= 52.7% ±6.72), productivity (0.73 young per occupied nest; x= 0.65 ± 0.10), and mean brood size (1.36 young per successful nest; x= 1.23 ± 0.08). Osprey occupancy was below the 1991-2005 mean (72.4%; x= 75.90% ± 3.54) for 29 nesting territories surveyed, but success (70.0%; x= 57.23% ± 5.93), productivity (1.60; x= 1.06 ± 0.16) and mean brood size (2.29; x= 1.83 ± 0.17) were all higher than the means. Osprey had the highest productivity recorded since 1991. Peregrine falcon occupancy was below the 1991-2005 mean (86.7%; x= 88.83% ± 6.59) for 15 nesting territories surveyed, but success (90.9%; x= 87.24% ± 7.35), productivity (2.55; x= 0.2.30 ± 0.37) and mean brood size (2.80; x= 2.60 ± 0.29) were all higher than the mean. Mean dates were estimated for peregrine falcons in GMU 12 (using nestling ages; n=28) for egg laying (x=16 May), hatching (x=18 June) and fledging (x=28 July), each 2.5 days later than the means for 2003-2005. Over 315 observations were made to 158 nests of 8 raptor species in 123 nesting territories in GMU 12 in 2006.

Contact: Hank Timm, U.S. Fish and Wildlife Service, Tetlin National Wildlife Refuge, P.O. Box 779, Tok, AK 99780.

Project: Repeatability of Riparian Avian Point Counts along the Itkillik River Corridor, Gates of the Arctic National Park and Preserve, Alaska

Investigators: Nikki Guldager[1], Melanie Wike[2]
U.S. Fish and Wildlife Service[1], National Park Service[2]

Gates of the Arctic National Park and Preserve (GAAR) spans 8.2 million acres of the central Brooks Range. It is dominated by mountains and inter-mountain valleys that provide optimal breeding habitat for many species of migratory birds. In 2003, an extensive montane-nesting shorebird inventory was conducted throughout GAAR in May (Tibbitts et al. 2006), but this survey occurred prior to the arrival of many landbird species. Thus, an extensive gap remained in our knowledge of the breeding distribution and habitat requirements of many migrant and resident landbird species in GAAR. The riparian bird inventory within GAAR was established in 2003 through the Park Flight Program (a partnership between the NPS, National Park Foundation, National Fish & Wildlife Foundation/USAID, American Airlines, and the University of Arizona). This study was designed to document landbird species distribution, diversity, density and habitat within GAAR's major riparian corridors over the course of 3 years. In the pilot study year of 2003, the Killik River drainage was sampled to determine the feasibility of the logistics and study design. In 2004, the John, Kobuk, Noatak and the North Fork of the Koyokuk rivers were surveyed. In 2005, the Alatna and Itkillik rivers were surveyed, bringing the total number of rivers surveyed to 7 and the number of survey points conducted in 2003 – 2005 to more than 800. The Itkillik River corridor was repeated again in 2006 to determine if these avian surveys could be replicated to yield similar

results of the total numbers and types of avian species detected on points on a particular river corridor between survey years. We attempted to survey the same points in the same order along the 9 transects of the Itillik River and repeat the effort and logistics of the 2005 survey. The 2006 survey effort was complicated by a late spring, high water from break-up and large sheets of aufeis that prevented access to many points surveyed in 2005. In 2005, a total of 104 points were surveyed along the 9 transects, with a total of 39 species detected and 950 total detections. In 2006, only 60 points were surveyed along the same 9 transects, but a greater number of species were detected (46), with a greater number of total detections (1022). The top 5 landbirds detected in 2005 and 2006 were similar in species composition and numbers of detections. The top 5 species detected in 2005 were Lapland Longspur (178 detections), Redpoll sp. (152 detections), Savannah Sparrow (111 detections), American Tree Sparrow (108 detections) and White-winged Scoter (70 detections-from one location), although White-crowned Sparrow (68 detections) were dispersed throughout the 9 transects. In 2006, the top 5 species detected included: American Tree Sparrow (217 detections), Lapland Longspur (164 detections), White-crowned Sparrow (109 detections), Smith's Longspur (95 detections) and Savannah Sparrow (91 detections). In both years, American Golden-Plovers, Arctic Terns, Scaup sp., American Robin and Long-tailed Jaegers were also frequently detected along the 9 transects. In 2005, unique species detected on points that were not detected in 2006 included Yellow Wagtail, Glaucous-winged Gull and Horned Grebe. Unique species detected on points only in 2006 included: Pacific Loon, Red-necked Grebe, Tundra Swan, Green-winged Teal, Northern Pintail, Common and Red-breasted Merganser, Willow and Rock Ptarmigan, Semipalmated Sandpiper, Dark-eyed Junco, Northern Waterthrush, Gray-cheeked Thrush and Bluethroat. An early spring in 2005 resulted in fewer overall detections because many birds were already on nests, only calling and/or no longer singing as contrasted with a greater number of detections of singing birds on fewer points in 2006. In 2006, surveys were conducted during break-up and logistical challenges prevented access to many points. In both years, the most-abundant species were detected similarly but the lesser-abundant species' detections varied greatly.

Literature Cited:

Tibbitts, T. L., D. R. Ruthrauff, R. E. Gill, Jr. and C. M. Handel. 2006. Inventory of Montane-nesting birds in the Arctic Network of National Parks, Alaska. Arctic Network Inventory and Monitoring Program, Alaska Region, National Park Service, Fairbanks, Alaska. NPS Technical Report NPS/AKRARCN/NRTR-2006/02.

Contact: Melanie Wike, National Park Service, 4175 Geist Road, Fairbanks, AK 99708
Phone: (907) 455-0627; Email: Melanie_Wike@nps.gov

Project: Bald Eagle Surveys, Kodiak National Wildlife Refuge

Investigator: Denny Zwiefelhofer, Kodiak National Wildlife Refuge

Bald Eagle nest occupancy and productivity surveys are one of five Kodiak National Wildlife Refuge avian inventory and monitoring projects. A total of 32 randomly selected five minute longitude-latitude plots were flown during 2006. A total of 250 nests were located on 11-13 May with 114 (46%) nests occupied. A nest productivity survey flown on 26-27 July and 2 August observed 96 chicks in 61 (54%) nests (1.57 chicks per successful nest). The 2006 nest productivity results were up slightly from 2005 (1.5 fledglings/successful nest) and 2004 (1.49 fledglings/successful nest) results. The 2006 occupation rate was down slightly from 2005 (47%) and up from 2004 (38%) but was below the historic occupation average of approximately 60%.

Contact: Denny Zwiefelhofer, U.S. Fish and Wildlife Service, Kodiak National Wildlife Refuge, 1390 Buskin River Road, Kodiak, Alaska 99615

APPENDIX I: 2006 MEETING MINUTES

Meeting notes were compiled by Melissa Cady. We owe her many thanks.

12/6/2006

Paul Meyers: Introductions, Housekeeping

Dave Tessler: Western working group update

- Coordinated monitoring discussions.
- We are ahead of the curve.
- We have a plan that we've been using.
- We have a lot of natural leadership in the group (Colleen).
- ALMS is an amazing tool for coordinated monitoring. We should work to actively promote the program.
- Avian Knowledge Network (Brian Sullivan of Cornell University)
    - Federates all bird data across hemispheric scale for visualization and analysis of data.
    - Allows better utility and linkage of data
- Longevity of folks in the agency is better in Alaska. Most monitoring is done by big non-profits in the west.
    - Point Reyes Bird Observatory
    - Rocky Mountain Bird Observatory

Paul Meyers: What we said we'd do and what we did

- Landbird Conservation Plan
    - We'd talk about how we could get it done in 2007
- Letters requesting support for ALMS program sent out
    - Letter to Tongass for Forest Plan Revision
- Member list by BCR to identify which folks were where
- Working groups
    - Groups were formed, but not much activity yet
- Recruit new members
    - Letters to universities to recruit new members
    - Need to send letter to Park Network (comment from ……?)
- Update website, hosted by USGS
    - ALMS section added, but no other updates
    - Personnel in place to add more
- Update Distance Estimation Training Manual
    - Complete and available on ABO's website
    - Can be sent by email
    - Is protocol for training
    - www.alaskabird.org

- Wanted some visibility at Wildlife Society Conference
    - No poster : (

Rich Capitan: Audubon Alaska Educational Efforts

- Bird Academy
- eBird Alaska Portal should be running by January
- Westchester Interpretive Program
    - Intern with spotting scope and bird guides for tourists and residents
    - Lots of folks came by early to mid-morning
- Alaska Migratory Bird Calendar
- Anchorage Daily News
    - Blurb every Sunday in the Science section
- Other assorted programs
    - Festivals
    - Summer camps
    - Public programs
- Desired direction for Audubon Alaska; seeking interaction with researchers and managers
    - Integration of research and education
    - Collaboration
    - Partnerships
    - Suggestion from audience to have these articles picked up in other smaller circulation papers elsewhere in the state

Bird Conservation Region Updates

Susan Savage BCR 2 Western Alaska

BBS routes in King Salmon
Cornell Nest Box Monitoring Program “Attempt”
Genetic Samples for Northern Goshawks
CBC
Raptor recovery and rehabilitation
Dave can fill in with his notes

BCR 3 Deb Nigro

Fill in with info from Deb’s talk

Smith’s Longspur
Nesting ecology of tundra nesting birds
Post breeding staging shorebirds
Breeding and post breeding shorebird samplIng for AI
Mergansers
Conservations concerns

Point counts along Itkillik River
SMLO work

BCR 4: No BCR coordinator available
BCR5: Melissa Cady

Gather notes from talk or summaries that will be submitted later.

Steve Matsuoka Landbirds and Avian Influenza

- Eastern Yellow Wagtail
- Arctic Warblers
- Last year was ranking process
- Gray-cheeked Thrushes
- 16,000 samples taken from multiple taxa and no highly pathogenic found. 1 or 2H 5?? found…Funding request is the same for this year.
- Some question as to the most likely route of entry. Central and South America may be likely due to imported poultry
- 200 GCTH captured and sampled in Bethel, ARWA also captured and sampled. 1024 birds sampled
- >2000 passerines sampled at Creamer's Field, many species, no positives
- Aleutians, eiders, no positives. Put transmitters in common eiders.
- Shemya Mike Schwitters sampled and got no good landbirds due to unusual winds
- Cape Romanzoff, and other sites opportunistic sampling. First band recovery from Tokyo from pintail at Shemya
- Steve Kendall did shorebird monitoring at NPRA and North Slope
- UAA, sampling for all birds, and hunters in Cold Bay and SC AK. Student also sampling. Not just sampling for highly pathogenic
- Missed one
- Tetlin sampled 45 GCTH but they won't be analyzed?? Target goal had already been reached?
- Some throat swabbing will be included in addition to cloacal swabbing in the future
- Innoko 300 pintails sampled
- Koyukuk sampled pintails as well

Steve Matsuoka: BBS update

- Objectives to monitor population trends
- 90 active routes in AK
- Most comprehensive survey in North America
- 73 routes run per year since BPIF
- Attempting to increase consistency in observers over time
- 16 folks have run routes for 10-16 years

- Population trends for >100 species in AK
- Declining birds
    - COME
    - RUBL
    - BPWA
    - WCSP
    - HETH
- Increasing species
    - WWCR
    - RBSA
    - NOCR
    - Et al.
- Submit data on time!
- Patuxent needs GPS coordinates
- How well are we sampling\
- Priority needs for range-wide monitoring in NA
    - Dunn et al. 2005
    - Evaluated monitoring for 448 species
    - 100 of 128 species are not adequately covered continent-wide
    - Recommendations for 100 species
        - 51 species would be helped by boreal surveys such as ALMS
        - 22 species improved by arctic sureys
        - Improve BBS would help coverage for 15 species
        - 12 other species by other programs
        - Secondary measures: migration monitoring
- We've come a long way but there is still room for improvement

Jeff Welker: Stable Isotopes

- See talk/abstract
- Primer and jargon
- UAA technology and equipment
- Food webs and isotopes
- Questions
    - Michelle Kissling asks about museum specimens
    - Both birds and vegetation are being used for this at this time

Susan Sharbaugh: All bird conservation program in BCR 4

- See talk/abstract
- No time for questions right now

Melanie Wike: Repeatability of riparian avian point counts along the Itkillik River Corridor, Gates of the Arctic

- See abstract/powerpoint presentation
- Specific study design for their location due to access issues

- Problems with weather, high water, thunderstorm, wind, and fog

Colleen Handel: ALMS update

- See abstract/powerpoint presentation
- Review of objectives and sampling issues
- Assess status of landbird populations in Alaska
- Collect basic information for land management decisions
- Protocol established and used in many venues
- Stratified random sampling scheme
- Biennial sampling scheme
- Distance sampling to estimate detection probabilities
- Obstacles
    - Access
    - Funding
- Revised sampling scheme
    - Riparian corridors are somewhat over-sampled by this revision
    - Still legitimate information with sampling area defined
- About 1/3 of targeted effort to date, including ORBBS routes with acceptable sampling design

ALMS Discussion

Buddy Johnson: Accessible areas were areas that biologists supplied from their areas. Suggests there are still a lot of roads that are unexploited by BBS that can be considered. Folks from other agencies might join in.
Colleen: Distribution of roads is still highly biased. Additional sites along Taylor highway and other non-federal lands are still an option.

Dave Tessler: 30 m landcover classification available soon. No excuse for not participating now that the sampling design has been revised.

Todd Eskelin from Kenai NWR: Incorporating other data is important.

Koyukuk: Hard to incorporate something new when they barely have enough money to do BBS, etc. Focus ORBBS into accessible areas that have been identified.

Innoko: Gave up off road points to do ALMS and they kept BBS routes. ALMS is more work.

Ancillary efforts such as Denali and Kenai were not included in her summary of effort. Some of it can be used in the ALMS analysis, but not easy to incorporate statistically. Trend information will require 10 years of data. After 10 years of data, power to detect trends increases dramatically.

Costs have come down considerably since accessibility requirements has been relaxed.

Parks need to be included and their monitoring programs. Individual parks have been good in attending the meeting but Park network coordinators have not been present.

Melanie Wike: Yukon Charley: may do Off Road point counts again. Encourages folks to attend parks planning meeting.

Matsuoka suggests we prepare a 1 page summary for the park networks that describes what we've been doing and how we need their participation. Maybe send a letter like the one sent to the Tongass.

Matsuoka asks if there are other efforts to put landbirds on the map for monitoring.

Michelle Kissling: Letter to NPS, identify species of concern that will be of interest to them. Get them to see what species need to be monitored. Suggests ALMS as a way to monitor them as focal species and species of concern.

Brian Sullivan: Avian knowledge network and eBird

See abstract/talk for content.

Maureen DeZeeuw asks about covariables, what kind of habitat data are available. Habitat data have been left out for AKN for now. Veg data are impossible to federate because of different sampling methods.

Dave Tessler suggests landcover and gap analysis data may be available if there is interest in habitat data. We'll have 30 m landcover maps in Alaska in a few years.

Brian says that they are focusing on the bird data first. Micro veg data should be stored at the node level. PRBO wants no data left behind. It's hard to keep all data at the whole-network level.

Discussion of setting up node for AKN

Dave Tessler: Discussion of applicability of this process for our data. Dave is interested in incorporating our data in this way. If there is interest, a meeting could be held between Natureserve and different data owners.

Brian, can be cheap to set up your node. Someone with the data management skills needs to take care of your data. Digger pulls out the data. You need to

have a “dedicated” server to house your data. There are 2 people in their network that helps folks integrate new data sets.

Heritage and Natureserve already house a lot of data. Costs would be high initially for uploading. Then costs would decrease. Dave Tessler thinks it would only take one dedicated person to do it for AK. Doable if there was collaboration on a grant, etc.

Data could be lumped yearly after that.

Dave asks how they are attached to NBII. They are a node that feeds in data.

DoD asks if data gets counted twice. Every record has a record identity number. There must be some way to keep from having those duplications, but he doesn’t know.

Can you go back and correct data once it is uploaded? Digger looks for changes in your data every day. Digger makes the changes every day. If you maintain your database on the node, then every change is pulled in. Oracle is what it uses.

Can telemetry data be uploaded? Brian doesn’t know. Answer is probably yes, but he doesn’t know exactly how it’s done.

Is BBS on there now? Not yet, but BBS and CBC are in discussion right now. There is an access control node so that you can keep other people out of your data. People could see your data on the map, but could not download it.

So far, no data has been downloaded by someone that should not have access.

Quality control is left to contributors in AKN. For eBird filters records electronically based on geographic location and date. There is a matrix that flags records that seem odd. The computer will ask if you are sure, then it goes into a que of records that get cleared by humans. They are constantly revising filters, and county level is smallest filter zone.

eBird and non-bird data. Dragonflies and butterflies may also be incorporated. It’s a model that can be applied to any taxa.

Dave will send an email to folks in the group to assess interest in forming an Alaska node for AKN.

Steve Kendall and Melanie Wike: Smith’s Longspurs

See abstract/powerpoint for notes.

No time for questions.

David Shaw: Continental research on Rusty Blackbirds

See abstract/powerpoint for notes.

No time for questions.

Robin Corcoran: Rusty Blackbird nesting ecology on Innoko National Wildlife Refuge: A pilot study

See talk/abstract for notes.

No time for questions.

Paul Meyers: Rusty Blackbirds on the Copper River Delta.

Notes from talk/abstract.

No time for discussion.

David Shaw: Icterids and Asiatics…

See talk/abstract for notes.

Brian McCaffery asked about nest success values; they had higher confidence in nest success due to high sample size

Apparent nest success works because they feel confident that they didn't miss nests. As well, MARK can't be applied because they didn't have enough failures. Mark Lindburg approved of using apparent nest success in this case.

There were a few predators there, but they are very cryptic. Steve Matsuoka suggests that it may be something about the location. Ted Swem (?) suggested it could be due to annual variation.

Rusty Blackbird Breakout session was held, but I didn't take notes.

12/7/2006

Dave Tessler: Introduction.

Talked about criteria for ranking species and how reproductive lifespan should be taken into consideration.

Pam Sinclair: Canadian Wildlife Service Yukon Landbird Program

See talk/abstract for notes.

Matsuoka asks if there is any interest in extending habitat maps into Alaska. Tessler says they are getting ready to do GAP analysis in Alaska. Also the landcover mapping is coming up soon. They are using 30 m landcover mapping. However, non-forest and particularly wetlands may not be well defined under those habitat classification.

Serguei Drovetski: UAA Research and Collections

See talk/abstract for notes.

Call Serguei and arrange travel for specimens. He's looking for collaborations and possibly projects for graduate students.

Brian McCaffery asks about avian influenza in ptarmigan. Not much is known about AI in Ptarmigan, but they are closely related to chickens. Much of the year they stay in flocks, and some of the flocks are very large. They live in tundra where a lot of other birds live that are primary suspects for being vectors, particularly waterfowl. Ptarmigan drink the water that all these birds use. Most other landbirds are solitary and live in small groups. Results are expected on his ptarmigan AI work soon.

Dave Evers: Mercury levels in passerines.

See talk/abstract for notes.

Paul Meyers mercury levels apparent for 2 weeks, if a bird picks up mercury on the wintering grounds, will it affect the breeding success? Loons lay eggs 3-5 weeks after they return. For loons, the mercury in the eggs is from breeding location. Speculating, YEWA coming from China, in AK in 2 weeks, then lays eggs, level will reflect mercury in China. Depends on arrival and length of stay in breeding area before laying, and how much mercury is in wintering and breeding grounds.

Correlation between liver and blood tissue? Data about that relationship is uncommon. Can't get blood from a dead bird, can't get liver from a live bird. Liver levels of Mercury are somewhat informative, but never gets above 10%. But liver can't tell you the level of mercury in its body. Blood, feathers, eggs, muscle tissue, and brain are much better for looking at Mercury levels. There are some data from environment Canada that has some blood/liver levels.

How much blood is necessary to get a good sample? ¼ of a capillary tube, or ca. 20 microliters. Try to get one ¼ to 1/3 full. Feathers are a good way to look at long term mercury. Feathers can only take a certain percentage of mercury from muscle tissue during a molt. If input is greater than output, than mercury increases in muscle tissue over the course of its life. With loons, they increase 9-10% per year in mercury levels in feathers. Older birds get poisoned. Same price to process blood or feather samples, but blood is easier to work with.

Mercury doesn't have much more information on RUBL. Evidence based on Red-winged Blackbirds. Dave thinks that RUBL may have same or higher levels than red-winged.

Bird-eating birds? Trophic level and location relative to mercury deposition and mercury point sources. Raptors that are feeding on floodplain forest birds will be very high risk. Wetlands have more He than upland systems.

Mercury is a neurotoxin. He suspects egg failure is due to neural effects.

Colleen asks is there was global modeling done for sulfur similar to what was done for mercury. Dave will find out.

Steve Matsuoka: Eastern Yellow Wagtails on the YK delta

See talk/abstract for notes.

Was there differential age migration? They saw adults all the way through and they were banding until August 10.

High nest success at Cape Romanzoff, but all hard to assess because they have not had a chance to look at it yet. They caught one Arctic Warbler.

Caroline Van Hemert: Bill deformities in Northwestern Crows.

See talk/abstract for notes.

Could these be natural occurrence that is turning up more because there are more of them around and more people to report them. For chickadees, there was sampling in unpopulated areas as well, and there is recent increase based on historical and recent capture information as well as reports.

Are the other passerines mostly insectivores? PISI, OCWA, CORE, so detections are across a wide array of taxa. Causes may be common or separate. Broad geographic cause is a possibility.

Matsuoka asks if they've looked at BOCH, and they are really small too. It is an interesting question, since prevalence is not as high for BOCH, but they are hard to sample because they are so small.

Great Lakes had bill deformities in 1990s. There is disagreement about the cause because they can only find correlations. Most evidence is for dioxins and PCBs. Dioxins are extremely toxic. The two types of compounds co-occur, so it is difficult to measure dosing. Less is known about chronic effects of these kinds of toxins.

Is it expanding in AK? If it's an atmospheric transport, it could be primarily be restricted to southcoastal. There may be an increase in prevalence in Fairbanks.

One other thing of note is the calcium connection. Deficiency in calcium can result in hyperkeratosis. If birds are feeding exclusively at feeders, they could have calcium deficiency. There may be an interaction between calcium deficiency in the environment and some kind of contaminant problem.

These types of deformities have been reported all over the world.

Travis Booms: Gyrfalcon site fidelity.

See talk/abstract for notes.

No time for questions.

Brian Riordan: Using remote sensing to examine changes in surface water area in interior Alaska from 1950 to 2002.

See talk/abstract for notes.

Are there any good permafrost maps for western Alaska. Yes. It's on his website.

Innoko also had early water body loss in addition to Copper River Delta.

Water body loss was high and surface area loss was low in Tetlin. In that area was losing a lot of small water bodies whereas some other locations were losing large water bodies.

They detected the formation of new water bodies as well. New water bodies that appeared were counted again.

New water bodies are forming through thermokarst, beaver dams, longer hydrological cycles that haven't been measured.

These changes seem to all be related and effects are “snowballing”. Changes in permafrost are large in some locations and very minor in others.

Ed Berg: Ecological effects of climate change on the Kenai Peninsula, Alaska.

How much of the change relates to beetles vs. logging? It’s logging of beetle-killed forest. After kill, trees must be harvested in 3 years for logs, and 10 years for pulp. So Native Corporations have salvage logged large areas.

The borough has done regeneration studies to determine what’s coming back in some of these areas. Most spruce regen was on nursewood in the past. When it’s logged, a lot of the nursewood is removed. In the natural areas of the Kenai, not much regeneration has happened yet and there is a lot of grass coming in and a tremendous hardwood response. There is a change in species composition from conifer to hardwood, and there is no data to support changes in vertebrates due to these changes. The road access had resulted in removal of some big bull moose. No one is tracking changes in water chemistry in the wetlands that are drying.

Wetland loss seems to be a one-way street. Are wetlands reclaimed naturally? No, they don’t reform all on their own. To reverse the process, you’d have to put more water in the system. Last summer was a wet summer. Cores don’t indicate a reversal but was wet until about 150 years ago. Spruce beetle outbreaks in the 1800s don’t indicate much shrub growth associated with those outbreaks.

Do long term changes conflict with long term land management goals? General mindset of land management agencies is to preserve past landscape patterns or return the landscape to pre-colonial times. So how do we deal with it? Blast ponds to keep the same numbers? His view; this is a worldwide process, so we need to learn to manage it and expect changes in species composition. It is impossible to change this process on the land management scale.

Dave Tessler: wrap up

Dave will send out meeting notes, summaries, abstracts, and request for interest for AKN.

APPENDIX II: MEETING AGENDA

DAY 1 - Wednesday, 6 December, 2006

8:30-8:50	Paul Meyers – USFS	Introductions and Welcome; Housekeeping

UPDATES

8:50-9:00	David Tessler – ADF&G	Update from the Western Working Group of PIF
9:00-9:10	Paul Meyers – USFS	BPIF: What We Said We'd Do, and What We Did
9:10-9:30	Rich Capitan – Alaska Audubon	Update on Education and Outreach for Audubon Alaska
9:30-9:45	BCR Coordinators	BCR Updates
9:45-10:00	All	Avian Influenza (AI) Updates and Discussion
10:00-10:10	Steve Matsuoka – USFWS	BBS in Alaska: Brief update
10:10-10:30	Break	

CONSERVATION, INVENTORY, and MONITORING

10:30-10:50	Susan Sharbaugh – ABO	All-bird Conservation Plan for BCR4
10:50-11:10	Melanie Wike – NPS	Repeatability of Riparian Avian Point Counts along the Itkillik River Corridor in Gates of the Arctic
11:10-11:30	Colleen Handel – USGS	Alaska Landbird Monitoring Survey (ALMS). C. Handel and M. Cady
11:30-11:45	All	ALMS: Individual Updates and Discussion
11:45-12:00	All	Open Discussion
12:00-1:20	Lunch	

CONSERVATION, INVENTORY, and MONITORING - Continued

1:20-1:40	Brian Sullivan – Cornell Lab	AKN: The Avian Knowledge Network, Federating Data Across the Western Hemisphere.
1:40-2:00	Brian Sullivan – Cornell Lab	eBird: a Level 1 monitoring tool.
2:00-2:20	David Tessler – ADF&G	Discussion - Alaskan / Canadian participation in the AKN.
2:20-2:40	Mary Rabe – ADF&G	Species Ranking Project and Implementation of the CWCS. M. Rabe, R. Fields, and T. Gotthardt.
2:40-3:00	Break	

SPECIES OF CONCERN

3:00-3:20	Steve Kendall/M. Wike – USFWS	A Pilot Study to Assess the Distribution and Abundance of Species of Concern: Smith's Longspur.
3:20-3:30	David Shaw – ABO	Update on Continental Research on Rusty Blackbirds.
3:30-3:40	Robin Corcoran – USFWS	Rusty Blackbird nesting ecology on Innoko National Wildlife Refuge: a pilot study.

3:40-3:55	Paul Meyers – USFS	Rusty Blackbirds on the Copper River Delta.
3:55-4:15	David Shaw – ABO	Icterids and Asiatics: Research into the Breeding Ecology of Rusty Blackbirds and Arctic Warblers in Interior Alaska.
4:15-4:20	Paul Meyers – USFS	Wrap-Up
4:20-5:00	Interested Parties	Rusty Blackbird Break-out
4:20-5:00	Interested Parties	Other Meetings and Break-outs as Needed

DAY 2 - Thursday, 7 December, 2006

8:30-8:40	David Tessler – ADF&G	Intro and Welcome
8:40-8:50	Pam Sinclair – CWS	Update on Canadian Landbird Program.

RESEARCH AND ISSUES OF CONCERN

8:50-9:10	Serguei Drovetski – UAA	UAA Ornithology: Research and Collections.
9:10-9:30	Steve Matsuoka – USFWS	Eastern Yellow Wagtails on the Y-K Delta. S. Matsuoka and J. Johnson
9:30-9:50	Dave Evers – Biodiversity Research Institute	Mercury Levels in Passerines.
9:50-10:10	Caroline Van Hemert - USGS	Bill Deformities in Northwestern Crows.
10:10-10:30	Travis Booms – UAF	Gyrfalcon Site Fidelity on the Yukon Delta National Wildlife Refuge: The Rest of the Story
10:30-10:50	Break	
10:50-11:10	Jeff Welker – UAA	Isotope (18O & D) characteristics of precipitation and migratory bird studies. J Welker, C Ely, A Sayer, D Sjostrom.
11:10-11:30	Brian Riordan – UAF	Using Remote Sensing to Examine Changes in Surface Water Area in Interior Alaska from 1950–2002
11:30-12:00	Ed Berg – USFWS	Ecological Effects of Climate Change on the Kenai Peninsula, Alaska.
12:00-12:10	S. Matsuoka, P. Meyers, D. Tessler	Discussion of BPIF Conservation Plan Update
12:10-12:20	David Tessler – ADF&G	Wrap-Up
12:20-1:30	Lunch	

BREAKOUT GROUPS AND ASSOCIATED MEETINGS

1:30-2:30	Interested Parties	BPIF Landbird Conservation Plan Revision - Breakout
1:30-2:30	Interested Parties	Migration Monitoring Working Group - Meeting
2:30-4:30	Interested Parties	BCR 4 All-bird Conservation Plan -Susan Sharbaugh