

## Landbirds – Introduction

Alaska is home to 135 species of breeding birds that principally use terrestrial habitats throughout the year. These birds, commonly referred to as “landbirds,” compose the largest and most ecologically diverse component of Alaska’s avifauna and include raptors, grouse, woodpeckers, flycatchers, jays, chickadees, thrushes, warblers, and sparrows, among others (Boreal Partners in Flight 1999, Alaska Raptor Management Program 2001<sup>1</sup>). Collectively, landbirds occupy all terrestrial habitats in Alaska, where they play vital roles in ecosystems by feeding on insect pests, pollinating plants, dispersing seeds, serving as prey, and acting as top predators. They also provide important functions to the people of Alaska by helping define our culture and contributing to our economy. The Willow Ptarmigan, for example, serves as the state bird, a traditional source of food for Alaska Natives, and an important prey item for many predators. Moreover, the economies of many communities throughout Alaska are bolstered by the thousands of bird watchers who visit the state each summer to view the many species of landbirds found nowhere else in North America. In order to maintain these contributions to the ecosystems and people of Alaska we must sustain viable and well distributed populations of these birds in the state through time (Boreal Partners in Flight 1999). Fundamental to achieving this goal is an understanding of the relative vulnerabilities of species and subspecies to range reductions and extinctions and using this information to focus limited resources on taxa most in need of conservation (Rich et al. 2004).

In April 2004, a group of experts met to identify landbird priority species and conservation issues for the next 10 years. The group reviewed information on the relative vulnerabilities of Alaskan landbirds based on population size, restrictions on distribution, threats to populations, and population trend (Boreal Partners in Flight 1999; Rich et al. 2004) and identified the following landbird taxa and taxa groups as the most important for conservation:

1. Aleutian and Bering Sea island endemic landbird species and subspecies (p. 357);
2. Smith’s Longspur (p. 363);
3. Landbirds sensitive to forest management (p. 328); and
4. Landbirds with long-term declines in population size (p. 322), with the Olive-sided Flycatcher (p. 336), Blackpoll Warbler (p. 342), and Rusty Blackbird (p. 350) species of particular concern within the group.

Specific goals and recommendations for conservation were developed for these birds and are included in the CWCS. The expert panel also recognized, however, that many additional conservation issues will need to be addressed in Alaska in order to keep our common landbirds common (Handel 2000). In addition to the birds and issues listed

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<sup>1</sup> A separate group of experts addressed raptors (eagles, hawks, falcons, and owls) because of their specialized conservation needs (Alaska Raptor Management Program 2001). However, we included in our discussion 2 game species, grouse and ptarmigan, because the conservation needs of these birds were not addressed by any management plan in the state, and several populations are either undergoing rangewide population reductions or are threatened by current land management practices in Alaska.

above, and the priorities noted in the Landbird Conservation Plan for Alaska Biogeographic Regions (Boreal Partners in Flight 1999), landbird conservation in Alaska will be advanced if the following issues are addressed over the next 10 years:

*Assessing the changing status of Alaska's landbirds*—Although several landbird species have been highlighted in this plan because of documented declines, there is still extremely limited information on the changing status and trends of most of Alaska's 135 species of breeding landbirds. In particular, few are adequately monitored by any of the current monitoring programs in North America. Thus, we greatly need more effective community and species-specific inventory and monitoring programs for landbirds in Alaska to establish baselines of population size for future comparison, identify key areas and habitats for conservation, and detect population declines before species become imperiled.

*Conservation of landbird taxa with small population sizes and restricted ranges*—Extremely vulnerable to threats are those birds with small populations and restricted ranges. Although Smith's Longspur and the endemic species and subspecies of Aleutian and Bering Sea Islands fall into this category and are addressed in templates in the plan, several other landbird taxa have ranges in North America that are entirely or largely restricted to Alaska. Additional taxa that should be of conservation focus in this category are: 1) a unique group of Palearctic-Nearctic migrants in Alaska, including the Alaska endemic breeding Arctic Warbler (*Phylloscopus borealis kennicotti*), and Eastern Wagtail (*Motacilla tschutschensis*); 2) "subspecies" largely restricted to Southeast Alaska, such as the Spruce Grouse on Prince of Wales Island (*Falcipecten canadensis isleibi*, Dickerman and Gustafson 1996); and 3) resident species common in Eurasia but restricted to Alaska in North America, such as the Gray-headed Chickadee (*Poecile cincta*). The Gray-headed Chickadee is of particular concern. Its nonmigratory habits suggest that it might be genetically isolated from conspecifics in the Palearctic. If this is the case, the North American population is nearly an Alaskan endemic with only a small part of its range extending into the Yukon and Northwest Territory. Although little population information is available, the species appears to be rare, and is at least partly reliant on isolated cottonwood stands north of the limits of spruce forest.

*Protecting landbirds from large-scale threats*—In addition to forest management, several other factors threaten Alaska's landbird populations and should be carefully studied and managed in order to conserve our birds. Global warming may be the number one future threat to birds in the region as current models predict large changes to important avian habitat. Such potential changes include shrinkage of boreal wetlands as well as substantial alterations to wind and weather patterns that may significantly increase the energetic costs of migration for our long-distance migrants. A short list of other threats includes accumulation of persistent organic pollutants, outbreaks of diseases such as West Nile virus and bill deformities, and the cumulative impacts of resource and urban development.

*Conserving important nonbreeding habitats outside of Alaska*—Approximately 75% of Alaska's breeding landbird species winter outside of the state (Boreal Partners in Flight

1999). Thus, efforts are needed to ensure that the conservation needs of our birds are being met along important migration pathways and wintering areas beyond our borders. Because the ranges of Alaska's migrant birds are not confined by political borders, considerable coordination among states, provinces, and countries is needed to advance rangewide conservation for our birds.

### **Literature Cited**

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## Landbirds with Long-term Declines in Population Size

### A. Species group description

This group includes Alaska landbird taxa experiencing significant ( $P < 0.15$ ) long-term declines ( $\geq 1.5\%$  population decline per year for 10 years or more) in their breeding range, including or excluding Alaska. This template is meant to generally address the conservation of Alaskan landbirds with documented declines, but also accommodates species which are later found to have declines within the next 10 years. Monitoring of landbird populations in Alaska largely began in the early to mid 1990s; thus, documented declines are largely restricted to species that are still currently abundant and experience moderate declines or more uncommon species experiencing dramatic reductions in population size.

In this account we focus on 3 classes of declining species. First are species that are declining in most of their range, but declines in Alaska are unsubstantiated, usually due to lack of data. This group includes species such as Blue Grouse, Black Swift, and Rufous Hummingbird (Rich et al. 2004; Sauer et al. 2004). Second are species that are still abundant but are showing evidence of declines in Alaska, but not always across their broader breeding ranges in North America. Violet-green Swallow, Hermit Thrush, and White-crowned Sparrow are examples of such species (Sauer et al. 2004). Additionally, species with documented low rates of survival or productivity either statewide or across large regions of the state, such as Wilson's Warblers in upper Cook Inlet (DeSante et al. 2003), are included here.

Finally, we have developed individual species accounts for landbirds with severe long-term declines throughout their range, including Alaska, because these species are of paramount concern. This group includes Blackpoll Warbler, Olive-sided Flycatcher, and Rusty Blackbird (Rich et al. 2004; Sauer et al. 2003). All further details on these birds are included in the individual species accounts on separate templates.

Common/Scientific names: Alaskan landbirds experiencing long-term declines

<i>Widespread declines (but not in Alaska)</i>	<i>Widespread declines (but not in Alaska)</i>
Blue Grouse, <i>Dendragapus obscurus</i>	Pine Grosbeak, <i>Pinicola enucleator</i>
Black Swift, <i>Cypseloides niger</i>	Red Crossbill, <i>Loxia curvirostra</i>
Rufous Hummingbird, <i>Selasphorus rufus</i>	Pine Siskin, <i>Carduelis pinus</i>
Belted Kingfisher, <i>Ceryle alcyon</i>	
Black-backed Woodpecker, <i>Picoides arcticus</i>	<i>Declines in Alaska (but not rangewide)</i>
Bank Swallow, <i>Riparia riparia</i>	Violet-green Swallow, <i>Tachycineta thalassina</i>
Barn Swallow, <i>Hirundo rustica</i>	Cliff Swallow, <i>Petrochelidon pyrrhonota</i>
Wilson's Warbler, <i>Wilsonia pusilla</i>	Hermit Thrush, <i>Catharus guttatus</i>
Dark-eyed Junco, <i>Junco hyemalis</i>	White-crowned Sparrow, <i>Zonotrichia leucophrys</i>

**B. Distribution and abundance****Range:**

Global and state range comments: Variable by species.

**Abundance:**

Global abundance comments: Population estimates (expressed as number of individuals) from Rich et al. (2004).

*Widespread declines (but not in Alaska)*

Blue Grouse: 2,600,000  
 Black Swift: 150,000  
 Rufous Hummingbird: 6,500,000  
 Belted Kingfisher: 2,200,000  
 Black-backed Woodpecker: 1,300,000  
 Bank Swallow: 46,000,000  
 Barn Swallow: 190,000,000  
 Wilson's Warbler: 36,000,000  
 Dark-eyed Junco: 260,000,000

*Widespread declines (but not in Alaska)*

Pine Grosbeak: 4,400,000  
 Red Crossbill: 15,000,000  
 Pine Siskin: 22,000,000

*Declines in Alaska (but not range-wide)*

Violet-green Swallow: 11,000,000  
 Cliff Swallow: 89,000,000  
 Hermit Thrush: 56,000,000  
 White-crowned Sparrow: 72,000,000

State abundance comments: Estimates of population size (% global population in Alaska) from Rosenberg (2004a and 2004b) are expected to be inaccurate, but provide the only available estimates of statewide population size.

*Widespread declines*

Blue Grouse: 590,000 (23%)  
 Black Swift: n/a  
 Rufous Hummingbird: 1,100,000 (17%)  
 Belted Kingfisher: 250,000 (11%)  
 Black-backed Woodpecker: n/a  
 Bank Swallow: 4,500,000 (10%)  
 Barn Swallow: 100,000 (<1%)  
 Wilson's Warbler: 17,500,000 (48%)  
 Dark-eyed Junco: 47,200,000 (18%)

*Widespread declines (but not in Alaska)*

Pine Grosbeak: 320,000 (7%)  
 Red Crossbill: 810,000 (5%)  
 Pine Siskin: 1,500,000 (7%)

*Declines in Alaska*

Violet-green Swallow: 1,200,000 (11%)  
 Cliff Swallow: 1,800,000 (2%)  
 Hermit Thrush: 5,800,000 (10%)  
 White-crowned Sparrow: 21,900,000 (31%)

**Trends:**

Global trends: Population trends (% change per year) calculated from data (1980–2002) from the North American Breeding Bird Survey (NABBS) (Sauer et al. 2003); *n* = number of routes.

Blue Grouse: -1.8% ( $P = 0.01$ ,  $n = 81$ )  
 Black Swift: -7.1% ( $P = 0.05$ ,  $n = 43$ )  
 Rufous Hummingbird: -2.3% ( $P = 0.01$ ,  $n = 201$ )  
 Belted Kingfisher: -1.6% ( $P < 0.01$ ,  $n = 1754$ )  
 Black-backed Woodpecker: -7.2% ( $P = 0.01$ ,  $n = 67$ )  
 Bank Swallow: -1.9% ( $P = 0.05$ ,  $n = 947$ )  
 Barn Swallow: -2.1% ( $P < 0.01$ ,  $n = 3275$ )  
 Wilson's Warbler: -2.5% ( $P < 0.01$ ,  $n = 456$ )  
 Dark-eyed Junco: -2.0% ( $P < 0.01$ ,  $n = 1051$ )

Pine Grosbeak: -6.7% ( $P = 0.01$ ,  $n = 79$ )  
 Red Crossbill: -2.3% ( $P < 0.01$ ,  $n = 413$ )  
 Pine Siskin: -3.3% ( $P < 0.01$ ,  $n = 791$ )

Violet-green Swallow: 0.8% ( $P = 0.28$ ,  $n = 623$ )  
 Cliff Swallow: 0.5% ( $P = 0.36$ ,  $n = 1841$ )  
 Hermit Thrush: 0.9% ( $P < 0.01$ ,  $n = 1040$ )  
 White-crowned Sparrow: -0.1% ( $P = 0.95$ ,  $n = 297$ )

State trends: Population trends (% change per year) calculated from data (1980–2002) from the North American Breeding Bird Survey in Alaska (Sauer et al. 2003); *n* = number of routes.

Blue Grouse: 0.0% ( <i>P</i> = 1.00, <i>n</i> = 10)	Pine Grosbeak: 3.3% ( <i>P</i> = 0.25, <i>n</i> = 35)
Black Swift: n/a	Red Crossbill: 3.8% ( <i>P</i> = 0.04, <i>n</i> = 15)
Rufous Hummingbird: 3.9% ( <i>P</i> = 0.33, <i>n</i> = 17)	Pine Siskin: 5.5% ( <i>P</i> = 0.10, <i>n</i> = 41)
Belted Kingfisher: -2.5% ( <i>P</i> = 0.32, <i>n</i> = 32)	Violet-green Swallow: -5.1% ( <i>P</i> = 0.01, <i>n</i> = 37)
Black-backed Woodpecker: n/a	Cliff Swallow: -6.0% ( <i>P</i> = 0.09, <i>n</i> = 30)
Bank Swallow: 4.1% ( <i>P</i> = 0.05, <i>n</i> = 38)	Hermit Thrush: -1.8% ( <i>P</i> = 0.06, <i>n</i> = 65)
Barn Swallow: 0.9% ( <i>P</i> = 0.89, <i>n</i> = 10)	White-crowned Sparrow: -1.9% ( <i>P</i> = 0.02, <i>n</i> = 73)
Wilson's Warbler: 1.0% ( <i>P</i> = 0.37, <i>n</i> = 77)	
Dark-eyed Junco: -1.1% ( <i>P</i> = 0.06, <i>n</i> = 80)	

**C. Problems, issues, or concerns for species group**

All of these species are showing signs of population decline either in Alaska or significant portions of their breeding range outside of Alaska. Although many of these species are still common, at least regionally, we currently have little insight into whether these declines are part of natural population cycles or larger ecological problems. Research and conservation efforts are needed to identify the causes of declines and stabilize their populations before they become rare, and their functional roles in terrestrial ecosystems in Alaska are lost. These declines warrant further investigation also because they may be indicative of larger ecosystemic problems either in Alaska or in other parts of these species' ranges.

Because monitoring programs for landbirds in Alaska were not widely instituted until the early 1990s, many of these declines have not been documented until very recently. Few biologists and resource managers are aware of these declines in Alaska, and thus, these species have received little to no recognition in the conservation planning process in the state.

**D. Location and condition of key or important habitat areas**

Habitats used by these birds vary widely among species.

**E. Concerns associated with key habitats**

Variable by species.

**F. Goal:** Conserve declining landbird populations so that they remain sustainable throughout their range within natural population-level variation and historical distribution across Alaska.

**G. Conservation objectives and actions**

**State conservation and management needs:**

**Objective:** At a minimum, maintain species widely distributed across their current range and within the range of natural cycles. However, it may be more appropriate to increase population size to 1966 levels for species declining over large parts of their range (i.e., PIF Watchlist species listed in Rich et al. 2004).

**Target:** Increasing breeding distributions and population trends.

**Measure:** Population trends estimated jointly from the North American Breeding Bird Survey (NABBS) in Alaska and its complementary program in roadless areas of the state, the Alaska Landbird Monitoring Survey (ALMS).

**Issue 1:** Ability to maintain long-term monitoring of NABBS routes in appropriate places in the state.

**Conservation action:** Maintain participation in the NABBS in Alaska at no less than present level.

**Issue 2:** Current knowledge of population trends is based solely on the roadside NABBS, which only samples a small proportion of the species breeding range in Alaska. Therefore, it may be inappropriate to extend the objective for this species to outside of the NABBS corridor without an appropriate evaluation of its status in roadless areas.

**Conservation actions:**

- a) Examine independent data on trends from migration stations, other breeding surveys, and demographic monitoring to determine if declines are evident in areas away from the road system.
- b) Encourage and implement full participation in ALMS. Random sampling of roadless areas will improve estimates of population size and percent global population in Alaska, reduce bias in trends associated with geographically limited NABBS, improve knowledge or distribution, and when combined with data from the NABBS, increase statistical power in detecting statewide trends. Surveys should be conducted for no less than 25 years.

**Issue 3:** There is a general lack of understanding of the breeding habitat associations of these species in Alaska. Thus, it is difficult to conserve important areas to help meet the objective of restoring populations to 1980s levels.

**Conservation actions:**

- a) Conduct field studies and/or analyses of existing data to determine habitats, habitat attributes, and geographic locations that support high densities of this species during breeding and migration in Alaska. Determine if declines in habitat may be linked to declines in population size. Combine such studies with conservation action “j” when possible.
- b) Use results from such studies to direct research to important areas and strategically protect or enhance important areas and habitats to help meet the objective of restoring populations to 1980s levels (Rosenberg 2004a and 2004b).
- c) Communicate the habitat associations of these species to appropriate agencies in Alaska.

**Issue 4:** Causes of population declines are rarely known.

**Conservation actions:**

- a) Raise profile of decline of these species to pique interest in the research community for exploring causes.
- b) Conduct targeted demographic studies to identify deficits in survival, reproduction, or recruitment and whether such deficits are linked with specific habitats, habitat changes, geographic locations, exposure to contaminants or diseases, or natural cycles. Priority should be placed on studying suites of species that share habitats during critical times of the year.
- c) Based on research findings, develop and implement conservation actions in appropriate areas to reverse population decline.

**Issue 5:** Wilson's Warbler has been found to have low rates of survival and productivity in upper Cook Inlet, suggesting regional problems with the status of this species (DeSante et al. 2003).

**Conservation action:** Determine if species has different population trajectory in Southcentral Alaska compared to other regions in the state; if so, identify cause of the regional decline and develop strategies to remediate the problem.

**Issue 6:** For some species, such as Black Swift, even full implementation of the NABBS and ALMS will be insufficient to determine population status and trends due to the species' unique ecology and the sampling parameters of the 2 programs.

**Conservation actions:**

- a) Conduct field studies as appropriate to determine habitats and geographic locations of these species in Alaska.
- b) Develop protocols that adequately sample populations of these species.

**Global conservation and management needs:**

**Objective:** Reverse population declines.

**Target:** At a minimum, maintain still common species (e.g., Dark-eyed Junco) appropriately distributed across their current range at population sizes within the range of natural cycles. For Partners in Flight Continental Watch List, increase population size to 1966 levels (Rich et al. 2004).

**Measure:** NABBS and Christmas Bird Count (CBC).

**Issue 1:** Cause(s) of decline is/are unknown.

**Conservation action:** Collaborate with researchers and conservationists in appropriate locations in North and South America to identify the cause(s) of decline, and develop and implement strategies for remediating the problem(s), once identified (Rich et al. 2004).

**Issue 2:** Poor recognition of population decline among public, academic, and conservation communities.

**Conservation action:** Develop and distribute information about the decline to the public, academic, and conservation communities.

**Issue 3:** Much coordination will be needed among states, provinces, and agencies to develop and implement strategies to reverse declines across the ranges of these species.

**Conservation action:** Develop numerical goals for conservation (i.e., amount of habitats for restoration) appropriately for each state and province included in the species range and implement strategies for reaching these goals for each area (Rich et al. 2004).

#### **H. Plan and time frames for monitoring species and their habitats**

Monitoring by NABBS and ALMS should be conducted annually from present for a minimum of 25 years. Studies of demography and habitat associations should begin as soon as possible and continue for a minimum of 5 years. NABBS work is underway in Alaska through cooperative interagency efforts and a network of volunteers. At this point the ALMS, demography, and nesting habitat studies are only partially funded; participants should include USGS, USFWS, NPS, BLM, USFS, DOD, State of Alaska, NGOs, universities, and private landowners, including but not restricted to Native corporations and industry.

#### **I. Recommended time frame for reviewing species status and trends**

Five-year intervals for review.

#### **J. Bibliography**

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## Landbirds Sensitive to Forest Management

### A. Species group description

**Common name:** Landbird species sensitive to forest management

***Upland gamebirds:***

Blue Grouse, *Dendragapus obscurus*

Prince of Wales Spruce Grouse,  
*Falcapennis canadensis isleibi*

***Canopy-nesting species:***

Pacific-slope Flycatcher, *Empidonax difficilis*

Townsend's Warbler, *Dendroica townsendi*

Golden-crowned Kinglet, *Regulus satrapa*

Varied Thrush, *Ixoreus naevius*

Red Crossbill, *Loxia curvirostra*

Pine Siskin, *Carduelis pinus*

White-winged Crossbill, *Loxia leucoptera*

***Cavity-nesting species:***

Red-breasted Sapsucker, *Sphyrapicus ruber*

Boreal Chickadee, *Poecile hudsonica*

Hairy Woodpecker, *Picoides villosus*

Chestnut-backed Chickadee, *Poecile*

American Three-toed Woodpecker, *Picoides dorsalis*

*rufescens*

Red-breasted Nuthatch, *Sitta*

Black-backed Woodpecker, *Picoides arcticus*

*canadensis*

Northern Flicker, *Colaptes auratus*

Brown Creeper, *Certhia americana*

### B. Distribution and abundance

**Range:**

State range comments: Forested regions of the state including both coastal and boreal forests.

Resident species typically undergo some limited seasonal movements within Alaska.

Endemic taxa: Prince of Wales Spruce Grouse

Resident species: Blue Grouse, Red-breasted Sapsucker, *Picoides* woodpeckers, chickadees, Red-breasted Nuthatch, Brown Creeper, Golden-crowned Kinglet, Red Crossbill, White-winged Crossbill, Pine Siskin

Short-distance migrants (within N. America): Northern Flicker, Varied Thrush

Long-distance migrants (winter in Neotropics): Pacific-slope Flycatcher, Townsend's Warbler

**Abundance:**

Global abundance comments: Population estimates (expressed as number of individuals) from Rich et al. (2004).

Blue Grouse: 2,600,000

Chestnut-backed Chickadee: 6,900,000

Spruce Grouse, Prince of Wales: unknown

Red-breasted Nuthatch: 18,000,000

Red-breasted Sapsucker: 2,500,000

Brown Creeper: 5,400,000

Hairy Woodpecker: 9,400,000

Golden-crowned Kinglet: 34,000,000

American Three-toed Woodpecker: 830,000

Varied Thrush: 26,000,000

Townsend's Warbler: 12,000,000

Black-backed Woodpecker: 1,300,000

Red Crossbill: 15,000,000

Northern Flicker: 16,000,000

White-winged Crossbill: 41,000,000

Pacific-slope Flycatcher: 8,300,000

Pine Siskin: 22,000,000

Boreal Chickadee: 7,800,000

State abundance comments: Population estimates, expressed as number of individuals (% global population) from Rosenberg (2004). Note that the Rosenberg (2004) estimates are suspected to be inaccurate, but provide the best available estimates of statewide populations.

Blue Grouse: 590,000 (23%)	Boreal Chickadee: 2,223,000 (29%)
Prince of Wales Spruce Grouse: n/a	Red-breasted Nuthatch: 180,000 (1%)
Red-breasted Sapsucker: 800,000 (32%)	Brown Creeper: 350,000 (6%)
Hairy Woodpecker: 340,000 (4%)	Golden-crowned Kinglet: 2,800,000 (8%)
American Three-toed Woodpecker: 250,000 (30%)	Varied Thrush: 15,000,000 (58%)
Black-backed Woodpecker: n/a	Townsend's Warbler: 4,100,000 (34%)
Northern Flicker: 220,000 (1%)	Red Crossbill: 810,000 (5%)
Pacific-slope Flycatcher: 1,700,000 (20%)	White-winged Crossbill: 2,340,000 (6%)
Chestnut-backed Chickadee: 1,700,000 (25%)	Pine Siskin: 1,500,000 (7%)

### **Trends:**

Global trends: Population trends (% change per year) calculated from data (1980–2003) from the NABBS (Sauer et al. 2004); *n* = number of routes trend is based on.

Blue Grouse: -1.8% ( $P < 0.01$ , $n = 81$ )	Boreal Chickadee: -1.9% ( $P = 0.18$ , $n = 135$ )
Prince of Wales Spruce Grouse: n/a <sup>1</sup>	Red-breasted Nuthatch: 1.2% ( $P < 0.01$ , $n = 1055$ )
Red-breasted Sapsucker: unknown	Brown Creeper: -0.9% ( $P = 0.32$ , $n = 539$ )
Hairy Woodpecker: 1.1% ( $P < 0.01$ , $n = 1975$ )	Golden-crowned Kinglet: -1.1% ( $P = 0.09$ , $n = 635$ )
American Three-toed Woodpecker: -3.1% ( $P = 0.64$ , $n = 31$ )	Varied Thrush: -1.0% ( $P = 0.07$ , $n = 186$ )
Black-backed Woodpecker: -7.2% ( $P = 0.01$ , $n = 67$ )	Townsend's Warbler: 0.9% ( $P = 0.18$ , $n = 189$ )
Northern Flicker: n/a	Red Crossbill: -2.3% ( $P < 0.01$ , $n = 413$ )
Pacific-slope Flycatcher: n/a	White-winged Crossbill: -1.2% ( $P = 0.80$ , $n = 113$ )
Chestnut-backed Chickadee: -0.7% ( $P = 0.31$ , $n = 178$ )	Pine Siskin: -3.3% ( $P < 0.01$ , $n = 791$ )

<sup>1</sup>No direct information is available on population trends of Prince of Wales Spruce Grouse; however, this “subspecies” has a limited distribution in Southeast Alaska, and it may be sensitive to forest management activities, although population trends are unknown.

State trends: Population trends (% change per year) calculated from data (1980–2003) from the North American Breeding Bird Survey (Sauer et al. 2004); *n* = number of routes trend is based on.

Blue Grouse: 0.0% ( $P = 1.00$ , $n = 10$ )	Boreal Chickadee: -0.5% ( $P = 0.80$ , $n = 43$ )
Prince of Wales Spruce Grouse: n/a <sup>1</sup>	Red-breasted Nuthatch: -0.6% ( $P = 0.82$ , $n = 17$ )
Red-breasted Sapsucker: 1.9% ( $P = 0.50$ , $n = 16$ )	Brown Creeper: 22.3% ( $P = 0.20$ , $n = 14$ )
Hairy Woodpecker: 6.8% ( $P = 0.05$ , $n = 28$ )	Golden-crowned Kinglet: -0.5% ( $P = 0.83$ , $n = 31$ )
American Three-toed Woodpecker: 6.5% ( $P = 0.33$ , $n = 16$ )	Varied Thrush: -0.1% ( $P = 0.89$ , $n = 85$ )
Black-backed Woodpecker: n/a	Townsend's Warbler: 0.2% ( $P = 0.93$ , $n = 35$ )
Northern Flicker: 0.2% ( $P = 0.95$ , $n = 34$ )	Red Crossbill: 3.8% ( $P = 0.04$ , $n = 15$ )
Pacific-slope Flycatcher: 1.3% ( $P = 0.61$ , $n = 16$ )	White-winged Crossbill: 4.3% ( $P = 0.30$ , $n = 47$ )
Chestnut-backed Chickadee: 2.0% ( $P = 0.41$ , $n = 20$ )	Pine Siskin: 5.5% ( $P = 0.10$ , $n = 41$ )
<b>C. Problems, issues, or concerns for species group</b>	
<p>All of these species are sensitive to losses of mature, coniferous forest throughout their ranges in Alaska. Timber and salvage harvest and associated road construction in Alaska not only decrease forest cover, but also alter or eliminate attributes of forest structure, composition, configuration, and connectivity needed by populations of these birds. Many of the important habitat attributes in mature stands that are needed by these species are not recruited into harvested stands for more than 100 years, such as snags and dead wood material on live trees (e.g., broken treetops) for cavity-nesting birds (Sallabanks et al. 2001). Harvest prescriptions are sometimes applied during timber removal to minimize the negative effects of logging (such as riparian buffers), but their efficacy has not been evaluated. Forest management that protects important resources, such as patches of large diameter trees, riparian corridors, and snags, is likely to be most beneficial to these birds. Postharvest prescriptions such as planting, herbicide application, and thinning are sometimes used to increase commercial tree growth but have unknown consequences on forest-associated birds.</p> <p>In Southeast Alaska these species are typically found more commonly in large-tree old-growth forests of hemlock-spruce at lower elevations than second-growth stands of varying ages following clearcutting (Kessler and Kogut 1985, Zwickel 1992, DellaSala et al. 1996, Russel 1999, Kissling 2003, Andres et al. in press). Large-scale natural disturbance is largely absent from these coastal forests; thus, widespread disturbance from logging may have landscape effects on these birds. A bird of particular concern among this group of birds is the Prince of Wales Spruce Grouse, which appears to be endemic on Prince of Wales and nearby islands in southern Southeast Alaska (Dickerman and Gustafson 1996).</p> <p>Many of these species whose breeding ranges extend into the boreal forest, such as the Brown Creeper, Golden-crowned Kinglet, Varied Thrush, and Townsend's Warbler, are also associated with mature white spruce or mixed white spruce/paper birch forests for breeding (Spindler and Kessel 1980, Matsuoka et al. 1997a and 1997b), and therefore, decrease in density following removal of the large trees through fires, outbreaks of bark</p>	

beetles, and associated salvage logging (Quinlan 1978, Lance and Howell 2000, Collins et al. 2001). Other species, such as Hairy, American Three-toed, and Black-backed woodpeckers, however, increase in abundance during beetle outbreaks (Lance and Howell 2000) or immediately following fires (Hutto 1995, Murphy and Lehnhausen 1998), but salvage logging eliminates resources needed by these birds (Hutto 1995). Because the boreal forest is the home to frequent and large-scale natural disturbances from fires and insect outbreaks, silvicultural systems that mimic natural disturbances may be promising, but require development.

Recent research suggests that changes in climate may be having large-scale effects on forests in Alaska. Warming trends have favored reproduction of spruce beetles, (*Dendroctonus rufipennis*) and larch sawflies (*Pristiphora erichsonii*), leading to unprecedented outbreaks in the last decade, and low snowfall may be causing widespread mortality among yellow cedar in Southeast Alaska. Similarly, the frequency of large-scale fires and wind storms may increase with continued changes in climate. The effects of these forest disturbances and associated salvage logging activities on bird communities are largely unknown and need further study.

Biologists and land managers generally lack information regarding habitat associations for these species, and are thus unable to provide effective strategies for conserving or restoring important avian habitats or habitat attributes. Knowledge of the specific components of forest structure (vertical and horizontal), composition, and configuration used by these species would allow land managers to make better decisions regarding harvest prescriptions, rotations periods, second-growth management, fire management, and habitat restoration and ultimately lead to more effective avian conservation. Results from research in this area must be put into the hands of managers as soon as possible so that findings can be incorporated into the planning process.

#### **D. Location and condition of key or important habitat areas**

Key coastal forest habitats include low elevation, medium and large sized conifer forests of uneven age structure. Condition of these habitats varies from much degraded to pristine. Many private and state-owned lands in Southeast Alaska, Prince William Sound, and the Kodiak Archipelago are degraded as a result of logging, mining, and associated road construction. In Southeast Alaska forests on Prince of Wales, Heceta, northeast Chichagof, Kupreanof, and Kuiu Islands are particularly degraded from extensive clearcut logging. Despite large-scale industrial logging in the region, Alaska supports more than 1/4 of the Earth's coastal temperate rain forest and maintains the largest and most pristine tracts left in the world (DellaSala et al. 2001). However, pristine coastal forests in Southeast Alaska are generally restricted to designated parks and monuments, including Admiralty Island National Monument, Misty Fjords National Monument, Glacier Bay National Park and Preserve, and several federally designated wilderness areas within the Tongass National Forest.

Critical interior forest habitat includes mature forests of upland and riparian white spruce and mixed white spruce and variable deciduous species. Similar to coastal forests, interior forest condition is largely related to land ownership. Large tracts of state and private land

on the Kenai Peninsula are highly degraded due to salvage logging. Small amounts of logging have also occurred in the Tanana State Forest and the Native lands in the Copper River Basin, leaving these areas somewhat degraded as well. Additionally, Interior forests have been fragmented locally from urban and industrial development (e.g., oil and gas). However, the majority of the boreal forest in Alaska is still largely pristine.

**E. Concerns associated with key habitats**

See C and D above.

**F. Goal:** Ensure that populations of bird species sensitive to forest management remain sustainable throughout their range within natural population-level variation and historical distribution across Alaska.

**G. Conservation objectives and actions**

**Objective:** Maintain species widely distributed across their current range and at a level of abundance that is  $\pm 20\%$  of current population size.

**Target 1:** Stable geographic breeding distribution and population trend.

**Measure 1:** Distribution and trends in abundance relative to habitat estimated from the statewide NABBS and ALMS.

**Issue 1a:** General poor information on distribution, population size, and trends.

**Conservation action:** Maintain participation in the NABBS in Alaska at no less than present level, and complement information from this program by fully implementing the ALMS program in Alaska. The latter will require broad participation among federal, state, and private land managers in Alaska.

**Issue 1b:** Early breeding species (e.g., Blue Grouse, woodpeckers), species occurring naturally at low densities (e.g., woodpeckers), species with low detectability (e.g., Brown Creeper), and taxa with restricted ranges (e.g., Spruce Grouse on Prince of Wales and other nearby islands) may not be adequately monitored by existing survey programs (i.e., NABBS and ALMS).

**Conservation action:** Develop survey and monitoring protocols for early breeding species and those with low detectability and/or low densities.

**Issue 1c:** Broad-scale monitoring using the NABBS and ALMS program may not meet the information needs for geographic areas that are undergoing rapid and widespread reductions in forest cover. In particular, more specific information is needed on the long-term effects of timber harvest, fire, insect outbreaks, salvage harvest, and associated pre- and postharvest prescriptions on bird populations.

**Conservation actions:**

- a) Develop inventories and/or simulation models to assess the short-term effects of landscape change on bird communities in areas undergoing rapid and widespread changes in forest cover.

- b) Monitor successional trajectories of bird communities to evaluate the long-term effects of forest change. Priority should be placed on evaluating pre- and postharvest activities applied to promote wildlife populations (i.e., variable retention, buffers, reforestation, second-growth thinning). Whenever possible, use such data to develop empirical and/or simulation models to assess both current and future benefits of such prescriptions.

**Issue 1d:** The distribution and population status of the Prince of Wales Spruce Grouse warrants additional assessment as this “subspecies” is endemic to a small number of islands in southern Southeast Alaska.

**Conservation actions:**

- a) Conduct surveys to assess population size, densities, and distribution of this subspecies related to forest management and identify important areas and habitats for conservation.
- b) Conduct phylogenetic studies to assess the degree of isolation of this subspecies from other nearby populations of Spruce Grouse.

**Target 2:** Maintain amount of appropriate habitat needed to support species across current range and at a level of abundance that is  $\pm 20\%$  of current population size.

**Measure 2:** Quantify the amount and distribution of appropriate forest habitat. Changes in forest cover should be monitored grossly by compiling information on forest area harvested and restored in Alaska through existing sources of information. More specific changes in forest structure, cover, and composition should be monitored preferably statewide, but at a minimum in areas with high rates of change, using remote sensing at 10-year intervals.

**Issue 2a:** Limited information on the appropriate types, amounts, and configurations of forest habitat needed by these species hinders the development of habitat targets. Such information is needed to better evaluate planned harvest activities and to develop habitat targets (Target 2) that will help achieve numerical goals for bird populations (Target 1; Rosenberg 2004 a and 2004b). Information on habitats important in supporting high survival or reproductive success is lacking.

**Conservation actions:**

- a) Compile and review existing information on habitat use and natural history patterns for these birds to identify important habitats and develop general habitat targets.
- b) Develop more specific habitat selection models for birds in geographic areas that are undergoing rapid change. When possible, use existing regional GIS data on forest cover (i.e., Southeast Alaska and Kenai Peninsula) in combination with existing data from bird surveys (NABBS, ALMS, and other surveys) to develop more specific habitat targets.
- c) For species that are highly restricted to mature forests, specific research should be conducted to identify habitats, habitat attributes, and geographic areas associated with high reproduction success and survival. Such information would give insight into the mechanisms governing avian responses to habitat manipulations and would provide an improved basis for developing habitat targets and recommendations for forest management.
- d) Provide information from these efforts to managers as soon as possible so that findings can be incorporated into the planning process.

**Issue 2b:** Existing information on timber harvest and forest restoration in Alaska is not compiled in order to assess how changes in forest cover may be affecting bird populations.

**Conservation action:** Monitor gross changes in forest cover by compiling information on timber and salvage harvest and forest restoration activities in Alaska from the USFS, Alaska Division of Forestry, and other appropriate sources on an annual or biennial basis.

**Issue 2c:** Lack of detailed information on forest cover, structure, and composition for Alaska, particularly on state and private lands, limits our ability to evaluate the cumulative effects of forest management on regional or statewide populations of birds. Detailed data are currently only available for specific areas, such as the Tongass National Forest, Kenai Peninsula, and a growing number of national parks.

**Conservation action:** Develop a statewide landcover map for Alaska that includes data layers for forest structure and species composition at a minimum resolution of 30 meters.

**Issue 2d:** Harvest prescriptions and best management practices need to be better designed and implemented on some federal, state, and private lands. The development and application of such prescriptions will be useful in minimizing the negative effects of forest management on birds.

**Conservation action:** Encourage federal, state, and private landowners to consider and implement best management practices for the conservation of declining forest birds.

#### **H. Plan and time frames for monitoring species and their habitats**

NABBS work is ongoing in Alaska through cooperative interagency efforts and a network of volunteers. Presently, the ALMS program has not been fully implemented statewide and is only partially funded. Development of a statewide landcover map is unfunded, and responsibility for this task does not belong to a particular agency or private organization. Studies of demography, habitat selection, and effectiveness monitoring are also unfunded at this time. Participants should include USGS, USFWS, NPS, DOD, USFS, BLM, State of Alaska, nongovernmental organizations, universities, and private landowners.

#### **I. Recommended time frame for reviewing species status and trends**

Ten years unless monitoring suggests that population(s) have fallen below target levels.

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## Olive-sided Flycatcher

### A. Species description

**Common name:** Olive-sided Flycatcher

**Scientific name:** *Contopus cooperi*

### B. Distribution and abundance

**Range:**

Global range comments: Breeding range extends from Alaska east through coniferous forests to southern Labrador, in the Northeast south to Massachusetts and locally to North Carolina, in the Midwest south to northern Wisconsin and northeastern Ohio, and in the West south along coastal ranges to Baja California and in the Rockies to southeastern Arizona and western Texas (Altman 1997). Principal wintering range is Panama and Andes Mountains of northern and western South America, from northern and western Venezuela south through Ecuador to southeastern Peru and western Bolivia (Altman and Sallabanks 2000).

State range comments: Regularly breeds in central, south-central, southeast, and sparingly western Alaska. Generally at low densities throughout the coniferous boreal and coastal forests of Alaska (often characterized as uncommon or rare [Armstrong 1995]). Ranges to northern and western extent of coniferous forest to Noatak River in the northwest, Bethel and Katmai areas in the west/southwest, and to Colleen and Porcupine Rivers in the northeast (Kessel and Gibson 1978).

**Abundance:** Population estimates are suspected to be inaccurate (Rich et al. 2004; Rosenberg 2004a and 2004b), but are the only available estimates at this time.

Global abundance comments: 1,200,000 (Rich et al. 2004)

State abundance comments: 270,000 (Rosenberg 2004a and 2004b)

**Trends:**

Global trends: From 1966 to 2003 a population decline of 3.5% per year ( $P < 0.01$ ,  $n = 776$  routes) detected on the NABBS (Sauer et al. 2004).

State trends: From 1980 to 2002 a population decline of 3.3% per year ( $P = 0.09$ ,  $n = 49$  routes) detected on the NABBS in Alaska (Sauer et al. 2003). The period of documented population decline is shorter in Alaska due to the lack of monitoring surveys prior to 1980.

**C. Problems, issues, or concerns for species**

Steep, rangewide decline in numbers of breeding birds. Current estimates suggest that the global population has been reduced by over 70% since 1966. Trend similar in Alaska as in rest of the species range.

Reasons for decline unknown, but rapid losses of forested habitats on wintering grounds in the Andes foothills and mountains are a suspected but untested cause of the decline. Because the genus *Contopus* has the lowest reproductive rate of all North American passerines, lowered survival resulting from losses of favored wintering habitat could be particularly problematic for this species (Altman and Sallabanks 2000). Rates of survivorship not currently known.

Because this species is closely tied to recently burned forests and, to a lesser extent, bark beetle infested forests for breeding, fire suppression and salvage harvest may be detrimental to populations (Hutto 1995; Stone 1995). Harvested stands may act as “ecological traps” that attract breeding birds because of the forest opening they create but support low rates of nest success compared to favored postfire stands because of high densities of predators supported by adjacent live stands (Altman and Sallabanks 2000).

Climate change may also affect this species by changing the energetic requirements of long-distance migration, availability of flying insects for food, frequency of fires and bark beetle epidemics, or drying of favored muskegs and forested bogs and swamps in the boreal forest (Altman and Sallabanks 2000).

**D. Location and condition of key or important habitat areas**

**Breeding:**

Considered an indicator species of the coniferous forest biome throughout North America, although it is occasionally found in mixed deciduous/coniferous forests. In central Alaska, most often found in stands of open canopy spruce (*Picea glauca* and *P. mariana*). Usually associated with openings (muskegs, meadows, burns, and logged areas) and water (streams, beaver ponds, bogs, and lakes). Apparently requires an uneven canopy or openings for aerial hawking and wet areas productive of insect prey. Regularly uses prominent dead or partially dead trees for perching, singing, and hawking. In central Alaska, perches averaged 1.4 times the height of surrounding tree canopy; 25% of perches were dead trees, 51% were partially dead (most with dead tops), and 24% were live. Nests were placed in live trees, primarily black spruce, that were slightly shorter than surrounding canopy (Wright 1997). Breeding habitats in Alaska are generally in good condition.

**Winter:**

Primary wintering habitat (based on limited anecdotal information) is mature evergreen forests, particularly montane forest. Reaches highest densities in Andes in Columbia, where it occurs in lightly forested areas and forested edges from 400 to 2600 m. This is one of the most heavily altered habitats in South America. Andean valleys are almost completely deforested, and 85% or more of montane forests have been cut (Altman and Sallabanks 2000).

**E. Concerns associated with key habitats**

On breeding grounds in Alaska, forest management, particularly salvage harvest, may be detrimental to this species. Climate change and associated landscape drying could decrease the suitability of muskegs, bogs, and streamside habitat for breeding, as well as alter the availability of flying insects for foraging.

On wintering grounds, forests favored by this species have been one of the most heavily altered habitats in South America. Andean valleys are almost completely deforested, and 85% or more of montane forests have been cut. From an examination of 123 migrant landbirds, the Olive-sided Flycatcher was considered one of the 12 species most vulnerable to extinction from tropical deforestation primarily because of restriction to undisturbed broadleaf forest during winter (Petit et al. 1993, 1995).

**F. Goal:** Ensure Olive-sided Flycatcher populations remain sustainable throughout their range within natural population-level variation and historical distribution across Alaska.

**G. Conservation objectives and actions**

**State conservation and management needs:**

**Objective:** Restore population to 1980 levels in Alaska.

**Target:** An average 3.3% increase in population size per year over the next 25 years.

**Measure:** Population trend estimated jointly from the NABBS in Alaska and its complementary program in roadless areas of the state, ALMS.

**Issue 1:** Ability to maintain long-term monitoring of NABBS routes in appropriate places in the state.

**Conservation action:** Maintain participation in the NABBS in Alaska at no less than present level; identify individuals to adopt routes that have been discontinued; observers must commit to no fewer than 3 consecutive years of service.

**Issue 2:** Current knowledge of population trends is based solely on the roadside NABBS, which only samples a small proportion of the species breeding range in Alaska. Therefore, it may be inappropriate to extend the objective for this species to outside of the NABBS corridor without an appropriate evaluation of its status in roadless areas.

**Conservation actions:**

- a) Examine independent data on trends from migration stations or other breeding surveys to determine if declines are evident in areas away from the road system.
- b) Encourage and implement full participation in ALMS, whose random sampling of roadless areas will improve estimates of population size and percent global population in Alaska, reduce bias in trends associated with geographically limited NABBS, improve knowledge of distribution and habitat use and, when combined with data from the NABBS, increase statistical power in detecting statewide trends. Surveys should be run for no less than 25 years.

**Issue 3:** There is a general lack of understanding of the breeding habitat requirements of this species in Alaska. Thus, it is difficult to develop and implement strategies to conserve or enhance important areas for breeding to help meet the objective of restoring populations to 1980s levels.

**Conservation actions:**

- a) Conduct field studies or analyses of existing data to determine important habitats, habitat attributes, and geographic locations for this species in Alaska. Combine such studies with the second conservation action listed in Issue 4, when possible.
- b) Effects of disturbance from fires, insect outbreaks, and particularly associated salvage logging activities should be evaluated.
- c) Use results from such studies to strategically protect or enhance important areas and habitats to help meet the objective of restoring populations to 1980s levels (Rosenberg 2004a and 2004b).
- d) Communicate the habitat needs of this species to appropriate land managers and regulatory agencies in Alaska.

**Issue 4:** Current cause of population decline unknown but could be operating outside of Alaska on nonbreeding sites. However, the decline must be linked to deficits in survival, reproduction, or recruitment.

**Conservation actions:**

- a) Raise profile of demise of species to pique interest in the research community for exploring causes of decline.
- b) Conduct targeted demographic studies to identify deficits in reproduction and, particularly, survival and recruitment and whether such deficits are linked with specific habitats, habitat changes, geographic locations, or exposure to contaminants or diseases. Information on survival and recruitment are needed in particular.
- c) Conduct studies using stable isotopes and/or genetics to determine important nonbreeding sites (migration stopover, wintering) for Alaskan breeding populations and whether losses of habitats in these areas may be contributing to the decline.
- d) Based on research findings, develop and implement conservation actions in appropriate areas to reverse population decline.

**Global conservation and management needs:**

**Objective:** Restore population to 1966 levels across the breeding range (Rich et al. 2004).

**Target:** Population level in 1966 (Rich et al. 2004). This equates to an average 3.5% annual increase in population size over the next 38 years.

**Measure:** NABBS.

**Issue 1:** Current knowledge of population decline is based solely on the roadside NABBS, which only samples a small proportion of the species breeding range. Therefore, it may be inappropriate to extend the objective for this species to outside of the NABBS corridor without an evaluation of its status in roadless areas.

**Conservation action:** Analyze data from appropriate migration stations and other breeding and nonbreeding surveys to determine if declines are evident from independent data sets and in roadless areas; the latter may be important in supporting “source” populations.

**Issue 2:** Cause(s) of decline is/are unknown.

**Conservation actions:**

- a) Collaborate with North and South American researchers and conservationists to determine causes of decline and develop and implement strategies to remediate the problem(s) once identified.
- b) Effects of forest management on breeding birds should be further evaluated. In particular, prescribed fire and silvicultural systems that mimic the natural effects of fire and beetle outbreaks should be tested as a means of enhancing habitats for this species.

**Issue 3:** Poor understanding of linkages between breeding, staging, and wintering sites.

**Conservation action:** Conduct genetic and stable isotope studies to determine linkages between breeding, staging, and wintering populations to identify important areas and habitats for distinct populations of this species.

**Issue 4: Poor recognition of population decline among public, academia, and conservation communities.**

**Conservation action:** Develop and distribute information about the decline to the public, academia, and conservation communities.

**H. Plan and time frames for monitoring species and their habitats**

Monitoring by NABBS and ALMS should be conducted annually from present for a minimum of 25 years. Studies of demography and habitat requirements should begin as soon as possible and continue for a minimum of 5 years.

NABBS work is underway in Alaska through cooperative interagency efforts and a network of volunteers. At this point the ALMS, demography, and nesting habitat studies are only partially funded; participants should include USGS, USFWS, NPS, BLM, USFS, DOD, State of Alaska, NGOs, universities, and private landowners, including, but not restricted to Native corporations and industry.

**I. Recommended time frame for reviewing species status and trends**

Five-year intervals for review.

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## **Blackpoll Warbler**

### **A. Species description**

**Common name:** Blackpoll Warbler  
**Scientific name:** *Dendroica striata*

## **B. Distribution and abundance**

### **Range:**

Global range comments: Breeds from northern and western Alaska, throughout Yukon and southern Northwest Territories, east and south to central plains provinces to northern Ontario, central Quebec, throughout Labrador and Newfoundland; south to New York, Maine and Massachusetts. Winters in Ecuador, Columbia, Venezuela, Peru, Chile and Peru (Terres 1980).

State range comments: In Alaska, breeds in western Alaska as far north as Selawik and the Kobuk and lower Noatak drainages, south to Katmai, common east to central Alaska and south to the Matanuska-Susitna Valleys, less common in east-central Alaska, the Kenai Peninsula. Rare migrant in Southeast Alaska (Kessel and Gibson 1978; Boreal Partners in Flight 1999; Cotter and Andres 2000). Highest breeding densities were recorded in riparian areas along the tributaries of the lower Yukon and Kuskokwim Rivers in western Alaska (Harwood 2002).

**Abundance:** Population estimates from Rosenberg (2004) are suspected to be inaccurate, but are the only available estimates at this time.

Global abundance comments: 21,000,000 birds.

State abundance comments: 6,400,000 birds.

### **Trends:**

Global trends: Survey data from NABBS, 1980 to 2003 (not including Alaska), showed a population decline of 9.2% per year ( $P < 0.01$ ,  $n = 54$  survey routes; Sauer et al. 2004). Increasing from 1966 to 1980 (Sauer et al. 2004).

State trends: Data from NABBS from 1980 to 2003 in Alaska showed a population decline of 3.8% per year ( $P = 0.01$ ,  $n = 50$  survey routes; Sauer et al. 2004).

## **C. Problems, issues, or concerns for species**

*Precipitous population decline:* Data from the NABBS indicate this species has suffered the steepest long-term decline of any Neotropical-Nearctic migrant landbird since 1980, with populations diminished by over 50% and 90% across breeding ranges in Alaska and Canada, respectively (Sauer et al. 2004). Large proportion (30%) of the global population estimated to breed in Alaska (Rosenberg 2004a and 2004b). NABBS trend information may be biased.

*Climate change:* The causes for this decline are poorly understood; however, climate changes may be in part responsible for this trend. Recent research showed that the abundance of breeding Blackpoll Warblers from 1967 to 1996 was negatively correlated with the frequency and severity of tropical storms over the Atlantic Ocean and Gulf of Mexico during autumn passage the previous year (Butler 2000). As this species undertakes the longest migration of any North American warbler, including a continuous transoceanic autumn flight from northeastern United States and southeastern Canada to northern South America (Nisbet et al. 1995), the Blackpoll Warbler may be particularly susceptible to mortality during migration, which has been found to account for 90% of annual mortality for its congener, the Black-throated Blue Warbler (*Dendroica caerulescens*; Sillett and

Holmes 2002). Climate change may be further threatening the population of this species in Alaska by modifying favored riparian and bog habitats through permafrost degradation and drying.

*Habitat loss:* Habitat loss at breeding and nonbreeding areas is another concern. Some examples include:

- Logging of Canadian boreal forest. Breeding densities declined in 20 m riparian strips after surrounding habitat was removed by clearcutting (Darveau et al. 1995).
- Degradation of red spruce and subalpine spruce-fir forests resulting from acid precipitation in northeastern United States and southeastern Canada may adversely affect reproduction by eliminating favored red spruce for nesting (Smith et al. 1986; Moegenburg and Greenberg 2004).
- Deforestation of lowland Amazonia may negatively influence Blackpoll Warblers; however, little is known about habitat use during nonbreeding season. One of the migrant landbirds considered most likely to be negatively affected by destruction of tropical forests.
- Degradation of important migration stopover sites, particularly in southeastern Canada, northeastern United States and northern South America.

*Poor information on breeding and wintering ecology:* In general, the breeding and wintering ecology of this species is poorly studied. In Alaska we have a poor quantitative understanding of what habitats and habitat attributes are important in supporting viable breeding populations of this species. Also, information on survival and reproductive output/success would be useful for developing population models to identify demographic bottlenecks for this species.

*Other concerns:* This species commonly collides with towers during migration (i.e. communication towers, wind turbines, buildings), presumably due to attraction to lights (Hunt and Eliason 1999). Wind energy development and the cell phone industry are resulting in growing numbers of towers in both the United States and Canada. Widespread use of pesticides and dioxins on wintering grounds and accumulations of such materials in Alaska may adversely influence Blackpoll Warblers.

#### **D. Location and condition of key or important habitat areas**

Use of habitats for breeding changes from predominantly coniferous forests in the eastern and central portion of range to primarily deciduous habitats in Alaska. In Alaska, typically breeds in moist habitats along rivers, streams, or bogs, particularly in deciduous forest and tall shrub thickets (particularly *Salix alaxensis* and *Alnus incana*), the latter sometimes under a sparse overstory of spruce (*Picea glauca* or *P. mariana*; particularly in central Alaska) or mixed spruce-paper birch (*Betula papyrifera*; Gabrielson and Lincoln 1959; Spindler and Kessel 1980; McCaffery 1996; Kessel 1998; Cotter and Andres 2000). Also found in similar habitats at the transition zone between tree-line taiga and either alpine or coastal tundra (Kessel 1998), with the Yukon Delta being a possible exception (McCaffery 1996). Species reaches its highest breeding density in Alaska in riparian habitats in western Alaska (McCaffery 1996; Harwood 2002). Most of these habitats are not threatened by development.

### **E. Concerns associated with key habitats**

Reductions in the suitability of breeding habitats used by this species across Canada and the northeastern United States as a result of widespread resource development (forestry, oil and gas) and acid rain. Such changes may increase the value of undisturbed habitats in Alaska. Breeding habitats in Alaska generally in good condition. However, since this species is associated with riparian areas and muskegs in Alaska, patterns in landscape drying resulting from climate change may reduce the suitability of habitats favored by this species for breeding.

Threats on nonbreeding areas may be of particular concern for this species. A recent examination of 123 migrant landbirds suggested that Blackpoll Warbler is one of the 12 species most vulnerable to extinction from tropical deforestation primarily because of restriction to undisturbed broadleaf forest during winter (Petit et al. 1993, 1995). Also the quality and quantity of stopover habitats during migration may be paramount for populations of this species as it undergoes the longest migration of any North American warbler, including a continuous transoceanic migration in autumn from the Atlantic coast of southeastern Canada/northeastern United States to northern South America.

(See also the “Habitat Loss” description in section C.)

**F. Goal:** Ensure Blackpoll Warbler populations remain sustainable throughout their range within natural population-level variation and historical distribution across Alaska.

### **G. Conservation objectives and actions**

#### **State conservation and management needs:**

**Objective:** Restore population to 1980 levels in Alaska.

**Target:** An average 3.8% increase in population size per year over the next 25 years.

**Measure:** Population trend estimated jointly from the NABBS in Alaska and its complementary program in roadless areas of the state, ALMS.

**Issue 1:** Ability to maintain long-term monitoring of NABBS routes in appropriate places in the state.

#### **Conservation actions:**

- a) Maintain participation in the NABBS in Alaska at no less than present level. In particular, encourage running river routes annually.
- b) Identify individuals to adopt routes that have been discontinued (particularly river routes); observers must commit to no fewer than 3 consecutive years of service.
- c) Resume NABBS routes conducted in lower Yukon and Kuskokwim river watersheds (done 1998–2002) biennially for 25 years.

**Issue 2:** Current knowledge of population trends is based solely on the roadside NABBS, which only samples a small proportion of the species breeding range in Alaska. Therefore, it may be inappropriate to extend the objective for this species to outside of the NABBS corridor without an appropriate evaluation of its status in roadless areas.

**Conservation actions:**

- a) Examine independent data on trends from migration stations, the Alaska Off-road Breeding Bird Survey, or other surveys to determine if declines are evident in areas away from the road system.
- b) Encourage and implement full participation in ALMS), whose random sampling of roadless areas will improve estimates of population size and percent global population in Alaska, reduce bias in trends associated with geographically limited NABBS, improve knowledge of distribution and, when combined with data from the NABBS, increase statistical power in detecting statewide trends. Surveys should be run for no less than 25 years.

Issue 3: There is a general lack of understanding of the breeding habitat requirements of this species in Alaska. Thus, it is difficult to conserve or enhance important areas for breeding to help meet the objective or restoring populations to 1980s levels.

**Conservation actions:**

- a) Conduct field studies or analyses of existing data to determine important habitats and habitat attributes that support high densities, abundant food resources, or high rates of survival, reproduction, and recruitment. Combine such studies along with the second conservation action under Issue 4, when possible.
- b) Use results from such studies to strategically protect or enhance important areas and habitats to help meet the objective of restoring populations to 1980s levels (Rosenberg 2004a and 2004b).
- c) Communicate the habitat needs of this species to appropriate land managers and regulatory agencies in Alaska.

Issue 4: Current cause of population decline unknown but could be operating outside of Alaska on nonbreeding sites. However, the decline must be linked to deficits in survival, reproduction, or recruitment.

**Conservation actions:**

- a) Raise profile of demise of species to pique interest in the research community for exploring causes of decline.
- b) Conduct targeted demographic studies to identify deficits in survival, reproduction, or recruitment and whether such deficits are linked with specific habitats, habitat changes, geographic locations, or exposure to contaminants or diseases. Standardized protocols by the Monitoring Avian Productivity and Survivorship (MAPS) program and Breeding Bird Database may be appropriately applied to this species to help answer some of these questions.
- c) Conduct studies using stable isotopes and/or genetics to determine important nonbreeding sites (migration stopover, wintering) for Alaskan breeding populations and whether losses of habitats in these areas may be contributing to the decline.
- d) Based on research findings, develop and implement conservation actions in appropriate areas to reverse population decline.

**Issue 5: Potential exposure to contaminants is a concern across their range.**

**Conservation action:** Conduct assessment of presence of contaminants in breeding and wintering Blackpoll Warblers.

**Global conservation and management needs:**

**Objective:** Restore population to 1980 levels across the breeding range.

**Target:** 1980 population level.

**Measure:** NABBS.

**Issue 1: Current knowledge of population decline is based solely on the roadside NABBS, which only samples a small proportion of the species breeding range. Therefore, it may be inappropriate to extend the objective for this species to outside of the NABBS corridor without an evaluation of its status in roadless areas.**

**Conservation action:** Analyze data from appropriate migration stations and other breeding and nonbreeding surveys to determine if declines are evident from independent data sets.

**Issue 2: Cause(s) of decline is/are unknown**

**Conservation actions:**

- a) Collaborate with North American, South American, and Caribbean researchers and conservationists to determine causes of decline.
- b) Examine further the potential role of storm frequency during fall migration over the Atlantic Ocean in causing declines in this species (Bulter 2000).
- c) Future studies on reproduction should focus on replicating previous work (Eliason 1986a and 1986b), complementing ongoing work on the effects of acid rain on the species (Moegenburg and Greenberg 2004), testing the effects of land management actions, or obtaining data from areas still supporting high densities of this species (e.g., Western Alaska).
- d) Determine if an assessment of wintering ground habitats and demographics could be incorporated into ongoing research on other migrant birds in South America (e.g., Cerulean Warbler).

**Issue 3: Poor understanding of linkages between breeding, staging, and wintering sites.**

**Conservation action:** Conduct genetic and stable isotope studies to determine linkages between breeding, staging, and wintering populations to identify important areas and habitats for distinct populations of this species.

**Issue 4: Poor recognition of population decline among public, academia, and conservation communities.**

**Conservation action:** Develop and distribute information about the decline to the public, academic, and conservation communities.

**Issue 5:** Much coordination will be needed among states, provinces, and agencies to develop and implement strategies to reverse declines across the ranges of this species.

**Conservation actions:**

- a) Develop numerical goals for conservation (i.e., amount of habitats for restoration) appropriately for each state and province included in the species range and implement strategies for reaching these goals for each area (Rich et al. 2004).
- b) Increase the amount of land in national or provincial parks and wildlife preserves in Canada and across wintering areas in South America.
- c) Encourage the adoption of broad-scale land management policies that protect important breeding habitats or enhance habitats previously degraded from harvest or other management activities.
- d) Protect and enhance habitats along key migration stopover sites, particularly along the Eastern seaboard, where autumn migrants depart land to undertake a continuous transoceanic crossing to South America.

**H. Plan and time frames for monitoring species and their habitats**

Monitoring by NABBS, Yukon-Kuskokwim River BBS, and ALMS should be conducted annually from present for a minimum of 25 years. Studies of demography and habitat requirements should begin as soon as possible and continue for a minimum of 5 years. NABBS work is underway in Alaska through cooperative interagency efforts and a network of volunteers. At this point ALMS and studies of demography, habitat, and identification of nonbreeding areas are only partially funded. Participants should include USGS, USFWS, NPS, DOD, and BLM; State of Alaska; NGOs; private landowners; and universities.

**I. Recommended time frame for reviewing species status and trends**

Five-year intervals for review.

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## **Rusty Blackbird**

**A. Species description**

**Common name:** Rusty Blackbird

**Scientific name:** *Euphagus carolinus*

**B. Distribution and abundance**

**Range:**

Global range comments:

*Breeding range:* extends from the west coast of Alaska to the east coast of Canada (Avery 1995). The northern extent is delineated by Kotzebue Sound and the Brooks Range in Alaska, Mackenzie Delta, Great Bear Lake, Great Slave Lake, and Nueltin Lake in Northwest Territories, the coast of Hudson Bay from Churchill, Manitoba to northern Quebec, and across Quebec to the coast of central Labrador. The southern edge of the breeding range extends from southern Alaska, through central Canada from the interior of British Columbia to the northern shores of Lake Superior and Lake Huron, through southeastern Ontario to Vermont, New Hampshire, and Maine. Also breeds on the upper peninsula of Michigan, in the Adirondack Mountains of New York, and in western Massachusetts.

*Winter range:* primarily in the eastern half of the United States from eastern Nebraska, Kansas, Oklahoma, and Texas to the Atlantic coast between southern Massachusetts and central Florida, and from southern Wisconsin and Michigan to the Gulf of Mexico (Avery 1995). Also winters very locally across the northernmost part of the United States and the southern edge of Canada from Maine to the coast of British Columbia and into Southeast Alaska. A few winter in eastern Colorado; otherwise, very rare visitor to western and southwestern United States and south Florida.

State range comments: Found throughout most of mainland Alaska south of the Brooks Range (Kessel and Gibson 1978). Fairly common spring migrant and breeder, locally common fall migrant, and very rare winter visitor in central Alaska. Fairly common to rare migrant and breeder in western and southwestern Alaska (Brann and Andres 1997). Rare spring migrant and possible breeder in the Brooks Range. Very rare to casual spring migrant and summer and fall visitor to the coasts of the Beaufort and Chukchi Seas, the Bering Sea islands, and the coast of Bristol Bay. Uncommon spring migrant and fairly common fall migrant, rare breeder, and rare winter visitor in southcoastal Alaska. Uncommon migrant and rare to uncommon local breeder (mainland), and rare winter visitor in Southeast Alaska.

**Abundance:** Estimates of abundance from Rich et al. (2004) and Rosenberg (2004a and 2004b) likely inaccurate but are the only available estimates of abundance available for the species.

Global abundance comments: 2,000,000 individuals (Rich et al. 2004).

State abundance comments: 570,000 individuals (Rosenberg 2004a and 2004b).

**Trends:**

Global trends: Population decline of 9.2% per year ( $P = 0.02$ ,  $n = 96$  routes) documented from the NABBS, 1966–2002 (Sauer et al. 2004).

State trends: Population decline of 5.8% per year ( $P = 0.03$ ,  $n = 25$  routes) documented from the NABBS, 1980–2002 (Sauer et al. 2004). The period of documented population decline is shorter in Alaska due to the lack of monitoring surveys prior to 1980.

### **C. Problems, issues, or concerns for species**

All evidence suggests that this once abundant bird has been experiencing a chronic decline since the mid 1800s. The decline appears to be accelerating and totaled 90% by 3 independent population surveys (Greenberg and Droege 1999). Causes of the population decline currently unknown; however, on wintering grounds destruction of wooded wetlands and blackbird control programs have been suggested, while on breeding grounds acid precipitation and conversion of boreal forest wetlands have been implied (Greenberg and Droege 1999). Drying of wetlands resulting from global climate change may be a growing issue for this and other boreal wetland species in Alaska.

Increased attention needs to be given to this species now, while populations are large enough to make conservation actions effective (Greenberg and Droege 1999). Currently no research is being conducted to determine the cause of the population decline, although the decline is now well documented (Greenberg 2003). Alaska may be an important stronghold for this species and a prime area for research on breeding population since the species is still found in reasonable numbers (30% of global population, Rosenberg 2004a and 2004b) unlike other parts of its breeding range in Alberta and the Northwest Territories and (Greenberg 2003; S. Droege personal communication).

### **D. Location and condition of key or important habitat areas**

Breeds in wet coniferous and mixed forest from the edge of tundra south to the beginning of deciduous forest and grasslands. Frequently found in fens, alder-willow thickets and bogs, muskeg, beaver ponds, tall riparian shrub, swampy shores of lakes and streams, and other forest openings, such as those created by logging, fire, windthrow, and beaver activity. Likes large numbers of conifer saplings and dense foliage 2–4 m above ground. Breeding habitats in south-southeastern part of range in Canada are being lost due to conversion to agricultural lands, logging, and oil and gas development.

During spring and fall migration will forage in stubble, pasture, plowed fields, and edges of swamps. Usually roost in wooded areas, but will occasionally roost on the ground in open fields. Wintering habitats include swamps, wet woodlands, pond edges, stream borders, cypress lagoons, marsh edges, and fields adjacent to wet areas (Avery 1995). More closely tied to wooded wetlands during the winter than any other passerine (Greenberg and Droege 1999). More than 80% of this habitat has been lost, principally to use for agriculture, since colonization of the United States. However, recent rates of conversion of wooded wetlands on wintering grounds do not explain the recent acceleration in population decline (Greenberg and Droege 1999).

In Alaska, use of habitats not well described except in east-central Alaska, where the Rusty Blackbird is found in open habitats with water where it shows a preference for areas with tall shrubs. Commonly observed perched in white spruce (36% of observation), willow (30%), 10–12% each in alder, poplar, and dead snags (Spindler and Kessel 1980). In western Alaska found in higher breeding densities along rivers of

the Seward Peninsula and tributaries of the lower Yukon and Kuskokwim Rivers (Kessel 1989; Harwood 2002). Habitats in Alaska are generally largely intact and not directly disturbed by development (Greenberg 2003). In Southeast Alaska, found to co-occur with Red-winged Blackbirds in freshwater marshes and in sedges surrounding beaver ponds (Johnson 2003).

**E. Concerns associated with key habitats**

Breeding habitats in south-southeastern part of range in Canada are being lost due to conversion to agricultural lands, logging, and oil and gas development. Habitats in Alaska are generally largely intact and not directly disturbed by development (Greenberg 2003). However, climate change and associated degradation of permafrost and drying of ponds and lakes in Alaska could be resulting in losses of key habitats used by this species. More than 80% of forested wetlands used by this species on wintering ground have been lost, principally to agriculture, since colonization of the United States. However, more modern rates of conversion of these habitats alone do not explain the recent acceleration in population decline (Greenberg and Droege 1999).

**F. Goal:** Ensure Rusty Blackbird populations remain sustainable throughout their range within natural population-level variation and historical distribution across Alaska.

**G. Conservation objectives and actions**

**State conservation and management needs:**

**Objective:** Restore population to 1980 levels in Alaska.

**Target:** An average 5.8% increase in population size per year over the next 25 years.

**Measure:** NABBS in Alaska and its complementary program in roadless areas of the state, ALMS.

**Issue 1:** Ability to maintain long-term monitoring of NABBS routes in appropriate places in the state.

**Conservation actions:**

- a) Maintain participation in the NABBS in Alaska at no less than present level. In particular, encourage running river routes annually.
- b) Resume NABBS routes conducted in lower Yukon and Kuskokwim river watersheds (done 1998–2002) biennially for 25 years.

**Issue 2:** Current knowledge of population trends is based solely on the roadside NABBS, which only samples a small proportion of the species breeding range in Alaska.

Therefore, it may be inappropriate to extend the objective for this species to outside of the NABBS corridor without an appropriate evaluation of its status in roadless areas.

**Conservation actions:**

- a) Examine independent data on trends from migration stations and other breeding surveys to determine if declines are evident in areas away from the road system.
- b) Encourage and implement full participation in ALMS, whose random

sampling of roadless areas will improve estimates of population size and percent global population in Alaska, reduce bias in trends associated with geographically limited NABBS, improve knowledge of distribution and, when combined with data from the NABBS, increase statistical power in detecting statewide trends. Surveys should be run for no less than 25 years.

**Issue 3:** There is a general lack of understanding of the breeding habitat requirements of this species in Alaska. Thus, it is difficult to conserve or enhance important areas to help meet the objective of restoring populations to 1980s levels.

**Conservation actions:**

- a) Conduct field studies or analyses of existing data to determine habitats, habitat attributes, and geographic locations that support high densities of this species during breeding and migration in Alaska. Aerial surveys of breeding birds could be explored as a means for assessing habitat needs over broad geographic areas. Combine such studies with the second conservation action under Issue 4, when possible.
- b) Use results from such studies to direct research to important areas and strategically protect or enhance important areas and habitats to help meet the objective of restoring populations to 1980s levels (Rosenberg 2004a and 2004b).
- c) Communicate the habitat needs of this species to appropriate land managers and regulatory agencies in Alaska.

**Issue 4:** Current cause of population decline unknown but could be operating outside of Alaska on nonbreeding sites. However, the decline must be linked to deficits in survival, reproduction, or recruitment.

**Conservation actions:**

- a) Raise profile of demise of species to pique interest in the research community for exploring causes of decline.
- b) Conduct targeted demographic studies to identify deficits in survival, reproduction, or recruitment and whether such deficits are linked with specific habitats, habitat changes, geographic locations, or exposure to contaminants or diseases.
- c) Based on research findings, develop and implement conservation strategies in appropriate areas to reverse population decline.

**Global conservation and management needs:**

**Objective:** Restore population to 1966 levels across the breeding range.

**Target:** Population level in 1966, which equates to an average increase of 9.9% in population size over the next 38 years.

**Measure:** NABBS and CBC.

**Issue 1: Cause(s) of decline is/are unknown**

**Conservation actions:**

- a) Analyze data from NABBS and CBC for spatial variation in abundance and trend to identify both important areas for protection and geographic centers of decline on both breeding and wintering areas.
- b) Collaborate with North American researchers and conservationists to determine causes of decline and develop and implement strategies for remediating the problem(s) once identified (Rich et al. 2004).
- c) The affects of acidification of wetlands, blackbird control programs, and loss of forested wetlands on wintering areas on populations should be evaluated (Greenberg and Droege 1999; Greenberg 2003).

**Issue 2: Poor recognition of population decline among public, academic, and conservation communities.**

**Conservation action:** Develop and distribute information about the decline to the public, academic, and conservation communities.

**Issue 3: Much coordination will be needed among states, provinces, and agencies to develop and implement strategies to reverse declines across the ranges of this species.**

**Conservation actions:**

- a) Develop numerical goals for conservation (i.e., amount of habitats for restoration) appropriately for each state and province included in the species range and implement strategies for reaching these goals for each area (Rich et al. 2004).
- b) Increase the amount of land in national or provincial parks and preserves in Canada.
- c) Encourage the adoption of broad-scale land management policies in the United States and Canada that protect important breeding and wintering habitats and enhance habitats previously degraded from land management activities.
- d) Work through the joint ventures to protect and enhance wetlands used by this species.

**H. Plan and time frames for monitoring species and their habitats**

Monitoring by NABBS, Yukon-Kuskokwim River BBS, and ALMS should be conducted annually from present for a minimum of 25 years. Studies of demography and habitat requirements should begin as soon as possible and continue for a minimum of 5 years. NABBS work is underway in Alaska through cooperative interagency efforts and a network of volunteers. At this point the ALMS, demography, and nesting habitat studies are only partially funded; participants should include USGS, USFWS, NPS, BLM, DOD, State of Alaska, NGOs, private landowners, and universities.

**I. Recommended time frame for reviewing species status and trends**

Five-year intervals for review.

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## Aleutian and Bering Sea Islands Endemic Landbirds

### A. Species group description

All of these subspecies and species have extremely restricted ranges to a small number of islands within the Aleutian Islands, adjacent islands off the Alaska Peninsula, or Bering Sea Islands. We do not include subspecies that are widely distributed within this region such as Snow Bunting (*Plectrophenax nivalis townsendi*; Pribilof, Aleutian, and Shumagin islands) and Song Sparrow (*Melospiza melodia sanaka*; central Aleutians, Alaska Peninsula and adjacent islands) since their populations are not as threatened as the taxa included herein.

**Common names/Scientific names:** Systematics follow Gibson and Kessel (1997).

Rock Ptarmigan, *Lagopus mutus evermanni*, *L. m. townsendi*, *L. m. atkhensis*  
Winter Wren, *Troglodytes troglodytes meligerus*, *T. t. kiskensis*, *T. t. alascensis*, *T. t. semidiensis*  
Song Sparrow, *Melospiza melodia maxima*  
Gray-crowned Rosy-Finch, *Leucosticte tephrocotis tumbrina*  
McKay's Bunting, *Plectrophenax hyperboreus*

### B. Distribution and abundance

**Range:** Distributions described from (Gibson and Kessel 1997, and Gibson and Byrd [in prep.]).

State range comments:

Rock Ptarmigan

*Lagopus mutus evermanni*: Resident to Attu Island (reintroduced to Agattu in 2003).

*L. m. townsendi*: Resident to Rat Islands (Kiska to Amchitka)

*L. m. atkhensis*: Resident to Andreanof Islands (Tanaga to Atka, possibly Amlia).

Winter Wren

*Troglodytes troglodytes meligerus*: Resident to Near Islands (Attu and Agattu)

*T. t. kiskensis*: Resident from Rat Islands (Kiska) east to islands off Alaska Peninsula (Amak and Amagat).

*T. t. alascensis*: Resident to Pribilof Islands

*T. t. semidiensis*: Resident to Semidi Islands

Song Sparrow

*Melospiza melodia maxima*: Resident from the Andreanof Islands to the Near Islands (Attu to Atka, possibly Amlia) in the Aleutians.

Gray-crowned Rosy Finch

*Leucosticte tephrocotis tumbrina*: Breeds on Pribilofs and St. Matthew and Hall Islands. Resident on the Pribilof Islands.

McKay's Bunting

Breeds principally on St. Matthew and Hall Islands, potentially on St.

Lawrence and Pribilof Islands. Winters on the mainland along the Bering Sea coast, where it is considered a rare to uncommon migrant and visitant (Kessel and Gibson 1978) principally south of Norton Sound and north of Bristol Bay, including Nunivak Island. Casual winter visitant in the Aleutian Islands (Kessel and Gibson 1978).

**Abundance:**

Global abundance comments: Estimates from Rich et al. (2004) are likely inaccurate but are the only current estimates for these species.

Rock Ptarmigan: 8,200,000 individuals

Winter Wren: 36,000,000 individuals

Song Sparrow: 54,000,000 individuals

Gray-crowned Rosy Finch: 200,000 individuals

McKay's Bunting: 34,000 breeding individuals (S. M. Matsuoka unpublished data from 2003 survey).

State abundance comments: Numerical estimates of population size are not available for any of the subspecies below.

Rock Ptarmigan:

Aleutian subspecies are considered uncommon or fairly common residents and breeders throughout the Aleutians with density ranging from 0.14–0.30 prs./ha; however, does not occur on all islands (Gibson and Byrd, in prep.).

Winter Wren:

Aleutian subspecies (*T. t. meligerus* and *T. t. kiskensis*) considered uncommon residents and breeders throughout the Aleutians; however density varies considerably among islands (high at Buldir and Amchitka; low at Adak and Agattu; extirpated from Amchitka, presumably from rats; Gibson and Byrd, in prep). *T. t. alascensis* considered an uncommon to rare breeder on the Pribilof Islands (D.R. Ruthrauff, USGS, personal communication). No estimates the Semidi island subspecies (*T. t. semidiensis*).

Song Sparrow:

*M. m. maxima* considered uncommon to common residents and breeder (Gibson and Byrd, in prep.).

Gray-crowned Rosy Finch:

Unknown but likely less than 10,000 individuals (D.R. Ruthrauff, personal communication).

McKay's Bunting:

34,000 breeding individuals (S.M. Matsuoka unpublished data).

**Trends:**

Global trends:

Rock Ptarmigan, Gray-crowned Rosy Finch and McKay's Bunting:  
no estimates of trends available.

Winter Wren:

Abundance in North America increased from 1980 to 2003 (trend = 2.3%/year;  $P < 0.01$ ,  $n = 742$  routes; Sauer et al. 2004).

**Song Sparrow:**

Abundance in North America remained stable from 1980 to 2003 (Sauer et al. 2004).

**State trends:**

Statewide trends from NABBS that include many other subspecies estimate that both Winter Wrens (trend =  $-1.4\%/year$ ;  $P = 0.14$ ,  $n = 21$  routes) and Song Sparrows (trend =  $-1.4\%/year$ ,  $P = 0.44$ ,  $n = 31$  routes) have declined in abundance from 1980 to 2003 (Sauer et al. 2004). Statewide trends for Rock Ptarmigan, Gray-crowned Rosy Finch, and McKay's Bunting are unknown.

Introduced foxes have reduced population of Rock Ptarmigan on most of the Aleutian Islands and extirpated them from at least 6. Ptarmigan do increase in numbers following fox removal from islands; however, foxes have not been removed from all islands (Gibson and Byrd in prep). Subspecies of Winter Wrens and Song Sparrows endemic to the Aleutian Islands have been reduced in numbers from introduced foxes and rats. These subspecies have not responded dramatically to removals of foxes, presumably because of continued predation from rats (Gibson and Byrd in prep; V. Byrd, personal communication).

**C. Problems, issues, or concerns for species group**

These taxa have extremely small population sizes and ranges that are restricted to a small number of islands. Therefore they are particularly susceptible to extirpation from disease, disturbance, and introduced predators. Introduction of mammals, particularly rats and foxes, to islands in the region is the largest concern. On many of the Aleutian Islands, Rock Ptarmigan, Winter Wrens, and Song Sparrows have already been extirpated or reduced in numbers from such introductions (Gibson and Byrd in prep.). Unintended introductions of rats from shipping and fishing vessels are a continual high threat to populations even in areas with aggressive rat prevention programs (e.g., St. Paul Island).

**D. Location and condition of key or important habitat areas**

Habitats used by these subspecies are generally intact. On the Pribilof Islands, introduced reindeer are degrading habitats used by Winter Wrens and Gray-crowned Rosy Finches. Habitats used by McKay's Buntings on St. Matthew Island have also been degraded by introduced reindeer; however, these ungulates have been absent from the island since the early 1980s.

Contamination from military sites is a chronic issue throughout the Aleutian and Pribilof Islands, but its effects on populations of these birds is currently unknown. The primary factor that threatens this group of birds is introductions of mammalian predators, which have already greatly reduced and even eliminated populations from islands. The entire breeding ranges of these taxa are encompassed by the Alaska Maritime Wildlife Refuge.

Wintering and migration habitats for McKay's Buntings along coastal areas of western Alaska between Norton Sound and Bristol Bay are poorly known. Winter range for this

<p>species includes large conservation units (Yukon Delta and Togiak National Wildlife Refuges); however, many Native-owned land holdings that lie within the administrative boundaries of these areas may pose development threats such as wind energy development.</p>
<p><b>E. Concerns associated with key habitats</b></p> <p>See Section D.</p>
<p><b>F. Goal:</b> Ensure that Aleutian and Bering Sea endemic landbirds remain sustainable throughout their limited range within natural population-level variation and historical distribution across Alaska.</p>
<p><b>G. Conservation objectives and actions</b></p> <p><b>Objective 1:</b> On islands currently without introduced mammalian predators (i.e., foxes and rats) maintain species widely distributed across the current range and within the range of natural population cycles.</p> <p><b>Target:</b> Stable geographic breeding distribution and population trend. For McKay’s Bunting the target population size is the 2003 estimate of 34,000 breeding individuals (S.M. Matsuoka, unpublished data).</p> <p><b>Measure:</b> Population trend estimated from periodic surveys.</p> <p><b>Issue 1a:</b> <u>Introduction of foxes, rats, reindeer, and other introduced mammals are the primary threat for these birds.</u></p> <p><b>Conservation action:</b> Protect islands from introductions of foxes, rats, and reindeer.</p> <p><b>Issue 1b:</b> <u>Standardized surveys, such as the NABBS and ALMS, currently do not sample these islands with sufficient intensity to monitor these bird taxa. Many of these islands are remote and therefore logistically challenging and expensive to sample. Introductions of foxes and rats are a continual threat. Little is known about demographics of any of these taxa.</u></p> <p><b>Conservation action:</b> Design and implement surveys to measure breeding population size or an index of abundance periodically to estimate population trends. If surveys have already been conducted in key locations, they should be evaluated to determine if they provided a sound baseline of abundance or population size. If so, such surveys should be resampled periodically and potentially expanded so as to detect a 25% decline in population size over 10 years. If species are found to decline below 20% of current population size, investigate the causes of declines and develop remedial actions for both stabilizing populations and returning them to target levels.</p> <p><b>Issue 1c:</b> <u>Unlike the other avian taxa in this group, McKay’s Buntings are migratory, leaving breeding islands to winter on the mainland coast of the Bering Sea in Alaska. Once outside of the islands on which they breed, they are subjected to several additional potential threats. This further complicates the conservation of this species.</u></p>

**Conservation actions:**

- a) For McKay's Buntings, identify key migration and wintering habitats and threats to populations during the nonbreeding season. In particular, assess the threat of wind turbines in coastal communities to wintering and migrating birds.
- b) Conduct mark-recapture study during winter to estimate survival and recruitment. Use demographic information coupled with information from breeding studies on McKay's Buntings or similar species to develop population models to determine if deficits in adult survival, nesting success, or recruitment are most likely to cause populations to decline.

**Objective 2:** Increase population size on islands with introduced foxes and rats.

**Target:** Suspected population size prior to introduction of foxes and rats, or double current population size if such information is unavailable.

**Measure:** Population trend estimated from periodic surveys.

**Issue 2a:** Many of the islands with introduced foxes and rats are large and remote, making the removal of these exotic mammals extremely difficult and expensive.

**Conservation actions:**

- a) Remove or reduce in number introduced rats and foxes from selected Aleutian Islands.
- b) Maintain and potentially expand current program to control, eradicate, and prevent introductions of exotic mammalian predators.
- c) Use results from recently initiated tests to eradicate rats from selected Aleutian Islands to develop and implement a strategy for the widespread removal of rats from the island system.
- d) Measure the efficacy of exotic species management by monitoring numerical and possibly demographic responses of birds to control and eradication efforts.
- e) Reintroduce Rock Ptarmigan to islands from which they have been extirpated following control or removal of foxes.

**H. Plan and time frames for monitoring species and their habitats**

The USFWS' Alaska Maritime National Wildlife Refuge will be a key partner in managing this group of birds, particularly through prevention, control, and eradications programs for introduced mammalian predators, many of which are ongoing. The Yukon Delta and Togiak National Wildlife Refuges and Native villages on western Alaska coast and the State of Alaska for lands on the northern Alaska Peninsula will be important partners for studying and conserving McKay's Buntings on migration and wintering grounds.

**I. Recommended time frame for reviewing species status and trends**

Ten years unless monitoring suggests that population have fallen below target levels.

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## Smith's Longspur

### A. Species description

**Common name:** Smith's Longspur

**Scientific name:** *Calcarius pictus*

### B. Distribution and abundance

**Range:**

Global range comments:

Breeds from northern Alaska, northern Yukon Territory, and northern Mackenzie to southern Keewatin, northern Manitoba, and northern Ontario. Small disjunct population in extreme northwestern British Columbia and the uplands of southeastern-central Alaska. Breeding range incompletely known but assumed to encompass suitable habitat across the tree-line west of James Bay to Alaska.

Winter distribution limited to the southern great plains from Kansas and central Iowa south to Oklahoma, central Texas, and northwestern Louisiana east to Arkansas, Mississippi, Tennessee, and Alabama. High relative numbers of wintering birds in north-central and northeastern Oklahoma (Grzybowski 1982; Dunn and Dunn 1999).

State range comments: Found in 2 areas in Alaska: Brooks Range and northern foothills and uplands of southeastern-central Alaska. In the Brooks Range they are found as far west as the Noatak headwaters (Kessel and Gibson 1978), and north to the confluence of the Colville and Kogosukruk Rivers (Johnson and Herter 1989). Considered a fairly common breeder in the eastern Brooks Range, at least as far west as Anaktuvuk Pass. Confirmed or probable breeder in the Kongakut, Sheenjek, Hulahula, Canning, Atigun, Sagavanirktok, and Ribdon river valleys. Uncommon to rare breeder west of Anaktuvuk Pass. Rare breeder or probable breeder in Wrangell Mountains, along Denali highway, Mt. Fairplay area, Tanana-Yukon highlands and White Mountains (Kessel and Gibson 1978).

**Abundance:**

Global abundance comments: The total population size of Smith's Longspur is unknown, but breeding densities in suitable breeding habitat suggest it does not exceed 75,000 birds (Briskie 1993). Population size likely far less than this.

State abundance comments: Unknown.

**Trends:**

Global trends: Unknown.

State trends: Unknown.

### C. Problems, issues, or concerns for species

Small population size coupled with restricted breeding and winter distribution makes this species particularly susceptible to population decline. Smith's Longspur is not

currently monitored by any of the North America's avian monitoring programs (Rich et al. 2004). This species uses grasslands during winter in a limited portion of the southern Great Plains (Dunn and Dunn 1999), where land is primarily privately owned and heavily managed through grazing, burning, and frequent use of herbicides and pesticides. Breeding range in Alaska is incompletely known. Considered one of the more poorly studied birds in North America (Ehrlich et al. 1998). Factors controlling population size are unknown, although breeding success is strongly affected by predation levels and climatic conditions (Briskie 1993).

**D. Location and condition of key or important habitat areas**

Isolated breeding areas largely protect this species from direct human disturbance during part of the year. In northern Alaska in the Brooks Range, prefers moist tussock meadows in wide alpine valleys, often surrounding lakes. In central Alaska prefers dry ridgetop tundra (Kessel and Gibson 1978). Elsewhere found at treeline. May be found in low areas of tundra interspersed with spruce.

During winter this species is gregarious and can be one of the most common grassland birds in north-central and northeastern Oklahoma (Grzybowski 1982; Dunn and Dunn 1999), where it specializes in using specific heavily grazed fields of short grasses, mostly silver beardgrass (*Andropogon saccharoides*) interspersed with three awn grass (*Aristida* sp., Grzybowski 1980; Dunn and Dunn 1999). Favored fields appear to have some patches of tall grasses mixed among the patches of shorter grass typically used by birds foraging on the ground (Dunn and Dunn 1999). The species is commonly found near airports, pastures, and regularly cut hayfields, sometimes near lakes, streams, or damp areas (Briskie 1993; Dunn and Dunn 1999).

**E. Concerns associated with key habitats**

No immediate threats to breeding habitats used in Alaska. Some concerns in Alaska include:

- Changes in the distribution and condition of favored breeding habitat, such as drying of alpine meadows and advance of treeline, resulting from climate change.
- Accumulation of persistent organic pollutants a concern across breeding range.

Threat primarily on wintering grounds, where the species is concentrated within a small portion of the southern Great Plains where favored grasslands are heavily managed for agricultural uses.

**F. Goal:** Ensure Smith's Longspur populations remain sustainable throughout their range within natural population-level variation and historical distribution across Alaska.

**G. Conservation objectives and actions**

**State conservation and management needs:**

**Objective:** Maintain species widely distributed across the current range and at a level of abundance that is  $\pm 20\%$  of current population size in Alaska.

**Target:** Stable geographic breeding distribution and population trend in Alaska.

**Measure:** Distribution and population trend estimated from periodic surveys of breeding birds.

**Issue 1:** Low breeding densities, patchy distribution, and difficulty in surveying populations using existing broad-scale monitoring programs limits the ability to manage and conserve Alaska populations of this species (BPIF 1999). Monitoring surveys will likely need to be designed specifically for this species to overcome these obstacles. General lack of specific information on the breeding distribution and habitat associations in Alaska severely hampers the ability to design effective surveys for this species.

**Conservation actions:**

- a) A high priority is to extend the systematic-random inventory of montane-nesting birds conducted in the Brooks Range (R.E. Gill, Jr., unpublished data) eastward into the Arctic National Wildlife Refuge. This would be an important inventory to enumerate population size in northern Alaska and identify important geographic locations and habitats for this species in Alaska. This survey should be completed by 2006 so as to be directly comparable to similar data already collected in the western Brooks Range (R.E. Gill, Jr., unpublished data).
- b) Once these surveys are completed, conduct a thorough evaluation of the breeding distribution and habitat use of this species in Alaska based on the Brooks Range inventory, information from Kessel and Gibson (1978), and other standardized surveys conducted as part of the NABBS, Alaska Off-road Breeding Bird Survey (Handel 2000), ALMS, and other intensive inventories of birds (Swanson and Nigro 2003) within the species breeding range. Observations of Smith's Longspurs from these surveys should be examined to assess the relative importance of different geographic areas and habitats in supporting breeding population of this species, with the results used to develop objectives for conserving breeding areas for this species.
- c) Develop methods for monitoring changes in population size either through intensive local studies in areas with predictable concentrations, or through extensive surveys of key habitats across representative parts of the breeding range in Alaska (i.e., eastern Brooks Range). Information on distribution and habitat use will undoubtedly help the design of such surveys. Consider resampling existing surveys (i.e., eastern Brooks Range) when appropriate.
- d) Conduct demographic studies in areas with high concentrations of this species to collect baseline information on annual survival and reproductive success and identify factors affecting reproduction. Compare such information to similar data collected from breeding populations in Churchill and possibly use data from both Churchill and Alaska to model how deficits in survival, reproduction, or recruitment are likely to effect rates of population growth.

**Issue 2:** Potential accumulation of persistent organic pollutants a concern across breeding range.

**Conservation action:** Conduct assessment of exposure to persistent organic pollutants in breeding range.

**Global conservation and management needs:**

**Objective:** Maintain the species widely distributed across the global breeding and wintering range at population sizes within the range of natural cycles.

**Target:** Stable geographic breeding distribution and population trend.

**Measure:** Distribution and population trend estimated from periodic surveys of breeding and/or wintering birds.

**Issue 1:** Current surveys of birds on wintering areas may already be monitoring population trends for this species. However, these data have not been sufficiently evaluated.

**Conservation actions:**

- a) Evaluate data from the CBC to determine if this survey is already adequate for monitoring changes in distribution and population size of Smith's Longspurs on wintering grounds. Data from this survey already go back continuously to the early 1950s, so this survey may already be tracking gross changes in population size.
- b) Develop and test winter surveys for monitoring changes in population size if the CBC is proven inadequate in monitoring trends.

**Issue 2:** Species has small population size and occurs both in the United States and Canada.

**Conservation actions:**

- a) Improve communication among Alaskan and Canadian biologists, conservationists, land managers, and policymakers and develop long-term plans for the conservation of this species across its limited range.
- b) A priority within this should be to conduct literature reviews or studies to assess threats to birds across entire breeding and nonbreeding range. An assessment of threats on the wintering range should be undertaken first as distribution is limited to areas that are intensively managed.

**Issue 3:** Species has extremely limited wintering range in the southern Great Plain centered in Oklahoma. This area is heavily managed for livestock and agriculture, with much land under private ownership.

**Conservation actions:**

- a) Increase the amount of grassland area in preserves in key wintering areas.
- b) Encourage the development of land management policies and practices in wintering areas that protect and enhance habitats for Smith's Longspurs, particularly on private lands.

**H. Plan and time frames for monitoring species and their habitats**

Surveys in Alaska should be coordinated between key conservation units (i.e., USFWS' Arctic National Wildlife Refuge, NPS' Central and Northern Park complexes), appropriate research (i.e., USGS' Alaska Science Center) and conservation (i.e., USFWS' Migratory Bird Management) agencies.

Rangewide conservation of this species will need to be coordinated among several federal, provincial, state, and nongovernmental agencies; notably the USFWS (Regions 2, 3, 4, 6, 7), the Canadian Wildlife Service, USGS, Fish and Game (Alaska, Arkansas, Kansas, Oklahoma, Texas), and appropriate universities and nongovernmental agencies (Bird Studies Canada, Boreal Songbird Initiative, Sutton Avian Research Center). Evaluations of trend data from the CBC may include National Audubon Society and the USGS' Patuxent Wildlife Research Center among others.

**I. Recommended time frame for reviewing species status and trends**

Ten years unless evaluation of distribution in Alaska or estimates of population trend from the CBC or other surveys suggest populations may be in decline.

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