BROWN CREEPER

TAXONOMY

Photo credit: © Stephen Dowlan

Scientific name: *Certhia americana* Bonaparte, 1838
Common name: Brown Creeper
Family: Certhiidae
Taxonomic comments: Formerly regarded as conspecific with Eurasian Treecreeper *C. familiaris*; however, may be more closely related to the Short-toed Treecreeper *C. brachydactyla* (AOU 1998).

Up to thirteen subspecies are recognized, two of which are found within Alaska: *C. a. alascensis* in southcentral and southcoastal Alaska and *C. a. occidentalis* in southeastern Alaska (Webster 1986, Harrap and Quinn 1995, Gibson and Kessel 1997, Hejl et al. 2002).

DESCRIPTION

Basic description: Small, bark-gleaning songbird.

General description:
A tree-climbing passerine that is easily overlooked due to its very small size and cryptic plumage. Adults are dark brown above with extensive dull white streaking on head, back, scapulars, and wings, becoming tawny on the rump and upper tail. Sides of the head are typically brown with a prominent whitish eyebrow line. Underparts are generally white; tail is long and stiff, used as a prop. Juveniles similar to adults but with duller underparts and pale streaking and spotting. Plumage is similar throughout the year (Hejl et al. 2002).

C. a. alascensis has white underparts and buff-tinged under tail coverts. Upperparts are pale grayish brown (paler and grayer than *C. a. montana* with more numerous white streaks); *C. a. occidentalis* has white underparts, narrowly streaked buff upperparts much browner than *alascensis*, a cinnamon rump, and a long bill (Webster 1986, Harrap and Quinn 1995, Hejl et al. 2002).
Length (cm): 13
Weight (g): 8

Reproduction:
Lays 4–8 eggs (usually 5 or 6; Bent 1948, Davis 1978). Incubation begins once the entire clutch is laid; lasts 14 to 17 days (Davis 1978). Young fledge in 15 to 16 days, and are fed by both parents for approximately 2 more weeks.

Davis (1978) found that 58% of nests with at least one egg or nestling succeeded in fledging young (n = 19). Survival rates, calculated from a total of 94 eggs laid were 60%

from laying to hatching, and 94% from hatching to fledging, or 52% overall (from laying to fledging).

Ecology:
Few known predators. One incidence of a creeper chased (but not captured) by a Northern Shrike (*Lanius excubitor*) is recounted in Bent (1948). Creepers are known to respond defensively to the scream of a hawk (Bent 1948, Davis 1978).

Breeding: Territories ranged from 2.3 to 6.4 ha in Michigan (Davis 1978). Rough approximations of density, calculated from maps of nest locations at study sites in Davis (1978) yielded these figures for three study sites: 2 ha per pair and 1.5 ha per pair for 2 areas of swamp forest habitat; 5.6 ha per pair in a more upland site. In the latter area, nests were close to streams, so that the amount of suitable habitat may have been smaller than the overall study site, and 5.6 ha per pair may have be overestimated by the inclusion of unsuitable habitat away from streams.

Non-breeding: Bent (1948) reported that creepers are mostly solitary, but there have been reports of communal roosting and huddling in winter. Fledglings roost in a characteristic huddle (Davis 1978, Ryser 1985). Moving mixed-species flocks were reported in winter in Louisiana and Maryland and in summer in Maine (Morse 1970). In Louisiana, individuals were almost always observed in mixed-species flocks in winter (Morse 1970).

Migration:
South of a line from southeastern British Columbia, North Dakota, Minnesota, Ontario, and Nova Scotia, this species is a year-round resident and does not migrate. In the mountains of the west, Brown Creepers undertake seasonal altitudinal migrations, moving down into the foothills and valleys during winter (Ryser 1985). In the vicinity of Bozeman, Montana, altitudinal movements typically occur from February 20 to April 20 and from September 10 to October 30.

Food:
Eats mainly insects and other invertebrates, including immature stages, obtained from bark of tree trunks and branches; also eats some nuts and seeds (Terres 1980). Creepers feed by gleaning arthropods from the surface and crevices of tree bark. Individuals feed primarily on the main trunk of trees, moving from bottom to top, almost invariably forward and upward, and then flying to a low point on the next tree when branch density begins to restrict their movement (Willson 1970). Willson (1970) found that Brown Creepers in southern Illinois had highly specialized feeding behavior. Among a group of 6 bird species gleaning on insects from tree trunks or branches, creepers were the most specialized in terms of tree structure in both winter and spring. While they favored oaks and maples in winter and hackberries in spring, they also used several other tree species fairly equally in spring (i.e. they were less fussy about tree species in spring; Willson 1970).

Habitat:

Global habitat:

Preferred habitat includes forest, woodlands, forested floodplains and swamps. Scrub and parkland are also used in winter and during migration. Most often found in coniferous and mixed forests. A study by Franzreb (1985) describes Brown Creeper habitat in Arizona as mixed-coniferous forest dominated by Douglas fir, ponderosa pine and southwestern white pine. Within this habitat, birds selected the largest (tallest) trees most often for foraging. Hejl (pers. comm.) reported finding larger numbers in western red-cedar stands than in the Douglas fir-ponderosa pine stands during 1992 field work.

In the eastern U.S. south of the northern conifer zone, populations occur regularly in forested floodplains, and sometimes swamps. Hamas (pers. comm.) suggested that floodplain forests may be important habitat in Michigan. Davis (1978) studied populations in Michigan in two different forest types, and found that all nests were in dead trees and near water. Because a component of dead trees is essential for nesting, Brown Creepers are often associated with older forests. Hejl and Woods (1991) found them in old growth forests (200+ yr), but not in rotation-aged (80 to 120 yr) Douglas-fir/ponderosa pine stands in western Montana and adjacent Idaho.

Temporary positive impacts have been created by Dutch elm and other forest diseases, and by artificial flooding in forested areas. Both diseases and flooding leave standing dead wood and create large numbers of optimal nesting sites. An increase in creeper abundance has been reported in such situations (Bent 1948, Davis 1978, Nicholson pers. comm.), suggesting a certain degree of opportunism; however, habitat suitability is temporary.

Nests usually constructed behind loose slab of bark still attached to living or dead tree, average of 1.5-5 m above ground (Harrison 1979, Hejl et al. 2002). Occasionally in knot holes when loose bark is not available (Bent 1948). Bent (1948) noted that nests were often under the only remaining piece of bark on a dead tree. Davis (1978) found that tree canopy was partially open at each nest site in Michigan.

State habitat:

Breeding: Mainly associated with mid-successional to mature and old growth coniferous and deciduous forests (Kessler and Kogut 1985, Dellasala et al. 1996, Hejl et al. 2002). Rarely observed in logged habitats (Dellasala et al. 1992 in Pogson et al. 1997). Brown Creepers were 50 times more abundant in high volume old growth than low volume plots on Admiralty Island, in Southeast Alaska (Hughes 1985). Dead trees are an essential component of nesting habitat.

In interior Alaska, occurs in upland white spruce (*Picea glauca*) and mixed white spruce-birch (*Betula papyrifera*) forests (Spindler and Kessel 1980) and in cottonwood (*Populus balsamifera)* and mixed white spruce-birch forests (Kessel 1998). In Prince William Sound, found primarily in hemlock (*Tsuga* spp.)-Sitka spruce (*Picea sitchensis*) and mixed deciduous spruce woodlands (Isleib and Kessel 1973). In the Chugach Mountains of the Kenai Peninsula in southcoastal Alaska, the species occurred in forest stands over

100 years old and in a 10-year-old burn area; Brown Creepers were twice as abundant in the older stands (Quinlan 1979). In a study of island habitats in Southeast Alaska, creepers were found only in old growth habitats near saltwater, and were generally uncommon in that habitat (Kessler and Kogut 1985); on the mainland they were uncommon in spruce/hemlock forests (Gibson and MacDonald 1975 in Pogson et al. 1997).

Non-breeding: Generally the same as breeding habitat, but in a wider variety of wooded habitats (e.g., more deciduous forests; Hejl et al. 2002). The high densities of creepers found in high-volume old growth forests in Southeast Alaska in winter suggests these habitats may be important wintering areas for migrants from farther north (Hughes 1985, Dellasala et al. 1996, Pogson et al. 1997).

Foraging: Feeds primarily on the trunks of live trees. Selects large old growth trees for foraging, presumably because there is more food on the bark of larger, older trees which often have more deeply furrowed bark (Pogson et al. 1997, Hejl et al. 2002).

STATUS

Global rank: G5 (02Dec1996)
Global rank reasons:
Widespread, reasonably common, and demonstrably secure in many areas of North America; likely to be missed in standard surveys, and so may be underestimated in some counts; not particularly threatened globally at present.

State rank: S4 (27Jun2006)
State rank reasons:
A common, but inconspicuous bird that is likely missed in standard surveys. Widespread but at apparently low densities in southcoastal, southcentral, and southeast Alaska. Statewide population estimate about 350,000 birds; considered stable. Strongly associated with old growth and mature coniferous forest habitat and is sensitive to natural and man-made forest degradation and fragmentation.

DISTRIBUTION AND ABUNDANCE

Range:
Global range:
Breeding: Southcentral Alaska across Canada to southcentral Quebec and Newfoundland; south to southern California, southern Nevada, central and southeastern Arizona; in the mountains of Middle America through Mexico, Guatemala, and Honduras to north-central Nicaragua; to western Texas, southeastern Nebraska, southern Iowa, southeastern Missouri, southern Illinois, southern Michigan, southern Ontario, central Ohio, West Virginia; in the Appalachians to western North Carolina and eastern Tennessee; and to lowlands of Virginia, Maryland, and Delaware (AOU 1998).

Non-breeding: Southern coastal Alaska and southern Canada generally south throughout breeding range, except higher latitudes and elevations, to southern Texas, Gulf Coast, and northern Florida; in lowlands of western United States and northern Mexico (AOU 1998).

Resident: Queen Charlotte Islands and in mountains from southeastern Arizona and southwest New Mexico south to Nicaragua (AOU 1998).

State range:
Breeding: Southcentral, southcoastal, and southeastern Alaska south.

Subspecies *C. a. alascensis* breeds along the southern coast of Alaska from Tyonek in Cook Inlet, Kodiak Island and Kenai Peninsula east across Southcentral Alaska to Prince William Sound and Yakutat (Gabrielson and Lincoln 1959, Quinlan 1979, Webster 1986, Harrap and Quinn 1995, Igl 1996, Collins et al. 1999). Casual inland except for a very local population near Fairbanks in the Upper Tanana River Valley (Tobish 1998, Hannah et al. 2003, Rozell 2003, Walker 2004).

Subspecies *C. a. occidentalis* occurs throughout the Alexander Archipelago and the adjacent mainland in Southeast Alaska (Gabrielson and Lincoln 1959, Hejl et al. 2002).

Non-breeding:
Subspecies *alascensis* is an uncommon year-round resident throughout Cook Inlet and Prince William Sound (Gabrielson and Lincoln 1959, Isleib and Kessel 1973, Igl 1996). Numbers increase in winter in the Prince William Sound region due to migration or a winter influx, specifically in the Copper River Delta and Resurrection Bay (Isleib and Kessel 1973). Recently, part of the *alascensis* population has been observed wintering within its breeding range in central Alaska (Pogson et al. 1997).

C. a. occidentalis individuals breeding in Southeast Alaska are probably permanent residents with little movement out of the area in winter (Phillips 1986 in Pogson et al. 1997). Hughes (1985) and Dellasala et al. (1996) found high densities of Brown Creepers during winter in high-volume old growth forests on Prince of Wales and Admiralty Islands.

Abundance:
Global abundance:
Global population estimated at 5,400,000 individuals (Rich et al. 2004). Over 16,000 pairs were estimated in a small portion of Ontario alone.

State abundance:
Statewide population estimated at 350,000 (6% of global population), although this estimate is likely inaccurate (Rosenberg 2004). The relative abundance for Alaska BBS routes combined was .55 birds per route (bpr) (n=14; Sauer et al. 2005a). In 1997, Pogson et al. (1997) reported that highest regional abundances were in Southeast Alaska (1.2 bpr) followed by southcoastal (1.0 bpr) and southwestern (0.2 bpr) regions. This

species was not detected in central or western Alaska surveys, and there are no Breeding Bird Survey (BBS) routes in northern Alaska (Pogson et al. 1997).

Results from Off-Road Breeding Bird Surveys (ORBBS) also indicate relatively low abundance throughout areas surveyed in Alaska (Handel et al. 1998). The ORBBS measures the average number of birds per 12 points. Results from the ORBBS in 1998 were: 2.0 in Denali National Park and Preserve, 0.2 – 1.2 in Anchorage, 0.68 at St. Lazaria (Alaska Maritime National Wildlife Refuge), 0.5 in Klondike Gold Rush National Historic Park, 0.33 – 5.0 near Hoonah in the Tongass National Forest (NF), and 0.33 – 1.5 near Juneau in the Tongass NF (Handel et al. 1998). Relative abundance for 2000–2002 at Bonanza Creek near Fairbanks, was 0.028 pairs/point (n = 24 points; Rozell 2003); on Admiralty Island, winter densities were 15 birds/40.5 ha (Hughes 1985).

Trends:

Global trend:

Assessment of rangewide population trends is difficult because this species is recorded infrequently in standard surveys (e.g., BBS); individuals are easily missed, and the species typically occurs at fairly low densities. BBS data for 1966-2004 indicate a basically stable population in North America (nonsignificant increase averaging 0.4 % per year) and stable or decreasing trend throughout the U.S. (-0.6 %/year, $P<0.34$, n=482; Sauer et al. 2005b). On the smaller scale of statewide surveys, some trends have been apparent, but they have been few, scattered, and apparently short-lived; statewide trends range from an increase in South Dakota (41.8 %/year, $P<0.14$, n=5, 1966-2004) to a decrease in Idaho (-7.4 %/year, $P<0.48$, n=12, 1980-2004; Sauer et al. 2005b). These data should be viewed with caution since the number of birds per route was less than 1.0 in most cases. The BBS data suggests that populations may be quite variable, and that more studies on population dynamics are needed before BBS data can be reliably interpreted.

Canada-wide BBS data suggest Brown Creeper populations have increased nationwide by approximately 5.2 % ($P<0.03$, n=108) between 1966 and 2004 (Sauer et al. 2005b), although observations at several migration monitoring stations in northern Canada show declines (Bird Studies Canada 2000 in ASRD 2003). Trend information is sparse across North America in general.

The species takes advantage of major tree die-offs, recently flooded areas, and disease-killed stands. Movement into such areas temporarily inflates local populations.

State trend:

Between 1980 and 2004, BBS surveys indicated a non-significant increase in Alaska of 20.8 % annually ($P<0.16$, n=14; Sauer et al. 2005a). Due to the species' low detectability in standard BBS surveys, information on population trends is generally considered limited and likely inaccurate.

EXISTING PROTECTION

Global protection:
Habitat protected in national and state wildlife refuges and parks.

State protection:
Habitat is protected where species occurs in state and national parks, national monuments, and national wildlife refuges. In Southeast Alaska, Brown Creepers occur in Admiralty Island National Monument (NM), Misty Fjords NM, Glacier Bay National Park and Preserve (NPP), and several federally designated wilderness areas within the Tongass National Forest (Dellasala et al. 1999). In central Alaska, they are year-round residents within Kanuti and Tetlin National Wildlife Refuges (NWR). In southcoastal Alaska, they occur within Kenai NWR, Kenai Fjords NPP, Wrangell-St. Elias NPP, Kodiak NWR, and Alaska Maritime NWR (Igl 1996).

CHALLENGES

Global challenges:
Locally threatened by loss of forested wetlands and floodplain forest (Herkert, pers. comm.), forest fragmentation (Keller and Anderson 1992), and forest management practices that eliminate dead trees. Species is apparently area-sensitive (i.e. requires large blocks of habitat), and is intolerant of heavy logging or thinning. Nest failures have been caused by alteration of the nest site by wind or rain, predation, human disturbance, and in one case, brood parasitism by a cowbird (Davis 1978).

State challenges:
Habitat degradation: Species is sensitive to loss and fragmentation of mature coniferous forest as a result of timber and salvage harvest and associated road construction (Hejl et al. 2002). Brown Creepers are rarely observed in logged habitats (Dellasalla et al. 1992 in Pogson et al. 1997, Hejl et al. 2002); forest thinning has been shown to significantly reduce their numbers (Hayes et al. 2003) and recently harvested and early successional regenerating forests do not support them (Hejl et al. 2002). In the boreal forest the species is associated with mature white spruce or mixed white spruce-paper birch forests for breeding. Decreases in density have been noted following removal of large trees by fires, bark beetle epidemics and associated salvage logging (Quinlan 1978, Spindler and Kessel 1980, Collins et al. 1999, Hobson and Schiek 1999, Lance and Howell 2000). Even partial cutting has resulted in dramatic decreases in abundance in both the boreal forests of western Canada (Norton and Hannon 1997) and coastal forests of the Pacific Northwest (Chambers and McComb 1997, Hayes et al. 2003).

Clear-cutting of old growth forests in Southeast Alaska has occurred since the early 1950s (McClellan et al. 2000). Approximately 10 % of high-volume, old growth remains in the Tongass National Forest, and much of this is scheduled for harvesting (Dellasala et al. 1999). Forests on Prince of Wales, Heceta, northeast Chichagof, Kupreanof, and Kuiu islands are particularly degraded from extensive clearcut logging (Dellasala et al. 1999).

Similarly, large tracts of state and private land on the Kenai Peninsula are highly degraded due to salvage logging.

In Southcentral Alaska, a rapid loss of large spruce trees has resulted from spruce beetle (*Dendroctonus rufipennis*) infestations. Spruce trees on about 3 million acres of mature forest have been killed; in Kachemak Bay beetle infestation has caused upwards of 90% mortality of coastal old-growth stands (Kuletz 1997). Birds associated with mature white spruce and mature mixed spruce/birch forests in Alaska's boreal forests decreased in density following removal of large trees from outbreaks of bark beetles and associated salvage logging (Collins et al. 1999, Lance and Howell 2000, Matsuoka et al. 2001).

Forest Fires: Forest management practices that mimic natural wildfire with controlled burns could adversely affect the species due to their strong association with mature old growth forest (Quinlan 1979). Although early successional stages immediately following wildfires may provide suitable habitat for Brown Creepers, mid-succession forests do not (Hejl et al. 2002). Salvage logging, even partial logging of early post-fire forests, decreases nesting habitat suitability (Hobson and Schieck 1999, Hejl et al. 2002). On the Kenai Peninsula, creepers were present in newly burned forests, but absent in 20- and 40-year-old burns when bark on dead trees was no longer available for nesting (Quinlan 1978).

Climate change: Climate change may have large-scale effects on Alaska's forests. Warming trends have favored reproduction of spruce beetles and larch sawflies (*Pristiphora erichsonii*), leading to unprecedented outbreaks in the last decade (ADFG 2005).

RESEARCH AND INVENTORY NEEDS

Global research needs:
The degree to which this species is affected by timber-harvesting practices and forest fragmentation is uncertain; need to determine response to various forest management practices. Identify size of tract necessary to attract a breeding pair and size of area required to maintain viable sub-populations, metapopulations, etc. Determine relationship between demographic parameters (nesting success, survivorship, and dispersal) and habitat or management treatments. Information also needed on breeding biology, taxonomic relationship to Eurasian (*C. familiaris*) and Short-toed Treecreepers (*C. brachydactyla)* and validity of subspecies, geographic variation in vocalizations, and the effectiveness of current methods for sexing and aging (Hejl et al. 2002).

State research needs:
Research is needed to determine forest habitat characteristics preferred by this species in Alaska. A separate assessment of habitat use in Southeast and Southcoastal Alaska is probably necessary because different habitats are used in each region (Pogson et al. 1997). The degree to which this species is affected by timber-harvesting practices and forest fragmentation is uncertain; determine response to various forest management

practices. Determine size of tract necessary to attract a breeding pair and size of area required to maintain viable sub-populations, metapopulations, etc.

Global inventory needs:
Monitoring is needed across the range; effort should focus on occupied areas that are subject to intense logging or in areas where populations have declined or are expected to decline. Surveys specific to this species are needed because the BBS is not very effective for this elusive, low-density species. Brown Creepers are perhaps best monitored in conjunction with research on neotropical migrants because they co-occur in mixed flocks during migration.

State inventory needs:
Due to the species' cryptic plumage and high-pitched call, it may not be adequately monitored by existing survey programs (i.e. BBS, ORBBS, and Alaska Landbird Monitoring System, or ALMs). Abundance and trend information is likely inadequate and distribution information is limited. Additional routes (to the BBS and ALMS) and additional methods specific to this inconspicuous species (i.e. off-road point count or mist-netting) are needed within the range of both subspecies (Pogson et al. 1997). Determine if summering birds are residents and what proportion of wintering birds are migrants (Pogson et al. 1997).

CONSERVATION AND MANAGEMENT NEEDS

Global conservation and management needs:
Promote policies that protect old growth on public forested lands and maintain standing deadwood over large areas of forested land. The effects of management on wintering habitat are virtually unknown, and need study. Management research needs to include determination of the appropriate size for a preserve, investigation of the effects of forest management practices in different forest types, and knowledge of population dynamics.

State conservation and management needs:
Forest management practices are likely to have the greatest effect on Brown Creeper populations in the near future. Retaining contiguous, unfragmented areas of unlogged, mature and old growth forests will provide optimum creeper habitat (Schoen et al. 1988). Allowing regrowth of harvested forests and actively restoring old growth forests may also be beneficial (Hejl et al. 2002). Hejl et al. (2002) recommend silviculture treatments that retain large snags and live trees (dbh >40 cm) within live forests and within forests with high tree mortality resulting from natural disturbances. Second-growth stands may provide suitable creeper habitat if old growth structural characteristics are present at high enough density; this idea should be tested. Forest management plans that specify the removal of old growth over large acreages but leave nest snags will not necessarily promote breeding activity; nest cavities will remain unused without surrounding wintering habitat (Hughes 1985).

LITERATURE CITED

Alaska Department of Fish and Game (ADFG). 2005. Our wealth maintained: a strategy for conserving Alaska's diverse wildlife and fish resources. A Comprehensive Wildlife Conservation Strategy emphasizing Alaska's nongame species. Submitted to the U.S. Fish and Wildlife Service, Anchorage, AK.

Alberta Sustainable Resource Development (ASRD). 2003. Status of the Brown Creeper (*Certhia americana*) in Alberta. Alberta Sustainable Resource Development, Fish and Wildlife Division, and Alberta Conservation Association, Wildlife Status Report No. 49, Edmonton, AB. 30 pp.

American Ornithologists' Union (AOU). 1998. Check-list of North American birds. Seventh edition. American Ornithologists' Union, Washington, D.C. 829 pp.

Bent, A.C. 1948. Life histories of North American nuthatches, wrens, thrashers, and their allies. U.S. National Museum Bulletin 195. Washington, D.C.

Chambers, C. L. and W. C. McComb. 1997. Effects of silviculture treatments on wintering bird communities in the Oregon Coast Range. Northwest Science 71:298-304.

Collins, W. B., D. Williams, and T. Trapp. 1999. Spruce beetles' effects on wildlife. Federal Aid in Wildlife Restoration Research Progress Report. Alaska Department of Fish and Game (ADFG) Division of Wildlife Management. Grant W-27-1 Study 1.53.

Davis, C. M. 1978. A nesting study of the brown creeper. Living Bird 17:237-63.

Dellasala, D. A., J. C. Hagar, K. A. Engel, W. C. McComb, R. L. Fairbanks, and E. G. Campbell. 1996. Effects of silviculture modifications of temperate rainforest on breeding and wintering bird communities, Prince of Wales Island, Southeast Alaska. Condor 98:706-721.

Dellasala, D., L. Craighead, and R. Hagenstein. 1999. Northern Pacific Coastal Forest. Pp. 199-203 in: Ricketts, T.H. et al. (Eds.). Terrestrial Ecoregions of North America: a conservation assessment. World Wildlife Fund-U.S. and Canada.

Franzreb, K. E. 1985. Foraging ecology of brown creepers in a mixed-coniferous forest. Journal of Field Ornithology 56:9-16.

Gabrielson, I.N. and F.C. Lincoln. 1959. The birds of Alaska. The Stackpole Company, Harrisburg, PA and Wildl. Manage. Inst., Washington, D.C. 922 pp.

Gibson, D. B. and B. Kessel. 1997. Inventory of the species and subspecies of Alaska birds. Western Birds 28:45-95.

Handel, C. M., S. M. Matsuoka, and D. C. Douglas. 1998. The Alaska Landbird Resources Information System, Version 98.1. USGS Alaska Biological Science Center, Anchorage, AK. Available online at: http://www.absc.usgs.gov/research/bpif/bpif.html. Accessed 16Mar2005.

Hannah, K. C., A. R. Ajmi, and T. R. Walker. 2003. Distribution and abundance of landbirds in the Tanana Valley State Forest, Alaska, 2002-2003. Unpublished Report. Alaska Bird Observatory, Fairbanks, AK.

Harrap, S. and D. Quinn. 1995. Chickadees, tits, nuthatches, and treecreepers. Princeton University Press, Princeton, NJ.

Harrison, H. H. 1979. A field guide to western birds' nests. Houghton Mifflin Company, Boston, MA. 279 pp.

Hayes, J. P., J. M. Weikel, and M. P. Huso. 2003. Response of birds to thinning young Douglas-fir forests. Ecological Applications 13:1222-1232.

Hejl, S.J., and R.E. Woods. 1991. Bird assemblages in old-growth and rotation-aged Douglas-fir/ponderosa pine stands in the northern Rocky Mountains: a preliminary assessment. In: Baumgartner, D.M. and J.E. Lotan (Eds.). Interior Douglas-fir: the species and its management. Proceedings of Symposium held Feb. 27-Mar. 1, 1990 in Spokane, WA. Dept. Natural Res. Sci., Washington State University, Pullman, WA.

Hejl, S. J., K. R. Newlon, M. E. McFadzen, J. S. Young, and C. K. Ghalambor. 2002. Brown Creeper (*Certhia americana*). In: The birds of North America, No 669 (A. Poole and F. Gill, Eds.). The Birds of North America, Inc., Philadelphia, PA. 32 pp.

Hobson, K. A. and J. Schiek. 1999. Changes in bird communities in boreal mixed wood forest: harvest and wildfire effects over 30 years. Ecological Applications 9:849-863.

Hughes, J.H. 1985. Characteristics of standing dead trees in old-growth forests on Admiralty Island, Alaska. M.S. thesis. Washington State University, Pullman, WA. 103 pp.

Igl, L.D. 1996. Bird Checklists of the United States. Jamestown, ND: Northern Prairie Wildlife Research Center. Available online at: http://www.npwrc.usgs.gov/resource/birds/chekbird/chekbird.htm. Version 12May03. Accessed 20Feb2005.

Isleib, M.E., and B. Kessel. 1973. Birds of the north Gulf Coast-Prince William Sound region, Alaska. Biological Papers of the Univ. of Alaska 14. University of Alaska, Fairbanks, AK. 149 pp.

Keller, M. E., and S. H. Anderson. 1992. Avian use of habitat configurations created by forest cutting in southeastern Wyoming. Condor 94:55-65.

Kessel, B. 1998. Habitat characteristics of some passerine birds in western North American taiga. University of Alaska Press. Fairbanks, AK.

Kessler, W.B., and T.E. Kogut. 1985. Habitat orientations of forest birds in southeastern Alaska. Northwest Science 59:58-65.

Kuletz, K.J. 1997. Spruce beetle: a serious threat to marbled murrelets in Alaska? Pacific Seabirds 24:28.

Lance, E.W. and S. Howell. 2000. Survey of songbirds during a spruce beetle (*Dendroctonus rufipennis*) outbreak on the Kenai Peninsula, Alaska. Northwestern Naturalist 81:1-10.

Matsuoka, S. M., C. M. Handel, and D. R. Ruthrauff. 2001. Densities of breeding birds and changes in vegetation in an Alaska boreal forest following a massive disturbance by spruce beetles. Canadian Journal of Zoology 79:1678-1690.

McClellan, M. H., D. N. Swanston, P. E. Hennon, R. L. Deal, T. L De Santo, and M. S. Wipfli. 2000. Alternatives to clearcutting in the old-growth forests of Southeast Alaska: study plan and establishment report. USDA Forest Service. General Technical Report PNW-GTR-494.

Morse, D. H. 1970. Ecological aspects of some mixed-species foraging flocks of birds. Ecological Monographs 40:119-168.

Norton, M. R. and S. J. Hannon. 1997. Songbird response to partial-cut logging in the boreal mixed wood forest of Alberta. Can. J. For. Res. 27: 44-53.

Pogson, T. H., S. E. Quinlan, and B. Lehnhausen.1997. A Manual of Selected Neotropical Migrant Birds of Alaska National Forests. Compiled and edited by: Ellen Campbell, Project Leader and Nancy Andison, Editor. USDA Forest Service, Juneau, AK.

Quinlan, S. E. 1978. Bird communities and white spruce succession on the Kenai Peninsula, Alaska. Unpublished report, Chugach National Forest, Seward, AK.

Quinlan, S. E. 1979. Effects of controlled burning and succession of white spruce forests on breeding bird communities, Kenai Peninsula, Alaska. Unpublished report, Chugach National Forest, Seward, AK. 55 pp.

Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Iñigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosenberg, C. M. Rustay, J. S. Wendt, and T. C. Will. 2004. Partners in Flight North American

Landbird Conservation Plan. Cornell Lab of Ornithology. Ithaca, NY. Partners in Flight website. http://www.partnersinflight.org/cont_plan. (March 2005).

Rosenberg, K.V. 2004. Draft Partners in Flight continental priorities and objectives defined at the state and bird conservation region levels. Unpublished report. Cornell Lab of Ornithology, Ithaca, NY.

Rozell, K. B. 2003. Effects of military overflights on nesting neotropical migrant birds. Alaska Bird Observatory, Fairbanks, AK.

Ryser, F.A. 1985. Birds of the Great Basin: a natural history. University of Nevada Press, Reno, NV.

Sauer, J.R., J.E. Hines, and J. Fallon, 2005a. The North American breeding bird survey, results and analysis 1966-2005. Version 6.2.2006. USGS Patuxent Wildlife Research Center, Laurel, MD.

Sauer, J.R., J.E. Hines, and J. Fallon, 2005b. The North American breeding bird survey, results and analysis 1966-2004. Version 2005.2. USGS Patuxent Wildlife Research Center, Laurel, MD.

Schoen, J.W., M.D. Kirchhoff and J.H. Hughes. 1988. Wildlife and old-growth forests in southeastern Alaska. Nat. Areas J. 8:138-145.

Spindler, M.A., and B. Kessel. 1980. Avian populations and habitat use in interior Alaska taiga. Syesis 13:61-104.

Terres, J. K. 1980. The Audubon Society encyclopedia of North American birds. Alfred A. Knopf, New York, NY.

Tobish, T. G. 1998. Alaska Region. Field Notes 52:107-110.

Walker, T. 2004. Creamer's Field Migration Station: fall report, 2004. Alaska Bird Observatory, Fairbanks, AK.

Webster, J. D. 1986. *Certhia americana* Bonaparte. Pp. 195-212 in: Phillips, A.R. The known birds of North and Middle America. Denver, CO.

Willson, M.F. 1970. Foraging behavior of some winter birds of deciduous woods. Condor 72:169-174.

Acknowledgements:

State Conservation Status, Element Ecology & Life History Author(s): Jansen, A. and T. Gotthardt, Alaska Natural Heritage Program, Environment and Natural Resources Institute, University of Alaska Anchorage, 707 A Street, Anchorage, AK. http://aknhp.uaa.alaska.edu.
State Conservation Status, Element Ecology & Life History Edition Date: 27Jun2006

Reviewer(s): Daniel Gibson, Bird Collection Manager, University of Alaska Museum of the North, Fairbanks, AK.

Life history and Global level information were obtained from the on-line database, NatureServe Explorer (www.natureserve.org/explorer). In many cases, life history and Global information were updated for this species account by Alaska Natural Heritage Program zoologist, Tracey Gotthardt. All Global level modifications will be sent to NatureServe to update the on-line version.
Copyright Notice: Copyright © 2005 NatureServe, 1101 Wilson Boulevard, 15th Floor, Arlington Virginia 22209, U.S.A. All Rights Reserved. Each document delivered from this server or web site may contain other proprietary notices and copyright information relating to that document.
NatureServe Conservation Status Factors Author: Soule, J. D., and G. Hammerson (08Oct1992)
Global Element Ecology & Life History Author(s): Hammerson, G. (17Mar1994)

Photo credit: copyright 2005 by Stephen Dowlan, obtained online at: http://calphotos.berkeley.edu/browse_imgs/bird_sci_7.html.