Brown creeper
(Certhia americana)

Paul Cotter

The brown creeper is an inconspicuous inhabitant of old-growth forests throughout Southeastern Alaska (Southeast) and the Tongass National Forest. When seen, its mottled brown back and shoulders, whitish and brown wing bands, downward-curved bill, and long, thin tail make it difficult to confuse with any other forest-dwelling bird (Fig 1). As its name implies, this bird creeps inconspicuously along tree trunks, eating insects, insect eggs, pupae, and similar foods. Nests are usually placed between the trunk and loose or peeled-back bark (Ehrlich et al. 1988, Hejl 2002).

The brown creeper breeds across much of North America from New England and Appalachia in the east, across the boreal forest, and south into the Rocky Mountains and the west coast of North America. Creepers also occur throughout Southwestern, Southcentral, and Southeastern regions of Alaska. Winter range is similar to the breeding range, but extends farther south (Gabrielson and Lincoln 1959, Kaufman 1996, Sibley 2000). Across the entire range of the creeper, an association with large trees and snags is consistent (Hejl et al. 2002).

Although quite common in the Tongass, the brown creeper often goes unnoticed by forest visitors because of its inconspicuous behavior and high-pitched, low-volume call. Those seeking creepers should note that its call does not easily penetrate dense forest, is not often heard by those with high-frequency hearing loss, and is regularly confused with the golden-crowned kinglet (*Regulus satrapa*). Keen observers who are familiar with the habits of creepers are often treated to sightings of this furtive inhabitant when venturing into pristine old-growth regions of the Tongass.

FIG 1. Brown creeper near nest site on an old-growth tree in southeastern Alaska. (Bob Armstrong)

STATUS IN SOUTHEASTERN ALASKA

Distribution

The brown creeper is a year-round resident across the Tongass in its preferred habitat of old-growth coniferous forest. The species is also found, albeit in lower densities, along large rivers in mature mixed and

deciduous forests. Most observers consider the brown creeper to be uncommon to fairly common throughout the forested areas of Southeast. Gabrielson and Lincoln (1959) suggested it is somewhat more numerous in southern than in northern Southeast, based on their reviews of early accounts, but this assertion has yet to be rigorously tested.

Stotts et al. (1999) considered brown creepers to be possible or confirmed breeders, according to North American Ornithological Atlas Committee guidelines, in 10 of 11 Research Natural Areas (RNAs) throughout Southeast. Johnson (2003) observed singing males within riparian areas of the Chilkat, Taku, Whiting, Stikine, Unuk, and Chickamin rivers. Gibson and MacDonald (1975) recorded singing males on the Taiya River. Observations of a family group in the Hyder and Salmon rivers area (Gibson 1986) further support findings about the use of large riparian areas by breeding brown creepers. Despite the diversity of habitats within these watersheds and throughout the entire forest, brown creepers are found primarily, and in greatest abundance, in old-growth stands.

Abundance

Abundance estimates for brown creepers in the Tongass National Forest come from selected local studies (DellaSala et al. 1996, Stotts et al. 1999, Johnson 2003). Johnson (2003) observed brown creepers during breeding season inventories on 8 of 11 (73%) large riparian areas from southernmost Southeast (Salmon River near Hyder) north to Yakutat (Alsek River). Data from point counts on a subset of these riparian areas revealed relatively low densities of brown creepers. Within these riparian areas, creepers were most plentiful in mixed-forest stands (0.05 individuals/point). Densities were similar along both coastal and trans-mountain rivers in the Tongass.

Using an inventory protocol developed by Allen (1993) and Andres (1995), Stotts et al. (1999) found brown creepers on 10 of 11 RNAs inventoried and classified the species as fairly common. In the same RNAs, creepers occurred on 36 of 187 (19.3%, 0.32 individuals/point) point count stops in a variety of old-growth habitats. (See discussion of habitat relationships below.)

Dellasala et al. (1996) conducted breeding season and winter point counts in areas of various forest treatments and controls on Prince of Wales Island between 1991 and 1993. Detections of brown creepers were low (39 detections/720 person-hours in winter, 22 detection/720 person-hours during breeding season), but consistently occurred in old-growth habitats.

It is likely that brown creeper abundance in Southeast may be underestimated. Lack of survey effort in undisturbed tracts of old-growth forest, low detectability of creepers, and observer experience could contribute to highly variable estimates of abundance. Further, nearly all monitoring and survey data in Southeast are collected during June to maximize detections of migratory species. Resident species, such as creepers, likely breed earlier and are surveyed when their detectability is relatively low. Therefore, current survey and monitoring protocols do not provide reliable breeding season data for resident species (M. Kissling, U.S. Fish and Wildlife Service [USFWS], Juneau, AK, personal communication 2005).

Taxonomic Considerations

The brown creeper exhibits geographic variation in plumage and size; however, various plumage shades may exist within any geographic area (Sibley 2000). As many as 13 subspecies have been described. *C. a. occidentalis*, the predominant subspecies in Southeast, is a resident along the Pacific Coast from Southeast to Northern California. The migrant subspecies *C.a. alascensis* is most common in south coastal Alaska and may occur in the extreme northern region of the Tongass National Forest (Gibson and Kessel 1997).

Significance to the Region and Tongass National Forest

Brown creepers breed and winter in old-growth forests throughout their range, including Southeast and the Tongass National Forest. As the nation's largest forest containing the largest tracts of undisturbed old-growth forest, the Tongass is likely an important refuge for the brown creeper during the entire year. Therefore, a robust creeper population in the Tongass would serve as an indicator of old-growth forest health. Cause-and-effect relationships between land management practices and population trends may be more practically assessed with old-growth residents, such as the brown creeper, than with migratory songbirds.

Special Management or Conservation Designations

The brown creeper is currently classified as a Management Indicator Species (MIS) in the Tongass National Forest (U.S. Forest Service [USFS] 1997). Ideally, an MIS is selected to represent a habitat type or structure on which other species may use or depend.

The selection of the brown creeper as an MIS is certainly justified because of its resident status and year-round affiliation with old-growth forest. The proposed MIS revision by the USFS does not include brown creepers or any other bird species, however. The revised list, which is expected to be completed by the end of fiscal year 2005, is considered a non-significant amendment to the Tongass National Forest Land and Resource Management Plan (USFS 1997) and is not subject to National Environmental Policy Act review (L. Shipley, USFS, Sitka, AK, personal communication 2004).

HABITAT RELATIONSHIPS

The USFS (2002) described the preferred habitat for brown creepers as containing "high volume old-growth, tall, large diameter trees and decadent timber"; in other words, undisturbed old-growth stands with large trees and variable structure. Highly productive old-growth stands greater than 15 acres (6.6 hectare) are considered very important for maintaining high population densities of brown creepers (USFS 2003). Studies elsewhere in the range of the brown creeper suggest a strong preference for large trees. Large trees generally produce more prey species and have greater foraging surface than smaller-diameter trees. Density of large trees affects territory size; creepers maintain smaller territories when large-tree density is high. Furthermore, foraging effort is inversely related to branch density; creepers spend more time foraging on large trees with fewer branches than on smaller trees with high branch densities (Suring 1988).

Data collected by Hughes (1985) in winter near Hawk Inlet, Admiralty Island, supports conclusions that brown creepers depend on old-growth forests. That study found brown creeper densities 50 and 7 times greater in large-tree old growth (15 individuals/100 acres [40.5 hectares]) than in small-tree and medium-tree stands, respectively (Fig 2). Additionally, the observation that snag densities did not differ across tree size classes suggests other structural components of old-growth forests are required by creepers.

Recent nest descriptions (4 nests) in the Tongass suggest that creepers prefer nesting in large trees (USFWS, unpublished data 2004). Average diameter at breast height of nest trees was nearly 45 in. (114 cm), 30% more than the nesting tree size of other cavity nesters from the same study. There is also evidence that brown creepers commonly nest in cedar

FIG 2. Old-growth forest brown creeper habitat in Southeast. Creepers appear to prefer large-diameter trees and winter creeper densities are higher in large- and medium-tree old growth (above) than in small-tree old growth (below). (John Schoen)

trees where they occur. Ongoing studies of cavity nesters in Southeast should help define specific nesting requirements for brown creepers in this region (M. Kissling, personal communication 2005).

Stotts et al. (1999) inferred habitat preferences for species detected on point counts in Tongass RNAs. They detected brown creepers on 20.5% of low-elevation hemlock-spruce, 15.4% of mid-elevation hemlock-spruce, 9.1% of high-elevation fir-spruce, 11.1% of mixed conifer, and none in shore pine habitats. They concluded that brown creepers select for low- and mid-elevation, old-growth, spruce-hemlock stands.

Nearly all (38 of 39) creeper observations by Dellasala et al. (1996) occurred in undisturbed old growth; 1 observation was recorded within 300 ft (100 m) of an old-growth stand. The USFWS is interested in revisiting these plots to ascertain bird community composition in maturing stands of differing forest

treatments (S. Matsuoka, USFWS, Anchorage, AK, personal communication 2004).

Kissling (2003) studied the effect of buffer width on breeding bird communities in the Tongass. Despite having nearly equal numbers of point stations in control and disturbed plots, 83% of all creeper observations occurred in undisturbed control plots.

Along major Southeast river systems, Johnson (2003) found brown creepers to be most closely associated with mature mixed-forest habitat. Densities of creepers within these large riparian zones were much lower than densities in upland old-growth habitats (Hughes 1985, Dellasala et al. 1996, Stotts et al. 1999).

IMPLICATIONS FOR CONSERVATION

Timber harvest results in reduced populations of brown creepers where abundance has been studied (Suring 1988). The USFS considers timber harvest the leading cause of increased mortality and reduced habitat capability of brown creepers in the Tongass National Forest (USFS 2002). Suring's (1988) habitat capability model for brown creepers indicates that creepers require large-tree, old-growth forests in the Tongass.

Brown creepers rely on complex, large-tree, old-growth forest habitats throughout the year (Hughes 1985, Stotts 1999). Conversion of this forest type to clearcuts and second-growth habitats may place creeper populations in Southeast at risk (Hughes 1985). Harvesting old growth on short-cutting rotations (<250 yr) will eliminate necessary habitat for brown creepers. Short-cutting rotations result in the permanent conversion of old-growth forest to young, even-aged stands. Young second-growth stands lack large trees with low branch density and complex structural components of large-tree, old-growth forest stands (such as standing dead trees, large-diameter snag trees, and heartwood decay).

Impacts of forest fragmentation on brown creeper populations have received little attention. Fragmentation of habitat often has deleterious effects on forest birds by reducing structural and microclimatic conditions of forest interiors. Aside from loss of habitat, fragmentation increases forest edge area. Increased forest edge can improve predator access and change the ecological dynamics of the forest through microclimatic effects (Dellasala et al. 1996).

Brown creepers may face potential threats along large mainland river corridors throughout Southeast (Johnson 2003). These corridors are less protected than other habitats, and may be more at risk from timber harvesting, mining, urbanization, road construction, and hydroelectric power generation. No information is available about the importance of Southeast brown creeper populations for nearby interior land populations connected by large mainland river systems. The amount of interchange occurring between coastal and interior populations is unknown.

Currently, the USFS lists the brown creeper as an MIS in the Tongass National Forest. Strategies used to monitor creepers include the Breeding Bird Survey (BBS), Christmas Bird Count (CBC), and Monitoring Avian Productivity and Survivorship (MAPS) study (USFS 2002). None of these techniques is designed to meet the objectives of the MIS program, however. Therefore, brown creepers are not currently being monitored effectively. The species will likely be removed from the Tongass MIS list because of the expense of monitoring, lack of a monitoring protocol for creepers, difficulty of detection, low population densities in the Tongass, and the comparative greater ease of monitoring creeper habitat through other species. The golden-crowned kinglet has been suggested as a possible substitute for monitoring (USFS 2002).

The inadequacy of monitoring protocols for land bird species in roadless areas of the Tongass National Forest, like most of Alaska, has long been recognized. Boreal Partners In Flight (a cooperative effort between government agencies, Native corporations, non-government organizations, and volunteer groups) has developed, and is currently testing, the Alaska Off-road Breeding Bird Survey (ORBBS). This project builds on the National Breeding Bird Survey by focusing on areas not served by roads. Eighteen randomly selected plots, each containing 25 points, have been established in the Tongass. The plan calls for a biennial rotation for sampling each plot, with nine plots to be surveyed each year. It was developed to detect, with near certainty, a 50% population change in a given species during a 25-year period (G. Baluss, USFS, Juneau, AK, personal communication 2004). The effectiveness of this plan for monitoring brown creepers is currently being analyzed (C. Handel, U.S. Geological Survey, Anchorage, AK, personal communication 2004).

If large-scale harvest of large-tree, old-growth forest continues in the Tongass, the natural abundance

and distribution of brown creeper populations may be placed at risk. The reliance of the brown creeper on the complex ecological attributes of old growth increases the vulnerability of this species to timber-harvesting activities. Conversion of old-growth stands to young second-growth stands will permanently reduce creeper habitat, particularly if timber harvest continues to focus on large-tree old-growth stands at low elevations.

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