

American Dipper (*Cinclus mexicanus*)

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Many streams in the Tongass National Forest harbor at least 1 pair of American dippers. The dipper's unique behavior and musical song are unique in comparison to its drab gray plumage and robin-sized body. When not swimming or coursing along a stream bottom foraging for invertebrates, small fish, or salmon eggs (Obermeyer et al. 1999), the American dipper can be found on the bank or nearby perch, restlessly bobbing its body and flashing its white upper and lower eyelids (Fig 1). A dependent stream-dweller and year-round resident of Southeastern Alaska (Southeast) (Gabrielson and Lincoln 1959), the American dipper may serve as an indicator of watershed health throughout the forest.

American dippers inhabit streams from Alaska, south and east to the eastern slope of the Rocky Mountains, and south to California and mountainous regions of Mexico and Central America. Their winter and summer ranges overlap, provided that streams remain unfrozen (Kingery 1996). In Alaska, dippers are found from the Brooks Range south. Gabrielson and Lincoln (1959) considered the American dipper to be more common in Southeast than in other regions of the state. It is likely that Southeast dippers migrate seasonally along an altitudinal gradient as they do elsewhere in their range (MacDonald and MacDonald 1975, Johnson 2003, Morrissey 2004).

STATUS IN SOUTHEASTERN ALASKA

Distribution

The American dipper is a year-round resident of Southeast and the Tongass National Forest. Gabrielson and Lincoln (1959) reported dippers along mainland and island streams throughout Southeast. Large rivers are also home to breeding dippers. Johnson (2003)



FIG 1. American dippers—year-round residents of southeastern Alaska—occur along fast-flowing streams throughout the region. (Bob Armstrong)

found dippers during the breeding season along the Chilkat, Antler, Whiting, Unuk, and Chickamin rivers. Breeding season records from the Stikine (Gibson and MacDonald 1975) and Salmon (Gibson 1986) rivers are also available. In winter, American dippers are common along streams and rivers across the forest. Additionally, wintering dippers are regularly sighted foraging in the intertidal zone and estuaries.

Abundance

No systematic estimate of dipper abundance in Southeast has been reported, but it is likely that dippers occupy most streams above some minimum size throughout the region. Gabrielson and Lincoln (1959) considered them numerous in Southeast, “Although never in large numbers, it (American dipper) is to be found on almost every stream in the southeastern district.” Armstrong (1995) listed the species as

common in Southeast, and Johnson (2003) characterized it as an uncommon breeder along large river systems with mostly deciduous and mixed forests.

Taxonomic Considerations

Cinclus mexicanus unicolor is the recognized subspecies throughout the United States and Canada, including the Tongass National Forest (Kingery 1996, Gibson and Kessel 1997).

Significance to the Region and Tongass National Forest

American dippers use streams and rivers across the Tongass National Forest. They are known to be sensitive to human activities that negatively affect the riparian zone in other areas of their range (Kingery 1996). In addition, dippers are strong candidates for measuring impacts of forest management practices on Tongass riverine systems. Special Management or Conservation Designations Specific conservation measures and goals for American dippers are not specified in the Tongass National Forest Land and Resource Management Plan of the U.S. Forest Service (USFS) (1997). Presumably, best use management practices within watersheds (such as maintaining water quality, minimizing erosion, and maintaining adequate buffer zones) are assumed to be adequate protective measures for dippers.

The USFS does not identify the dipper as a Management Indicator Species (MIS) for the Tongass National Forest. Dippers have been successfully used elsewhere as indicators of stream health because they are susceptible to anthropogenic disturbances such as logging, road construction, mining, and mine waste disposal and are relatively easy to monitor (Kingery 1996). For these reasons, the USFS should consider establishing a monitoring program for dippers in the Tongass.

HABITAT RELATIONSHIPS

In all regions studied, American dippers are dependent on streams during the entire year. A preference for streams with riffles and falls and with bottoms of rocks, sand, rubble, or a combination of these materials has been noted (Kingery 1996). In Southeast, Willson has frequently observed high numbers of wintering dippers foraging in the intertidal zone (M. Willson, ecologist, Juneau, AK, personal communication 2004). Estuaries and the intertidal zone are clearly important seasonal habitats for dippers throughout Southeast and the Tongass National Forest.



FIG 2. Young dipper chicks waiting for feeding at the mouth of the nest. Dipper nests are large and often covered with moss. Nests are usually located close to steep banks, cliffs, or waterfalls, and sometimes under bridges. (John Schoen)

Nest sites are often in hard-to-reach areas along stream cliffs and banks or behind waterfalls, and may be exposed to a constant mist (Fig 2). Nests are quite large, often as much as 1 ft (30 cm) in diameter (Kingery 1996). Until recently, few Southeast dipper nests had been described. Renewed research interest on habitat use in Tongass dippers has resulted in many nest and nesting behavioral observations (M. Willson, Ecologist, Juneau, AK, personal communication 2004).

Currently, dipper breeding and nonbreeding seasonal habitat requirements in Southeast are not well understood. Research to identify nesting habitat is being conducted (Willson, personal communication 2004). In Southeast, as elsewhere, dippers use streams and rivers at all times of the year, although winter use is restricted to those streams and stream reaches that remain open. Birds often use streams other than their breeding streams during winter. Thus, winter stream use is not a reliable predictor of nesting potential of a given stream. In Southeast, dippers are known to forage in the intertidal zone, an area not available to dippers across most of their North American range. It is not known whether proximity to marine shorelines influences nesting success or productivity.

Although dippers are often associated with fast, clear-running streams (Kingery 1996, Johnson 2003), Willson (personal communication 2004) has documented several nesting pairs along silty, glacier-

fed streams near Juneau. Detailed observations of dipper behavior at these sites are not available. Success along glacier streams may depend on proximity to clear-running channels, nesting and brooding before summer increases in stream silt content, the ability to use the clear-water stream edge for foraging, the ability to forage within water laden with glacial silt, or a combination of these conditions.

Current efforts (2004–2005) seek to establish a minimum stream size used by breeding dippers, and to develop a model to predict stream use by dippers based on stream size and flow volume, habitat, prey availability, and nest site availability (Willson, personal communication 2004). If feasible, such a model could be used to predict dipper habitats in Southeast and provide a framework for a monitoring protocol for the Tongass National Forest.

IMPLICATIONS FOR CONSERVATION

Aside from directly killing birds or destroying nests, several human activities have been implicated in harming dipper populations and habitats. Kingery (1996) reviewed the effects of deforestation, pollution, mining, road building, and other human-generated disturbances. In Southeast and the Tongass, forestry and road construction are likely the most common wide-scale human activities affecting dippers. These activities potentially open the forest canopy and can result in increased stream temperatures. Higher stream temperatures can negatively affect dippers by altering the food web (Kingery 1996). Clearcutting is also known to acidify stream water and lead to erosion and runoff, increasing stream sedimentation. The riparian buffers required in the 1997 Tongass Land Management Plan will minimize impacts to dipper habitat. Mining activities in Southeast could be a source of pollutants harmful to dippers. In the Western U.S., dippers have been known to abandon streams polluted with mining waste (Kingery 1996).

Local and wide-ranging atmospheric pollutants likely diminish water quality and may also have deleterious effects on dipper populations. As foragers high on the food chain, dippers can be useful indicators for metal, organochlorine, polychlorinated biphenyl, and mercury contamination of stream habitats (Morrissey et al. 2004).

The current avian monitoring efforts (such as Christmas Bird Count [CBC], Breeding Bird Survey [BBS], Monitoring Avian Productivity and Survivorship [MAPS], and Alaska Off-road Breeding

Bird Survey [ORBBS]) in the Tongass are not designed to adequately monitor dippers, a species with highly specific habitat requirements (stream and stream edges). With a developed monitoring protocol, the American dipper would serve well as an MIS for the Tongass. A year-round resident highly dependent on streams and relatively easy to monitor, the American dipper and its presence or absence in comparison to a predictive model could provide a basis to measure stream health across the forest. The ease of identifying dippers and the likelihood of encountering the species during stream, fish, or hydrology studies make data collection efforts by biologists and citizen volunteers low in cost and time.



FIG 3. Dipper habitat at Fish Creek on north Douglas Is. near Juneau. (John Schoen)

Because of its close association with streams, the American dipper is vulnerable to land management practices resulting in reduced water or habitat quality, increased erosion and runoff, increased pollutant loads, or other factors compromising stream health. For this reason, American dippers and Eurasian dippers (*Cinclus cinclus*) have been used as indicators of riverine habitats (Kingery 1996, Morrissey et al. 2004). Expanded industrialization throughout Southeast and in the Tongass through increased timber and mining activities has the potential to diminish stream quality, although risks from specific management activities have not been identified. Forest management practices that maintain adequate stream buffers, reduce or minimize erosion and runoff, and maintain high-water quality are preferred until further habitat requirements of dippers throughout Southeast have been addressed (Fig 3).

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