

American Dipper

The **American Dipper** (*Cinclus mexicanus*) is North America's only aquatic songbird, and one of only five species of dipper in the world. Dippers were formerly called water "ouzels" (from an old word for thrush, but they are not thrushes). While perched on a rock in a stream, they often bob up and down which may be the source of the name "dipper." In Alaska, they range from the Brooks Range southward in mountainous terrain, and out into some of the Aleutian Islands.

General description: The American Dipper has gray plumage, except for the upper eyelid, which has tiny white feathers. Males and females look alike. Although the average body mass of males is greater than that of females (57 g vs 51 g in Southeast Alaska), there is considerable overlap in body size (males 50-61 g, females 44-59 g). The bill is black in spring and summer but often becomes yellowish in winter. Juveniles are similar to adults, but commonly have yellowish bills. Both males and females sing a long, varied song that carries well over the noise of running water.

Dippers usually forage underwater, walking in the shallows and peering below the water surface or swimming underwater with their wings. Sometimes they swim on the surface and pick up floating insects or glean insects from streamside vegetation. They can dive from a rock or log and chase prey at high speed underwater. They also flip over stones with their bills and harvest the prey from underneath. They normally eat aquatic insect larvae, especially stoneflies, mayflies, and caddisflies, as well as small fish, including sculpins and salmon.

Dippers have very dense plumage, for good insulation in cold water, and a big oil gland, which they use to waterproof their feathers. Their blood has a large capacity for carrying oxygen, which facilitates diving and swimming underwater. The metabolic rate is relatively low, for a bird of that size.

Natural history: Dippers are fiercely territorial, vigorously defending nesting territories from other pairs. Territorial aggression can force a pair to abandon a nesting attempt if it is too close to the nest of another pair.

Dippers are socially monogamous in most cases; polygamy is rare. The nest is a volleyball-sized shell of moss with an inner saucer of dry grass and rootlets, on which the eggs are laid. The entrance is on the side, often facing slightly downward. In Southeast Alaska, nest-building usually begins in April or May; cold weather and high altitudes result in delayed nesting. Nests are customarily placed on cliff ledges or in little caves under boulder piles, but dippers also use old wooden dams and bridges that have horizontal ledges. Occasionally, nests are placed on top of large boulders.

Clutch size is 4-5 white eggs, which are incubated for 2-2.5 weeks. Females do all the incubation, but males bring some food to the incubating female. The female broods young chicks, which cannot regulate their body temperature, for a week or more. As the chicks grow, they grow feathers and can keep themselves warm. Both parents feed the chicks. Parents remove fecal sacs from young chicks, but older chicks back up to the nest entrance and eject their feces from the nest. Chicks stay in the nest about 3.5 weeks.

Adult dippers bring both insects and small fish to the chicks. Feeding rates can be as high as 20 trips/hour, but occasionally the adults leave the chicks for over an hour and forage for themselves. Chicks that are fed on fish in addition to insects tend to weigh more and survive better than those fed only on insects.

Over 65% of all nests usually produce fledglings in Southeast Alaska, but in good years nest success can be 90%. These levels of nest success are much higher than those of birds with open-cup nests. If the first nest is destroyed by flood or predator, dippers will re-nest. In warm years when nesting begins early in the season, two broods may be reared, although this is uncommon in Southeast Alaska. Production of two broods occurs principally at low elevations and on streams reaches with ready access to small fish.

When the chicks leave the nest, they are fed by the parents for about two weeks, as they gradually learn how to find and catch their own prey. Dippers have the unusual habit of removing the nest lining after the chicks have fledged.

Annual survival of adults in Southeast Alaska ranged from 37% to 67% in Southeast Alaska, which is similar to survival rates elsewhere. Juvenile survival is undoubtedly much lower. Cold winters in Southeast Alaska are associated with low survival. Dippers mature in one year, and most probably do not live more than two or three years. One banded female near Juneau, however, lived to be at least eight years old.

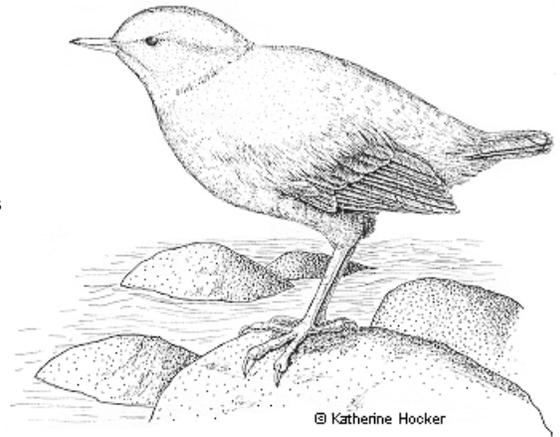
Adults frequently use the same nest site from year to year (if they survive), but if one mate dies, the surviving member of the pair may find a new nest site or even a new territory with its new mate. If both members of a pair survive, they usually nest together again. Some pairs have stayed together for at least three years.

Dippers molt in late summer and are usually rather shy and secretive during this time. In Southeast Alaska, however, they take advantage of the salmon runs to forage on drifting salmon eggs. Sometimes several dippers gather at such a rich source of food. They are not territorial (defending exclusive areas) when the nesting season is over, although they are often feisty and aggressive.

Dippers do not migrate latitudinally, but they do come down to low elevations in winter. They move around from watershed to watershed, sometimes many kilometers from their nesting territories, and sometimes they repeatedly cross channels of salt water between nesting and wintering areas. In Southeast Alaska, they can be found on many kinds of open water, not only ice-free streams but also glacial ponds, lakes, run-off rivulets, roadside ditches, and intertidal stream deltas. When foraging on marine deltas, they eat amphipods (small shrimp-like crustaceans) and fish, including yolk-sac salmon fry. Amphipods are low in fat and energy, so fish are probably a very important source of nutrition. Elsewhere in Alaska, dippers can overwinter in the Brooks Range (and in the Yukon) where upwellings keep ice from forming but air temperatures are famously low; however, mortality in these areas is not known.

Management considerations: Dippers are indicators of stream quality, because their aquatic prey becomes scarce in polluted streams. Sedimentation, acidification, and toxic wastes from industry of various types can cause reproductive failure and abandonment of streams by dippers. In addition, dippers accumulate heavy metals (e.g., cadmium, lead) in their bodies, which interferes with enzymes essential to the formation of hemoglobin (the oxygen-carrying molecule in the blood). Using dippers as indicator species, however, requires more than knowledge of water quality, because more than one factor may cause population declines.

An upper limit to abundance of nesting dippers in Southeast Alaska is set by the availability of suitable streams of sufficient size to provide adequate food and by the availability of nest sites; in addition, territory defense can limit the number of dipper pairs along a stream. Below the levels set by those factors, winter mortality can



reduce population size significantly. Mortality in Southeast Alaska can be so high in cold winters that many nesting territories remain vacant the following springs, and some known nesting streams have no dippers at all.

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