

LOGS USED AS NEST SITES BY THE AMERICAN DIPPER

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ABSTRACT: During spring and summer 2024 I followed activities at an American Dipper (*Cinclus mexicanus*) nest built in an exposed site on the end of a horizontal log overhanging Rattlesnake Creek, Missoula County, Montana—the first log reported as a dipper nest site on this creek, which has been the focus of prior studies of the American Dipper's breeding biology. Logs are rarely reported as nest sites in interior western North America (~1% of 452 dipper nests) but are used more frequently near the coast (~13% of 319 nests); use of logs also varies among sites within the coastal region. Reasons for regional differences in log use are not clear but could include the abundance of logs in surveyed streams, specific attributes of available logs or log jams, the availability of other nest substrates, and differences in the sizes of dipper territories, which could preclude occupancy of otherwise suitable nest sites.

The availability of favored nest sites can affect breeding birds' population densities, especially for those species that rely on special habitat features, such as tree cavities or cliff ledges; breeding pairs may be absent from otherwise suitable areas that lack appropriate nest sites (Newton 1998). The five species of dippers (Cinclidae) are an example. Dippers' typical natural nest sites include cliffs, rock outcrops, and boulders in streams. Nests are often built as well on human-created structures such as bridges, stone walls, houses, wooden buildings, and culverts, all adjacent to or overhanging rapidly flowing water (Marti and Everett 1978, Tyler and Ormerod 1994, 2005, Kingery and Willson 2020). Evidence that nest-site availability may limit breeding populations of the American (*Cinclus mexicanus*) and White-throated (*C. cinclus*) Dippers includes the frequent use of bridges in areas where stream-side cliffs or other natural sites are absent and use of artificial nest platforms along previously unoccupied streams (Hawthorne 1979, Tyler and Ormerod 1994, Osborn 1999, Loegering and Anthony 2006).

Dippers sometimes nest in unusual locations, such as large woodpecker cavities (Campbell and Ryder 2013), atop flood debris caught in tree branches overhanging streams (Tyler and Ormerod 1994), and among bankside or overhanging tree roots (Hann 1950, Campbell et al. 1997). Logs and log jams are also potential natural nest sites that the American Dipper uses infrequently (Kingery and Willson 2020). Reasons for this infrequent use are not clear but may include greater accessibility of logs or log jams to nest predators, greater vulnerability of logs and log jams to flooding, a lack of logs or woody debris along streams where dippers breed, or structural features that make nesting in logs or log jams undesirable.

Here I describe an American Dipper nest built atop a log overhanging a creek in western Montana where Bakus (1959a, b) and Sullivan (1973) had studied the dipper previously. Most accounts mentioning dippers nesting on logs provide few details of the nest's location or the substrate's characteristics.

On 25 March 2024 I noticed an apparently completed dipper nest built at the tip of a log overhanging Rattlesnake Creek in the Rattlesnake National Recreation Area north of Missoula, Missoula County, Montana, adjacent to a campsite near the upstream end of Poe Meadow (46.9520° N, 113.9228° W; elevation 1155 m; Figure 1). An adult dipper was singing from a nearby log in the creek. The nest log, a spruce lacking bark, was ~17 m long and lying horizontally and diagonally over the creek. It was 38.6 cm in diameter ~7 m from the nest, and was about this diameter at the



FIGURE 1. American Dipper nest (arrow) on a log overhanging Rattlesnake Creek, Missoula County, Montana, 9 August 2024; view upstream.

Photo by Paul Hendricks

nest. It was one of four downed trees of roughly the same diameter that had fallen from the bank toward the creek, but it was the only log extending far into the channel that would not be flooded during high water. The nest was ~ 1.5 m above the creek when found on 25 March and 1 m above high water on 14 May (Figures 2A and 2C, respectively). I used a laser range finder to determine the nest's position in the stream. The stream's width was 16 m, the distance from bank to nest was 11 m (Figure 1), and the log extended over the channel ~ 15 m to the nest.

The nearby vegetation was dominated by a canopy of Engelmann Spruce (*Picea engelmannii*), Douglas-fir (*Pseudotsuga menziesii*), Ponderosa Pine (*Pinus ponderosa*), and Western Larch (*Larix occidentalis*), with a shrub layer including Thin-leaved Alder (*Alnus incana*), willow (*Salix* sp.), and Red-osier Dogwood (*Cornus sericea*). Canopy cover at the nest-site itself, however, was 0% (Figure 1), and the nest was completely exposed to the weather and potential predators (Figure 2), especially aerial predators such as the Common Raven (*Corvus corax* Willson et al. 2009).

I observed adults nearby during all five of my visits from 25 March to 13 June. On 14 May both adults were collecting wet pine needles along the creek bank and adding them to the interior of the nest; the nest structure remained intact, undisturbed by a predator. By this date four other dipper nests downstream had fledged first broods or adults at them were still feeding nestlings. A first brood could have fledged from the log nest prior to mid-May (construction of nests downstream was underway or completed by the first week of March), so the dipper pair may have been preparing the log nest for a second attempt. Dippers sometimes raise second broods on this creek (pers. obs.). However, I never saw food delivered to the log nest, and given the infrequency of my visits (about every three to four weeks) do not know if any nesting at the log site was successful. After mid-July I did not observe adult dippers near any nest I was following until late September, by which time I

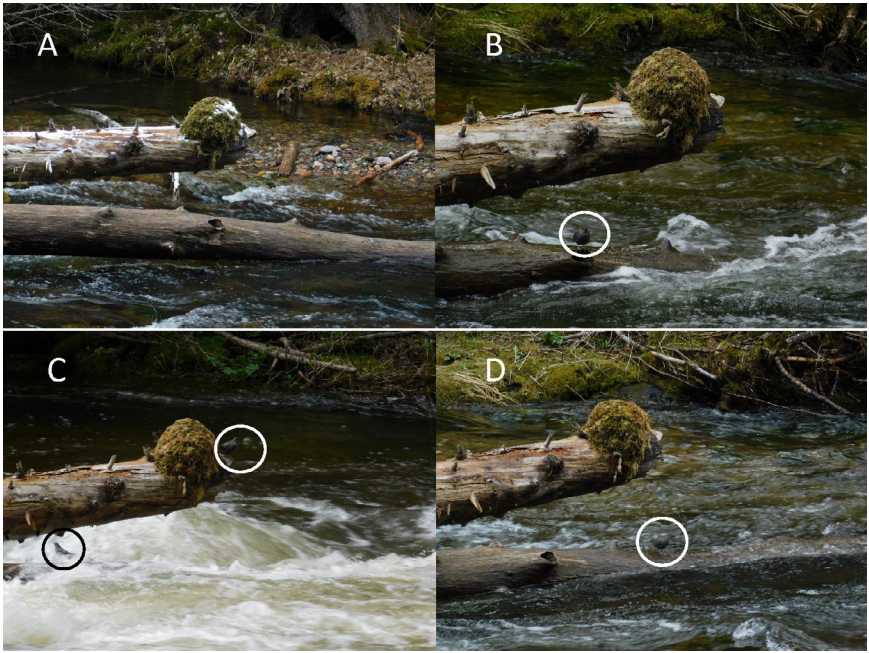


FIGURE 2. American Dipper nest on Rattlesnake Creek: (A) 25 March, (B) 29 April, (C) 14 May, (D) 26 May. Note changes in the water level. Adult dippers at the nest site are indicated by white or black circles.

Photos by Paul Hendricks

noted singing adults near each. The log nest appeared unused and undisturbed until sometime between 12 August and 2 September when the nest structure was removed, apparently by people visiting the adjacent camp site, and for some reason placed on the log partially submerged in the creek below the nest site (Figure 2). By 19 September the nest structure was completely missing and no dipper was present, but on 30 September an adult was singing from the partially submerged log where the nesting adults often perched (Figure 2B–D).

Use of this log allowed a pair of dippers to nest in an otherwise unoccupied segment of creek. This segment of Rattlesnake Creek, along which I have hiked several times from March to December each year for the past decade, was between sites where dippers nested in prior years. The nest log was also between nests on bridges and rock outcrops noted in earlier studies of the dipper's breeding biology on Rattlesnake Creek (Bakus 1959a, b, Sullivan 1973). Nests built on logs were not reported in either of those studies, a further indication that dippers rarely nest on logs along Rattlesnake Creek, even though logs and log jams are currently present in at least a dozen locations along 11 km of creek (pers. obs.). This is the only dipper nest that I have found on Rattlesnake Creek that was built atop a downed log; all others (at 7 locations) were on rock outcrops or under bridges. Dippers nested on the same log in 2025, a pair adding moss to the interior of a completely domed nest at the tip of the log on 3 March.

Nesting on logs has rarely been mentioned in other studies of the American Dipper in the Rocky Mountains (Table 1). Reports include a case from western Montana

NOTES

TABLE 1 Studies Reporting the Prevalence of the American Dipper Nesting on Logs

Locality	Number of nests ^a	Percent in/on logs	Source
Interior			
Alberta	74	0	Ealey 1977
Montana	17	0	Bakus 1959a
Montana	98	0	Sullivan 1973
Montana	77	3 ^b	Osborn 1999
Idaho	41	7 ^c	Strickler 2008
Wyoming	32	0	Feck and Hall 2004
South Dakota	13	0	Backlund 1994
Utah	13	0	Sullivan 1973
Colorado	11	0	Hann 1950
Colorado	76	0	Price and Bock 1983
Coastal			
Alaska	64	2	Willson et al. 2009
British Columbia	158	4; 22 ^d	Morrissey 2004
Oregon	17	0	Sullivan 1973
Oregon	80	31 ^e	Loeering 1997, 2003
Oregon	51	33 ^f	Loeering and Anthony 2006

^aUsually the total number of nesting attempts. When just nest sites, such as Alaska, the number is probably an undercount of nesting attempts.

^bIncludes a second nest on the same log after first nest failed.

^cEstimate, dividing equally a pooled 39% of nests in logs, root wads, fish weirs, culverts, behind waterfalls, and small pour-overs.

^dResident (65%) and migrant (35%) dippers, respectively, presented separately with logs and woody debris combined as a single category of substrate.

^ePacific coast, Coast Range, and Cascade Range pooled.

^fCoast Range only; included in Loeering (1997, 2003).

of renesting on the same log after a first attempt failed (Osborn 1999) and mention of logs as a minor category of nest sites in eastern Idaho (Strickler 2008), but neither of these described the sites, nor did Strickler (2008) mention the number of nests found on logs. Orr (1951) reported a nest in eastern Idaho that was attached to a log overhanging a turbulent part of a stream. Of 89 dipper nests recorded in the Montana Natural Heritage Program's [MTNHP] Map Viewer database (<https://mtnhp.org/mapviewer/>) and for which the substrate was specified, only one was on a log—on the end of a burned snag suspended over a creek in Yellowstone National Park.

In the Cascade Range and coastal regions of western North America, American Dippers nest on logs more frequently than in the Rocky Mountains (Table 1, two-sample proportion test: $Z = 6.89$, $P < 0.001$), although logs remain a minority of sites. I restricted this analysis to focused studies only because the methods for locating nests were similar, usually walking along or in rivers and creeks looking for birds and nests, unlike the opportunistic records submitted to databases or included in regional bird books (e.g., MTNHP, Campbell et al. 1997).

The dipper's use of logs may also vary substantially within the coastal region. In Oregon, 3 of 19 nests in the central Cascades and 6 of 11 nests on coastal streams described by Loeering (1997, 2003) were on logs (Fisher's exact test, $P = 0.042$); log use in the Coast Range falling in between (Table 1). In the Cascades of southwestern British Columbia, resident dippers studied by Morrissey (2004) nested on logs much less often than did migrants; residents tended to nest on lower-elevation rivers while

NOTES

migrants tended to nest on higher-elevation tributary streams. Factors contributing to apparent regional differences in log use are not clear but could include the numbers of logs and log jams in surveyed rivers and streams, specific attributes of available logs or log jams, the availability of other nest substrates, and the size of dipper territories which could preclude occupancy of otherwise suitable nest sites.

How American Dippers use logs for nesting may also vary geographically. In the Rocky Mountains, reported nests were constructed on top of logs overhanging creeks (Figures 1 and 2, MTNHP, Orr 1951, Osborn 1999, Strickler 2008). In Oregon, however, nests were built in hollows or platforms within the broken ends of overhanging logs (Loegering 1997, Loegering and Anthony 2006). In California, Gaines (1992) reported nests in log jams; in British Columbia, Campbell et al. (1997) reported them in cavities of streamside logs, and in southeastern Alaska Willson et al. (2009) reported one in a stream-side log atop a retaining wall. Also in British Columbia, Morrissey (2004) reported nesting in hollows in logs and log jams (or other woody debris) but without further details. More detailed descriptions of log nests are necessary for identifying the features that make logs suitable for nesting, and for assessing the importance of geographical variation in log use, especially in the absence of other natural nest sites. Finally, the fates of nests in logs should be followed whenever possible to determine if they are as successful as those on other substrates.

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