

Survey of Wintering and Breeding American Dippers along Bear Creek

 evergreenaudubon.org/2021-dipper-survey

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Contribution of the Evergreen Audubon American Dipper Survey Team

The American Dipper has been the mascot and emblem of our Evergreen Audubon chapter and newsletter since Sylvia Brockner founded the organization in 1968. It was obviously a favorite of hers as is apparent in one of many newspaper articles she wrote for the Canyon Courier:

“...Of all birds found in our area, none is more intriguing than the American Dipper. This crazy mixed-up bird that appears to be part thrush, part wren, part duck, and part fish is in reality perfectly adapted to the niche in which he lives-just one of the many miracles of adaptation to be found in “Our Evergreen World...”.

In addition to the varied unusual traits the dipper exhibits, the bird's abundance and successful breeding along Bear Creek, and other western mountain streams, is an important indicator of a healthy waterway. Dippers require various species of aquatic insects (i.e., mayflies, stoneflies, and caddisflies) to nourish their young and the presence of those insects is a biological indicator of good water quality. Perhaps the American Dipper should also be designated the official bird of our watershed.

Following the completion of the 10-year Bear Creek Atlas project that surveyed all species of birds found on public lands in the Bear Creek watershed, we altered the focus of our citizen science project. We decided to survey and monitor individual bird species that would indicate the quality of various habitats. The American Dipper was selected as an excellent first candidate.



Icy February Morning (Heather Johnson)

Although a limited pilot study of dippers upstream of Kittredge had been undertaken by a few Evergreen Audubon members in 2019-2020, to our knowledge, no prior comprehensive survey had been conducted along the entire creek. Starting in December 2020 and continuing through August 2021, Evergreen

Audubon volunteers and other community members carried out winter and breeding surveys for American Dippers along 23 miles of Bear Creek from the Mount Evans State Wildlife (SWA) downstream to the confluence with the South Platte River.

The goal of the survey was to determine the winter distribution, abundance, and breeding status of the dipper along Bear Creek which would serve as an indicator of the **aquatic** habitat quality. Our survey results would provide baseline data to evaluate future changes in dipper density and productivity that could occur due to possible drought, flooding, wildfires, pollution or other damaging events in the watershed.

We were fortunate to have 30 enthusiastic volunteers willing to devote time and energy to the four monthly winter counts, and more frequent surveys during the breeding season. This may have been partly a result of the COVID restrictions when folks were eager to get outside locally, enjoy nature, and contribute to a local citizen science project. Volunteers, either individually or as part of a small team, were assigned a “reach” for winter and breeding surveys. Prior to accessing any private property, we requested and received permission from some landowners.

For the winter surveys, 9 reaches were established from Evergreen Lake downstream to the South Platte confluence. For the breeding season in late spring and early summer, and as the creek’s upstream ice thawed, 2 more reaches were established from Evergreen Lake upstream through the Mount Evans SWA.

The total number of wintering dippers we counted increased from 27 individuals in December to 45 in March. The average dipper density (dippers/mile) for the entire area surveyed ranged from 0.0 to 8.6 per mile. The monthly totals between Evergreen Lake and Morrison ranged from 26 individuals in December to 41 in March with an average dipper density for the four months at 2.9 dippers/mile. Overall, the reach downstream of Evergreen to Kittredge had the highest average dipper density (5.4 dippers/mile). The lower two reaches from Bear Lake Park to the Platte River had much lower dipper densities (0.1 – 0.4/mile). Table 1 describes the survey reaches and the observed average 4-month dipper densities.

 table showing location of each study site, the length of the site, length surveyed and average winter density



Two adult American Dippers (aquatic songbirds) on a rock in a quiet stream. The upper bird has its beak pointing up, the lower bird is looking the other direction. Seems they are both a bit coy.

Dipper Courtship (Don McKenna)

The dipper densities observed along Bear Creek were comparable to those documented in other streams. For example, studies in Boulder Creek found wintering dipper densities range from 1.6 to 6.3/mile. In western Montana pre-breeding densities averaged 2.1/mile.

Dippers singing their hearts out as early as February signaled that the males were setting up breeding territories. The joy that Sylvia expressed when hearing their song in winter was shared by our surveyors:

"The American Dipper has a beautiful bubbling song that sounds like the very spirit of the streams on which he lives. He often can be heard singing on the coldest winter day, even in a snowstorm."

We found and monitored a total of 29 nest sites between Singing River Ranch and Morrison. Of those nests, 18 were placed under highway or driveway bridges, 5 in drainage holes, 3 under footbridges, 1 on rock outcrops, 1 under a fishing platform, and 1 unknown. Nests were placed near moving water with good foraging habitat of riffles and shallow pools. No nests were found downstream of Morrison.



Two adult American Dippers (aquatic songbirds) on a rock in a stream. Both have beaks full of wet grass and sticks

Gathering Nesting Material (Don McKenna)

We first observed dipper pairs building nests in mid-March, and this behavior continued through late May. Adults feeding young were first observed on 6 May and continued until 21 June. The first nestling was detected on 6 May in Lair O' the Bear Park, and the latest fledging, just out of the nest, was seen on 21 July in Morrison, likely from a second brood. Of the 28 nests where the outcome was known, 15 (53.6%) successfully hatched young. Fledglings often dispersed away from the nest site after two to four days; if

we did not visit the site within that time, fledglings were difficult to locate. From the 15 successful nests, we estimate that a minimum of 35 fledglings were produced. From the 11 sites where we were certain of the number of chicks fledged, we estimate that an average dipper pair produced three chicks.

Several nests were abandoned following nest building and initial incubation. Some abandonment may have resulted from sudden increases in Bear Creek stream flows which were running below average in March and April, but, thereafter, frequent heavy rain and snow in the watershed resulted in dramatically increased, above-average flows.

To test the effectiveness of nesting platforms, Bob Santangelo constructed and installed two wooden platforms under the Independence Trail and Highland Haven bridges in Evergreen. Dippers built a nest on the Highland Haven platform in April and chicks were heard later in May. Unfortunately, both platforms were washed away by the high flows in late May.



Adult Ready to Feed Nestlings (Dina Baker)

While American Dippers have been recorded breeding at elevations as high as 10,000 feet in Colorado, the highest nest we found along Bear Creek was at 7,620 feet at Singing River Ranch. From early June through late July, we surveyed portions of a six-mile, rugged section of Bear Creek extending above Singing River Ranch to the vicinity of Camp Rock in the Mount Evans SWA at about 8,900 feet. Only two observations of dippers were made in that area in 2021: a single bird on 8 July between Grass and Lost Creeks in the Mount Evans SWA and a lone adult dipper on 14 July just below the confluence of Indian Creek. Although no other dippers were encountered, droppings on midstream rocks were sometimes observed. We suspect that dippers seen at higher elevations were dispersing upstream after the breeding season. Observations made last year in the same area may support this hypothesis. On 15 July 2020, a pair of non-breeding adults was observed below the confluence of Indian Creek, and in August 2020, three juvenile dippers were seen at 8950 feet in the SWA.



Begging Chicks (Don McKenna)

The status of American Dippers breeding upstream of Singing River Ranch remains uncertain. The habitat appears to be highly suitable and the prey base substantial but this area does not have the abundance of bridges that occur at lower elevations and may lack ice-free flows at the start of breeding. On the other hand, we know that dippers have nested successfully on streamside cliffs in other high-elevation streams without the array of bridges.

It was encouraging that some breeding dippers tolerated, and appeared to have been habituated to, regular and sustained human disturbance at several nest sites and within foraging territories. Recreation use appears to have increased along Bear Creek over the past two years probably due to Covid-19. Observers documented activities such as fishing, wading, picnicking, and children throwing rocks adjacent to several nest sites and foraging areas, but report that the adult dippers did not abandon these sites.

Adult dippers were efficient in finding, catching, and bringing aquatic insects to nestlings. We often observed them bringing many bills-full of insects to the nest within a surprisingly short period of time. This was evidence of a healthy stream with good water quality and abundant macroinvertebrates, both necessary to maintain a dipper population. Since 2004, the Bear Creek Watershed Association has conducted macroinvertebrate sampling at 14 sites along the mainstem of Bear Creek. Several sites are close to dipper wintering and nesting territories and data could be used to correlate dipper density and nesting success. Macroinvertebrate sampling was canceled in 2020 and we are waiting for the results of the 2021 sampling. In 2019, the highest diversity and abundance of aquatic insects were found in the Mt Evans SWA which could support the suspected upstream movement of dippers later in the season.



Fledgling Just Out of the Nest (Larry White)

In summary, our survey of American Dippers estimated a minimum population of 43 wintering dippers and a viable breeding population of at least 21 pairs in a 19-mile section of Bear Creek between Morrison and Singing River Ranch. The study provides baseline data to support future surveys that could measure potential changes in the winter distribution and abundance, as well as nesting success during the breeding season. Because of the documented decline in North American birds, it is important to monitor breeding birds and develop conservation measures to protect vulnerable populations. We may repeat surveys at least every five years or more often in the event of significant drought-related low stream flows, wildfires, and heavy sedimentation.

This year was an unusual breeding season for several local bird species whose numbers were down dramatically. As with these other birds, dippers may have been affected by the cumulative effects of regional wildfires, toxic gases, drought, reduced food resources, extreme weather events, and other possible factors that have occurred over the past few years. If habitat at lower elevations becomes impacted by low flows and warmer water, the higher elevations may provide a refugium in the watershed. We are currently planning to continue dipper surveys in the Mount Evans SWA in 2022 and may consider installing the artificial nesting platforms that demonstrated potential success downstream.

A more detailed report will be available on the Evergreen Audubon website shortly.

ACKNOWLEDGEMENTS

We are fortunate to have dedicated and observant Evergreen Audubon members who contributed valuable time and effort to this project. Everyone learned more about dipper breeding behavior and enjoyed spending time quietly observing a single species interacting with the aquatic habitat in our Evergreen backyard. Observers included Chuck Aid, Brad Andres, Dina Baker, Cindy Barge, Susan and Bill Broderick, Annette Calvi, Margo Constable, Ed Furlong, Steve Garman, Jane Haddock, Heather Johnson, Michael Kiessig, Susan Krause, Skye Lewis, Kathy Madison, John McConnell, Margaret McDole, Don McKenna, Mark Meremonte, Joanne Parker, Marilyn Rhodes, Tom Ryon, Bob Santangelo, Dwight Souder, and Lorna Thomas. Please enjoy some of the great photos (above) taken by team members.