INTERSPECIFIC TERRITORIALITY OF MIGRANT CALLIOPE AND RESIDENT BROAD-TAILED HUMMINGBIRDS

GEORGE T. AUSTIN[1]

Department of Biological Sciences
Nevada Southern University
Las Vegas, Nevada 89109

Cody (Condor 70:270, 1968) summarized the present knowledge of interspecific territoriality in hummingbirds. Apparently there is no known instance of interaction between Broad-tailed (*Selasphorus platycercus*) and Calliope (*Stellula calliope*) Hummingbirds. Reported here are two instances of interspecific territoriality between males of these two species in the Spring Mountains, Clark County, Nevada.

The Broad-tailed Hummingbird is a common breeding bird in the montane forests of southern Nevada (Johnson, Condor 67:103, 1965) and territories are established by mid-May (pers. observ.). The Calliope Hummingbird is a rare transient in the same region (Austin, Condor 70:391, 1968).

Interactions between the two species were first observed in Lee Canyon, 8900 ft, on 23 May 1966 in an open forest of aspen (*Populus tremuloides*), ponderosa and bristlecone pines (*Pinus ponderosa* and *P. aristata*), and white fir (*Abies concolor*), with an understory of snowberry (*Symphoricarpos* sp.) and currant (*Ribes* spp.). The latter were in bloom and are an important nectar source in spring and early summer. Here a calliope was first observed perched at the tip of a small fir. It flew down to feed on the *Ribes* several times and once hovered at the tip of a fir branch, apparently catching small insects. It always returned to the perch where it was first observed. A broad-tail flew to a currant about 10 ft from the perched calliope. The latter immediately attacked the former, pursued it up the canyon about 30 ft, and returned immediately to its perch. Shortly, another broad-tail approached from the opposite direction and was similarly pursued for about 15 ft. On both occasions both species called continuously. During the next 30 min, no further encounters were observed, although the broad-tails fed just beyond the point to which they had been pursued. An hour later the calliope, still perched in the same spot, was collected. A week later broad-tails were observed feeding in the area from which they had previously been chased.

The second encounter was also in Lee Canyon, 8400 ft, on 3 June 1966. This area is dominated by ponderosa pine and white fir. The canopy is not as open as at the above site and there is less understory. Here another calliope was observed on the tip of a larger fir. Several times it hovered near the tips of branches. A broad-tail flew to a currant near the base of the fir and was pursued for about 20 ft, after which the calliope returned to the fir. No other encounter was observed in the succeeding 20 min. Two hours later the calliope was observed again, still in the same place.

These appear to be the first records of interspecific aggression between Calliope and Broad-tailed Hummingbirds and add to the paucity of records of a migrant species occupying habitat which would otherwise be used by a related resident species.

Accepted for publication 31 October 1968.

[1] Present address: Department of Biological Sciences, University of Arizona, Tucson, Arizona 85721.

FEEDING HABITS OF THE DIPPER IN SOUTHWESTERN WASHINGTON

RUDOLPH N. THUT

Research Department
Weyerhaeuser Company
Longview, Washington 98632

Very little has appeared in the literature regarding the feeding habits of the Dipper (*Cinclus mexicanus*). It has been known for some time that stream-dwelling insects and other invertebrates are the primary constituents of their diet (Muir, The mountains of California, Century Co., New York, 1894). Burcham (Condor 6:50, 1904) observed Dippers feeding on insect larvae, water bugs, and salmon eggs and fry. Bakus (Auk 76:190, 1959) observed them feeding on Plecoptera and Ephemeroptera nymphs and Trichoptera larvae. He examined the stomach contents of two birds. One was empty; the other contained an adult Coleoptera, adult Plecoptera, pieces of Oligochaeta, and sand grains.

Six specimens became available when permission was granted by the Bureau of Sport Fisheries and Wildlife to exercise some control over the number of Dippers in a study area in the Cascades. Dipper predation had been responsible for serious losses of fingerling trout in an experimental stream study.

The six birds were shot on or around 29 December 1967 and the stomach contents of each were examined and enumerated. Samples had been collected with a Hess sampler and a dip net from the streams in the study area for some time prior to collection of the Dippers, and the benthic fauna was well characterized. This made it possible to identify the source of the small sclerotized insect parts in the Dipper stomachs. Further, since the relative abundance of the various stream organisms was well known, I was able to compare the availability of food items with their presence in the Dipper's diet.

For each specimen at the time of collection, a single food item proved to be predominant; this item was generally either case-bearing caddis larvae or Chironomidae (midge) larvae (table 1). Snails, adult and larval aquatic beetles, and Plecoptera (stonefly) nymphs were also commonly encountered. Coarse sand grains and small pieces of woody stems were also found. No terrestrial forms were encountered. It might be expected that terrestrial insects would constitute some small portion of the Dipper's diet in the spring and summer.

The percentages contributed to the total stream fauna by each of the major taxonomic groups are presented in table 2. The streams were sampled at about the same time the birds were collected. The results have been divided into the percentage composition in slow-flowing pool areas and fast-flowing riffle areas. In both areas, midge larvae and oligochaetes were abundant. The Acari (mites), Ephemeroptera (mayfly) nymphs, and the Diptera other than the Chironomidae were also found in both habitats. The clams, snails, case-bearing caddis larvae, and the larval and adult beetles were typical of the pool areas; the mayfly and stonefly nymphs and the free-living caddis larvae were typical of the riffle areas.

In specimens 4 and 5, all of the major food items were from pools. Apart from those organisms found in like numbers in both pools and riffles, 11 of 19