

There have been several reports, especially for European birds, of sleeping aggregations in response to cold weather. Most of these are for very small species possessing relatively high surface:volume ratios. Such aggregations have been reported for Winter Wrens (*Troglodytes troglodytes*) and for Long-tailed Tits (*Aegithalos caudatus*) (Lack, Ecological adaptations for breeding in birds. Methuen & Co., London, 1968). Löhrl (Vogelwarte 18:71, 1955) has photographed sleeping aggregations of creepers (*Certhia*, sp.) which occur on cold winter nights.

I have found no previous report of sleeping aggregations of Common Bushtits in response to cold

weather. This is not surprising, as freezing temperatures are rarely encountered over most of their range. This makes it all the more interesting that this particular flock showed such an immediate response to abnormally cold conditions. In birds the size of bushtits, aggregations of this kind may greatly increase survival in subfreezing weather.

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INTERSPECIFIC AGGRESSION OF RESIDENT BROAD-TAILED AND MIGRANT RUFOUS HUMMINGBIRDS

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During the summer dry season, April-early July, flowers of penstemon (*Penstemon barbatus*) are virtually the only hummingbird-pollinated flowers seen under the ponderosa pines (*Pinus ponderosa*) at 2100 m in Rose Canyon, Santa Catalina Mountains, Pima County, Arizona. Penstemon occur singly or in small clusters of a few plants throughout the ponderosa pine forest, but in some places, especially along roadsides, they grow in large clusters of tens or even hundreds of plants. Broad-tailed Hummingbirds (*Selasphorus platycercus*) nest commonly in these mountains and are virtually the only hummingbirds which exploit penstemon in Rose Canyon during most of the summer. Our impression is that female Broad-tails feed at least as often at scattered penstemon as at large clusters, whereas males are almost always seen feeding at larger clusters. In addition, male Broad-tails seem to be aggressive when feeding; a large penstemon cluster seems to be the external reference for a male's intense aggressiveness toward conspecifics of both sexes. Females do not seem to be territorial in this way. Since large penstemon clusters are no doubt more economically defensible (*sensu* Brown, Wilson Bull. 76:160, 1964) than scattered penstemon, it is not surprising that territorial males are seen almost exclusively at larger clusters. Since penstemon are almost the sole local source of nectar for hummingbirds at this time of year, addition of another hum-

mingbird species to the avifauna would seem to create a situation promoting interspecific territoriality (Orians and Willson, Ecology 45:736, 1964).

On 6 July 1971, male Rufous Hummingbirds (*Selasphorus rufus*) were seen for the first time of the year in Rose Canyon. These were probably migrating individuals (female Rufous may have been present also). On 10 July, we observed a male Rufous feeding at a roadside penstemon cluster. Soon a male Broad-tail flew in, and the two birds joined in an aerial fight, rising vertically as they swirled around each other. Then the Broad-tail chased the Rufous for at least 30 m. Immediately the Broad-tail returned to a perch directly above the same penstemon cluster. Soon the Rufous returned, the Broad-tail dived at the Rufous, and they disappeared in a chase. Later in the day we observed another male Rufous feeding at a cluster of penstemon beside a lake, 1-2 km from the location of the first observation. This Rufous chased an unidentified hummingbird as we approached the penstemon. A female (Broad-tail or Rufous) perched for a minute in a pine near the flowers, then she flew down to feed. Immediately a male Rufous flew directly at the female from several meters away. The female flew about 30 m, but the male did not follow. It returned instead to feed at the penstemon. By the end of July all male Rufous seemed to have left Rose Canyon.

Cody (Condor 70:270, 1968) reports a nonterritorial Broad-tailed Hummingbird being attacked by territory-holding Rufous Hummingbirds, but the observations presented here seem to provide the first record of a Broad-tail attacking and chasing a Rufous. These observations provide an additional record of territorial behavior in migrant hummingbirds (Armitage, Condor 57:239, 1955; Cody, *op cit.*; Austin, Condor 72:234, 1970).

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