PIRACY OF NESTING MATERIALS FROM AND BY THE BROAD-TAILED HUMMINGBIRD

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In the course of nesting microclimatic studies of the Broad-tailed Hummingbird (*Selasphorus platycercus*), I observed three cases of intra- or interspecific piracy of nesting materials. These observations were made in the vicinity of the Rocky Mountain Biological Laboratory, Gothic, Gunnison County, Colorado, at an elevation of 2920 m, where this is apparently the only breeding trochilid.

On 17 and 18 June 1971, Broad-tailed females were observed building nests # 1 and 3 approximately 10 m above the ground in quaking aspen trees (*Populus tremuloides*) approximately 40 m apart on a hillside. A storm with rain, hail, and gusty winds occurred the night of 18 June. The following day, nest 1 was apparently abandoned, while a female was removing nest material from nest 1 to nest 3.

On 20 June, a Warbling Vireo (*Vireo gilvus*) was removing large beakfuls of material from the walls of this same hummingbird nest 3. The damage was repaired on 21 June. On 18 July, after at least 6 days during which the female was observed feeding young, the nest walls were again suddenly diminished in height, far more extensively than occurs from normal spreading of the nest cavity as the young grow to fledging size. From 18 July until fledging, 31 July, there was no evidence of major addition to the nest walls, although the female did attempt some repair or adjustment of what remained. The young birds completed their development in a noticeably shallower nest than others under observation, but were on schedule with other Broad-tailed Hummingbirds that came from nests begun at the same time.

On 20 July, a female hummingbird was removing fine material from the nest of the Western Wood Pewee (*Contopus sordidulus*). The adult pewees made passes on the hummingbird, periodically driving her from their nest. Her approaches to the nest were halting and cautious, apparently because of the large pewee nestlings in the nest. The hummingbird nest, to which the material was presumably taken, could not be located.

Female hummingbirds spend a considerable amount of time hovering under the eaves of buildings and up and down tree trunks to acquire the fine spiderwebs used in the nest lining and walls. The energy saving when nesting material is taken from concentrations in other nests is qualitatively obvious, as is the cost to the loser. If such piracy is widespread, protection not only of eggs and young from predators but of nest material from pilferage should exert a significant effect in natural selection as related to nesting behavior. Legg and Pitelka (Condor 58:393, 1956) observed a female Anna's Hummingbird (*Calypte anna*) who moved nesting material from one of her nests to a second and later to a third. They also observed one clear case of nesting thievery in this species. Nests were not reused or rebuilt at the same site, but material from old nests was transported elsewhere for "recycling."

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NUTS, BONES, AND A NESTING OF RED CROSSBILLS IN THE PANAMINT MOUNTAINS, CALIFORNIA

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In the Panamint Mountains of Death Valley National Monument, California, on 25 March 1970, I saw Red Crossbills (*Loxia curvirostra*) nesting in association with a flush of nuts of pinon pine (*Pinus edulis*). At Mahogany Flats (elevation about 2600 m), the winter snow was melting from the slopes facing south, although banks of snow covered the north-facing slopes. On the exposed soil were thousands of pinon nuts, under each of scores of pine trees. Most of the nuts had fallen free of their cones. It seemed the nuts had scarcely been harvested before snow had covered them earlier in winter, as nearly all of them were intact, although with the water and warm sunlight of spring thaw many nuts were germinating. Feeding on the fallen nuts as well as on nuts still in the cones high in the trees were several Red Crossbills.

In the center of the abundant pine nuts, a male Red Crossbill was singing a trilled song—a soft, descending series of whistled notes. I approached to within 10 m of the singing male. A female crossbill flew into the next pine with a pine twig and then disappeared into a dense cluster of pine needles in the terminal branches where she added the stick to a nest. The nest tree was about 3 m from the male's song tree, and the nest was 5 m above the ground, which here was covered by a deep snowbank. The nest was a shallow cup, built of pine twigs, not yet lined, and contained no eggs.

Other Red Crossbills sang in trees about 20 m from the nest, but I found no more nests in the area, although some may have been nearby.

Earlier reports of crossbill nesting in California have been in summer, perhaps because of the seasonal activity of local ornithologists. At least two of these three summer records indicate nesting in association with a local abundance of nuts of lodgepole pine (*Pinus contorta*) (Butts 1940; Smith 1940; McMillan 1948). Elsewhere in western North America, the Red Crossbills may nest almost any time of year, as in Colorado they have been seen nesting in winter through spring and early summer (Bailey et al. 1953) and also in late summer (Snyder and Cassel 1951). In eastern North America, 14 of the 15 egg dates recorded by Austin (*in* Bent 1968) fell between February and May. In Europe, the breeding season appears to be better known than it is in North America. Newton (1970, and pers. comm.) found the nesting pattern to be seasonal, with nesting beginning sometimes in late autumn, after com-