

similar to the flight song as well as a more elaborate version of that song, both given while the male was perched on a wire fence and only for a short period between twilight and sunrise. No vocalizations even vaguely suggestive of the *chew wit* of the Galápagos birds were noted in any of the California birds.

The possibility exists that the flight song of the mainland Vermilion Flycatcher is geographically variable, the South American birds being like the Galápagos birds. On 3 March 1964 Vermilion Flycatchers were observed in arid coastal Ecuador near Playas, Guayas Province. The only song recorded was transcribed *pit pit pre-ee-eeen pre-ee-eeen pre-ee-eeen*, but no birds were actually seen while singing; quite likely they were perched at the time. As the flight songs of both the Galápagos and California birds were similar to their perch songs, I suspect the flight song of the Ecuadorian bird is of the California type. Alden H. Miller informed me that the flight song of Vermilion Flycatchers in central Colombia is also of the California type. Thus the rather scanty evidence available is not indicative of major geographic variation in the flight song of mainland Vermilion Flycatchers.

Finally there exists the possibility that the flight song of Vermilion Flycatchers is seasonally variable and that I have happened to observe birds in very different stages of the annual cycle. The breeding condition of two of the California birds was firmly established. Two males of the Galápagos bird taken by A. H. Miller on 23 January, as well as the increased incidence of song between that date and late February, suggest that the Galápagos birds were in the early part of the breeding cycle. My limited experience with postbreeding Vermilion Flycatchers in California indicates that they do not sing. The literature of *Pyrocephalus* flycatchers is of little help; most publications since Bent's *Life History* appeared concern vagrant individuals. It is perhaps significant to note, however, that although the behavior of the two California males was quite different, their songs remained quite similar.

The function of the flight song is unknown. Presumably it is important in the formation and perhaps maintenance of the pair bond. The Galápagos and mainland Vermilion Flycatchers are morphologically very similar, and not infrequently they are included in the same species. My observations suggest, however, that the behavior of these birds has diverged considerably more than their morphology. Such divergence in behavior could be indicated by the continued recognition of Galápagos birds as *P. nanus*, with the understanding that they are very closely related to the mainland birds; the ultimate test, of course, cannot be made. The populations of Vermilion Flycatcher on Isla San Cristobal (Chatham) of the Galápagos Archipelago in the past have been recognized as a distinct species, *P. dubius*. Its flight song, as well as that of the birds now included in *P. nanus* inhabiting the other islands of the Galápagos Archipelago, remains unknown.

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Cedar Waxwing Nesting in Southern California.—Grinnell and Miller (Distribution of Birds of California, Pacific Coast Avifauna No. 27) and more recent field observations by many persons agree that the southernmost breeding record of Cedar Waxwings (*Bombycilla cedrorum*) on the Pacific Coast occurs in the vicinity of Eureka, California. Yet, in July 1964, two of these birds, accompanied by an immature in August, were repeatedly noted at Doheny State Beach in Orange County. Just once, 24 July 1964, I had witnessed one carrying apparent nesting material.

As two waxwings remained through late June 1965, I alerted my neighbor, and we both watched for signs of nesting activity. Betty Berrigan discovered the nest as three fledglings were leaving it on 7 July 1965. One, apparently ill, did not survive the first night, but the others thrived on the abundant *Myoporum* berries fed by the parent waxwings. During the next two weeks, several other competent observers watched this process, concurring that feeding of obvious offspring

waxwings is unusual there. The nest was secured, photographed, and is now in the Environmental Biology section of the University of California at Irvine.—ELEANOR A. PUGH, *Prairie Creek Redwoods State Park, Orick, California, 15 November 1965.*

Nesting Activities of Black-backed Woodpeckers.—In June 1963 I had an opportunity to observe two pairs of Black-backed Woodpeckers (*Picoides arcticus*), both of which nested in a border zone between patches of coniferous forest and open lumbered areas by the Second Connecticut Lake in northern New Hampshire. While these observations do not constitute a complete study, they add details to knowledge of the behavior of this species, about which little beyond brief notes have been published by others (see Philipp and Bowdish, *Auk*, 36:36, 1919; Mayfield, *Wilson Bull.*, 70:196, 1958).

Methods of communication. Drumming. Most of the drumming heard came in bursts of about 2 seconds' duration, at intervals of 30 to 40 seconds. The diminution at the end of each burst, as well as the comparatively long intervals between them, made the drumming of *P. arcticus* sound like that of the Pileated Woodpecker (*Dryocopus pileatus*) described elsewhere (Kilham, *Condor*, 61:377, 1959). The rate and duration of the drumming, however, varied with attendant circumstances. *Rapping.* A Black-backed Woodpecker may give single raps with its bill against a tree trunk when nervous, as when about to roost for the night, a behavior pattern also observed for *D. pileatus*. *Vocalizations.* (a) *Chet.* This note, which suggests that of a blackbird or a sparrow rather than a woodpecker, is the commonest one of *P. arcticus* and usually serves either as a location note or to register varying degrees of excitement. One female gave *chets* at a rate of more than 100 per minute when I came close to her nest. (b) *Wreo.* This is a resounding note often given singly when used as a greeting between members of a pair. It is preceded by several shorter syllables such as *si-si-wreo* when given at levels of greater emotional intensity or becomes a sharp *pet-pet-wreo* when used in threat displays against rivals. *Displays.* Members of pairs of Black-backed Woodpeckers occasionally greet each other by raising their wings horizontally, but when facing rivals they raise their wings upward over their backs in full extension. Head feathers may rise up all around the head in association with other displays.

Care of nestlings. The Black-backed Woodpeckers observed would usually fly through woods in direct flight, then glide for the last 10 or more yards to the nest. A parent feeding its young at the entrance would turn its head sideways so that the opened bills of the two birds more or less enclosed each other at the right angles. It was early apparent in these observations that males behaved differently than females in a number of ways. The females at both of the nests, for example, made about three times as many feeding visits as their mates, but the fact that their bills were usually closed as they arrived, with little of the insect prey they carried being visible, indicated that they did not bring much food per visit. Although the males came less often, their bills were generally stuffed with protruding parts of insect prey. The number of visits made by either sex varied with circumstances. Thus after a heavy rain on the afternoon of 29 June, when insect life in the area seemed to be especially abundant, both members of Pair B visited their nest 12 times in 20 minutes. On the other hand neither parent of Pair A visited their nest in the final hour of the day, between 2000 and 2100 on 18 June. It was dusk when Male A arrived at the end of this time to roost for the night, rapping a few times nervously on the side of the nest tree before entering.

Females at both nests were more nervous than their mates. This was shown not only by the rapid series of *chets* made when I came at all close, but also by a peculiar, reflex flashing of their white-edged nictating membranes, readily observed against the background of black head feathers. These behavior patterns were not noticed in either of the two males. An apparent result of the shyness of Female B was that when I stood close by her nest with a camera on 28 June, she refused to come near while her mate paid five visits in 35 minutes, with little hesitation. Another difference in behavior between the sexes was in nest sanitation, which was performed entirely by males in all seven times in which it was observed. A typical situation occurred at Nest A on 19 June. Thus Female A was making frequent visits to the young, at a rate of up to five in seven