

FROM FIELD AND STUDY

The Aerial Capture of a White-throated Swift by a Pair of Falcons.—On June 10, 1942, while camping at Horse Tank, a permanent desert watering tank within the boundaries of the Kofa National Game Range in the Castle Dome Mountains, about 50 miles northeast of Yuma, Arizona, I had occasion to witness a contest between two masters of flight—a large falcon and a White-throated Swift (*Aeronautes saxatalis*). [On the basis of color, the falcons were identified as Duck Hawks (*Falco peregrinus*), but since no specimen was obtained, the writer feels that a positive record of this species should not be claimed.]

When first sighted at about 100 feet above the tank, the hawk was pursuing the swift. The falcon was about ten feet behind the smaller bird and both were apparently straining every muscle in an effort to gain more speed. As though in an attempt to discourage its pursuer, the swift made an almost perpendicular dive. Although the falcon followed the smaller bird down almost to the ground, it could not seem to shorten the distance between itself and its prospective prey. At about ten feet from the ground the swift pulled out of the dive and strove to gain altitude. The falcon followed closely behind it. Judging from this performance, I assumed that the race would be a fair one. However, just as the swift was regaining altitude, another, smaller falcon of the same species came into view a little above and behind the two birds I had been watching. This smaller falcon, probably the male of the pair, swooped down upon the swift from behind, but a slight change in course by the swift caused the hawk to miss its mark. The larger falcon, presumably the female, continued its dogged chase close to the tail of the swift while the smaller falcon circled and gained altitude. After several moments, the smaller hawk again dove at the swift. This time it hit its mark squarely. When last seen, the pair of hawks was flying off into the distance. The smaller hawk was carrying the swift in its talons.

It will always remain a question in my mind whether or not the larger hawk could have mastered the situation without the cooperation of its apparent mate. Of particular interest was the fact that the two falcons chose to capture a bird as small and agile as a White-throated Swift within a few feet of a desert tank which at that time was frequented daily by several hundred White-winged Doves (*Melopelia asiatica*), Mourning Doves (*Zenaidura macroura*), and Gambel Quail (*Lophortyx gambelii*).—LEE W. ARNOLD, *Arizona Game and Fish Commission, Phoenix, Arizona, August 4, 1942.*

Southern Record Station for the California Pine Grosbeak.—On July 25, 1942, at a point $\frac{1}{4}$ mile above the junction of Evolution Creek with the South Fork of the San Joaquin River at an elevation of about 8900 feet, in Fresno County, California, I watched a pair of California Pine Grosbeaks (*Pinicola enucleator californica*) feeding on the ripening fruit of a twinberry bush. These birds were watched for a period of 15 minutes in good light with 8-power binoculars, at distances of 20 to 30 feet. The male was in full red breeding plumage and from various actions I felt sure that the birds were breeding. This is the southernmost location at which I have observed this species in the Sierra Nevada.—JOSEPH S. DIXON, *Berkeley, California, August 15, 1942.*

Relationships of the Hawaiian Avifauna.—In a recent paper on the limits of the Polynesian Subregion, Mayr (Proc. Sixth Pacific Sci. Cong., 4, 1940: 191-195) excludes Hawaii from Polynesia because in agreement with most other ornithologists he believes that the great majority of the endemic land birds of Hawaii is of Holarctic, usually Nearctic, or of Neotropical derivation. The only Polynesian elements in the avifauna of these islands are two "superspecies" of the Meliphagidae (*Moho*, *Chaetoptila*), one species of the Muscipidae (*Chasiempis*) and perhaps two species of extinct or nearly extinct rails. In a paper in the same volume (pp. 185-189) Bryan in an article on Hawaiian birds reaches the opposite conclusion (p. 188) that "the relationship of most of the . . . endemic land birds is with species to the southwest," that is, Polynesian species. He lists several species in addition to those mentioned above which he considers to be of Polynesian origin, but in every case the evidence for considering them to be of American or Palearctic derivation seems to be far more convincing and in some instances conclusive. An example of this is Bryan's treatment of the Hawaiian thrushes of the genus *Phaeornis*. He states (p. 188) that, "they seem to be most closely related to Pacific species of the genus *Turdus*" (*Turdus poliocephalus* and subspecies). As long ago as 1889 Stejneger (Proc. U. S. Nat. Mus., 12: 383-384) carefully investigated the relationships of *Phaeornis* and concluded that it is closely allied to the American solitaires of the genus *Myadestes*. After noting the many striking similarities of structure and color pattern to be seen in both adults and immatures of representatives of the two genera, he wrote: "In fact, were it not for the different proportions of wing, tail, and legs the two birds could hardly be separated generically." Before I knew of this paper, I had reached the same conclusion after comparing *Phaeornis*

with the various genera of American, eastern Asiatic and Polynesian thrushes. While I agree with Stejneger that the two groups are now sufficiently distinct to make it preferable to keep them in separate genera, there would seem to be little doubt that he also was correct in concluding that *Phaeornis* is a derivative of *Myadestes* stock. Neither genus is closely related to *Turdus*.—DEAN AMADON, *American Museum of Natural History, New York, September 7, 1942.*

Bathing of Young Wren-tit by Parent.—On the afternoon of August 31, 1942, three Wren-tits (*Chamaea fasciata*) came to a feeding tray situated at the edge of some chaparral near Cragmont Rock in Berkeley, California. One of the three appeared to be a young bird, the other two adults, probably parents. The former was indistinguishable from the latter, except for behavior, from the point of observation some twenty feet away. The young bird, begging for food by voice and fluttering wings, was fed bread crumbs from the tray by both parents.

After a few minutes one of the adults left the tray; the other hopped into the drinking dish. Following several quick dips under the water the parent returned to the side of the young. By shaking its plumage vigorously the parent splattered water on the young which responded by similarly shaking its feathers. Then by short anteroposterior stroking movements the parent worked its breast over the sides and then neck and dorsum of the young. During this act of grooming the young remained quiet and in a squatting position.

Although Erickson (Univ. Calif. Publ. Zool., 42, 1938:308) states that "not infrequently members of a pair or family preen one another," apparently the behavior pattern described above has not been recorded heretofore.—RICHARD M. EAKIN, *Department of Zoology, University of California, Berkeley, September 15, 1942.*

The Summer Food of Burrowing Owls in Costilla County, Colorado.—Pellets of Burrowing Owls (*Speotyto cunicularia*) collected from July 20 to August 21, 1941, near Blanca in the San Luis Valley, Costilla County, Colorado, give a good indication of the birds' summer food habits. The pellets collected at this time represented the food eaten by young and adults for the last few days that the young remained at the nest burrow and for about a month after the young had dispersed to burrows of their own. Abandoned burrows of prairie dogs (*Cynomys g. gunnisoni*) were occupied in all instances.

At the time the collection was started some of the older pellets about the nest burrows had been somewhat disintegrated by the frequent summer rains so that the exact number of pellets involved in this study could not be absolutely determined. However, as nearly as could be estimated the material collected represented about 81 pellets.

In the following table the presence of food items in the pellets is indicated by per cent of frequency of their occurrence.

As has been noted by Neff (Condor, 43, 1941: 197-198) and Sperry (Wilson Bull., 53, 1941: 45), these pellets indicate that Burrowing Owls usually are opportunists, taking most frequently the kind of food most readily available. On the other hand, Hamilton (Condor, 43, 1941:74) observed them traveling over a mile to bring crayfish to their young when an abundance of other food was available much closer to their nest burrows.

It was of interest to note that those pellets collected about the nest holes where the parents had brought food to the young contained a greater variety of food items than those collected later in the season representing food captured by individuals. Only in three instances when the small pocket mice, *Perognathus flavus*, were taken were the complete remains of a single mammal found in one pellet. Animals the size of a deer mouse or larger appeared to be more than a stomach full for an owl. However, Dr. A. A. Allen of the Department of Ornithology of Cornell University has reported to me that a captive Florida Burrowing Owl which he kept frequently regurgitated more than one pellet from a single meal, depending upon the amount of undigestible material it contained.

Certain of the food items listed in the table were probably accidental. The ants possibly were eaten as they clung to some other bit of food that the owl was devouring. Likewise most of the pellets contained considerable foreign material such as seeds, burrs, and other fragments of plant matter, as well as pebbles and sand. These in all probability were taken in when they adhered to the carcasses the owls tore apart on the ground.

While this method of studying the food habits of burrowing owls gives an approximation of their food habits, it should be remembered that only those food items which contain hard parts resistant to digestion will appear in the pellets.

I wish to express appreciation to Dr. Woodrow Middlekauf, formerly of the Department of Entomology of Cornell University, for his aid in identifying a number of the insects.