

## GENERAL NOTES

**Tropical Screech Owl nest defense behavior and nestling growth rate.**—The Tropical Screech Owl (*Otus choliba*) is a common and wide spread resident in the Neotropics from Costa Rica to Argentina. General accounts of it are given by French (A Guide to the Birds of Trinidad and Tobago, Livingston Publ. Co., Wynnewood, Pa., 1973), Haverschmidt (Birds of Surinam, Oliver and Boyd, Edinburgh, 1968) and Wetmore (The Birds of the Republic of Panama, Part 1, Smithsonian Institute Press, Washington, D.C., 1965). Although there are more than 30 owls, world wide, in the genus *Otus*, little has been published on their nestling behavior and growth, except for *Otus asio*, *O. trichopsis*, and *O. flammeolus* by Bent (U.S. Natl. Mus. Bull. 170, 1938). There is also a note on nestling screech owl behavior and growth by Sumner (Condor 30:333-338, 1928). References indicated below for soft part colors are from Smithe (Naturalist's Color Guide, The American Museum of Natural History, New York, 1975).

This note presents information on the defense behavior of adults and nestlings, and the growth rate of the latter, from observations made at a nest in a rural residential area 30 km south of Caracas, Venezuela.

The nest was located in an abandoned wooden box, a cube of about 40 cm wedged into the lowest branches of a pardillo tree (*Cordia alliodora*), 3 m from the ground. The box was in an angled position and about half of one side was open. The owl's choice of such a nest site probably reflected the lack of suitable natural cavities in the area, a region of fallow, grassy hillsides with only a few scattered trees.

On 25 February 1975 the nest contained 2 eggs (smooth, white, and nearly spherical;  $33.3 \times 30.5$ ,  $32.7 \times 29.9$  mm) which rested in the lowest corner of the box on some weathered fragments of cloth. The cloth was probably left over from the former tenant, a pet monkey. To stop tree climbing predators I fastened a 1 m wide piece of aluminum around the tree trunk.

**Nestling period.**—By the evening of 12 March both nestlings had hatched and their natal down was completely dry. They weighed 17.0 and 13.5 g. I believe the larger one had hatched on the previous day. They were covered with white down, sparser on the dorsal area. The legs and feet were pale pink (color 7) and the bills pearl gray (color 81) with a white egg tooth. The nestlings' eyelids were closed, but on the 6th day of observation the smaller bird's eyelids were slightly open, the larger nestling's eyelids were not fully open until the 10th day. At first the irides were cream color (color 54), they did not become nearly spectrum yellow (color 55) until about the 19th day.

The nestlings' bills had changed by the 4th day to pale neutral gray (color 86) and the egg tooth was greatly diminished; the legs and feet were now almost translucent white. Feather sheaths were clearly visible on the larger nestling on the 6th day on its spinal, alar, and ventral tracts. Rictal bristles appeared on both birds in 2 weeks. By the 16th day their white natal down (protopile) had generally changed to pale neutral gray (color 86) and white banded down (mesoptile) and their primaries and secondaries were beginning to expand. The central rectrices started to emerge from their sheaths on the 26th day.

A pesola scale was used to weigh the nestlings daily (except days 21 and 28) at about 18:00, before their first nightly feedings. The fairly constant increase of weights is shown in Fig. 1. The decreased weights recorded on the evenings of observation days 14 and 16 might be indicative of a lesser quantity of food brought to the nestlings on the previous nights. Weight losses on days 23, 25, and 27 possibly signal the approaching end of the nestling period.

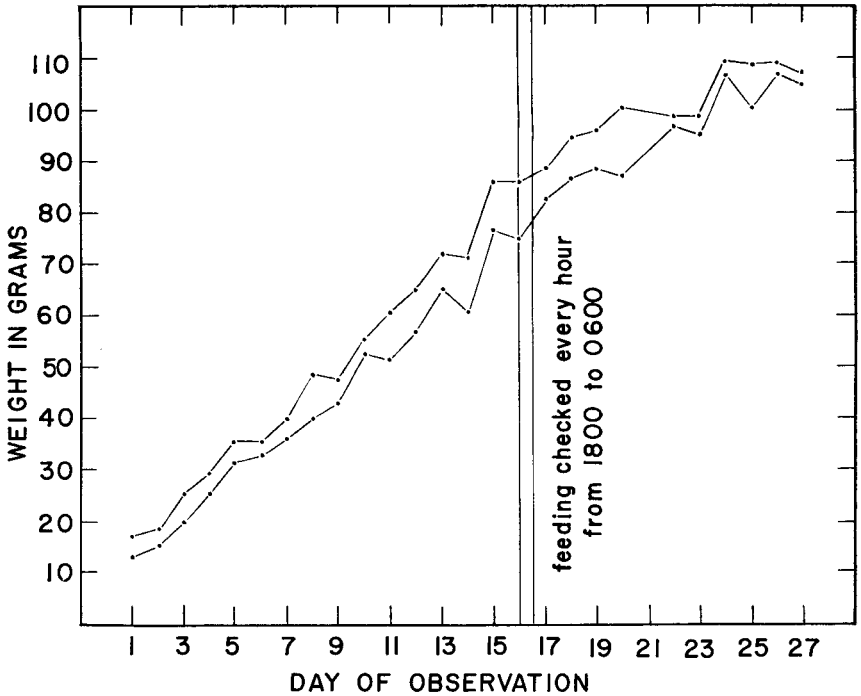


FIG. 1. Daily weights of Tropical Screech Owl nestlings.

The nestling owls never regurgitated food on being handled; therefore the only food seen was that encountered in the nest. At different times I found all or parts of 2 mice, 1 rice rat (*Oryzomys*), 2 cockroaches (*Periplaneta* and *Blaberus*), 1 locust (*Schistocerca*), 1 very small snake (*Helminthophis*) and 1 earthworm (*Lumbricus*). On the 27th day I collected the only pellet found in the nest. It was moist, measured  $2 \times 1.25$  cm, and contained insect and bone fragments too small for identification. Nest sanitation was poor only on the first 2 days; thereafter the nest was kept clean. Ectoparasites found on the nestlings were 1 louse fly *Icosta* (= *Lynchia*) *americana* and at various times 4 maggots were found attached to the nestlings' ventral sides. One maggot has been tentatively identified as *Neomusca* (= *Philornis*) *falsificus*.

An adult owl brooded the nestlings all day through the 6th day, leaving only after dark. However after a cessation of brooding for 3 days, an adult stayed all day in the nest for a single day, the 10th. I was unable to establish whether 1 or 2 owls attended the nest. Presumably the nestlings left the nest normally during the night of 8 April at the ages of about 28 and 29 days. That night around 02:00 there was much low calling by an adult owl. The next morning the nest box was empty and I could not locate the young owls in the area.

*Defense behavior by the adult.*—The first time that the nest box was examined, during the day, an adult owl was incubating the eggs and it puffed up its feathers and erected its "ear tufts." Then it flew out of the box onto the lowest limb of a tree 5 m distant



FIG. 2. Tropical Screech Owl nestling on the 26th day showing black feathers on eyelids.

from where it watched the nest. On subsequent nest examinations, in addition to ruffling out its plumage and erecting its "ear tufts" the adult owl snapped its bill, swayed back and forth sideways, and raised and lowered its body by flexing its legs. During the first examination after the nestlings had hatched, the brooding owl threw itself flat on its back over the nestlings and raised its legs with claws extended toward me. Gradually, however, the attending adult owl appeared to become accustomed to the daily visits and soon I was able to easily remove and replace the nestlings from under it without causing more than a token feather ruffling.

On the 16th day I examined the nest for food every hour on the hour from 18:00 to 06:00. At 22:00 while I was at the nest, an owl struck me quite hard on the arm, leaving 3 small bloody marks from the claws' impact in a triangle roughly 3.5 to 5 cm. In no way was this a serious wound, it is mentioned only as a measure of the probable size of grasp of an adult *Otus choliba*. An owl struck me again, twice at 01:00 and once more at 03:00, as well as on another night at about 21:00. I heard no sound of the bird's approach before the strikes nor was I able to see an owl in the area before climbing to the nest.

*Defense behavior of the nestlings.*—Nestling defense behavior may have started on the first day of examination when they made tiny squeaking sounds or distress calls on being weighed. They both continued their vocal protests with increasing vigor as they grew. On the 6th day, the smaller nestling gripped my glove with its bill and hung on tenaciously. The larger nestling began bill snapping on the 11th day; the smaller bird 2 days later. The more active nestling, the smaller one, dug its claws into my exposed finger on the 16th day of examination. That same day, for the first time, both nestlings fluffed up their downy feathers and crouched down deeply on their tarsi at my approach. The next

day they both began flapping their wings on being handled. On the 23rd day the larger nestling threw itself on its back with its legs raised and claws extended, exactly as the previously described adult behavior.

Most of the nestling owls' day was spent sleeping pressed tightly together. At 3 weeks they began sleeping facing the open entrance of the nest box. It was then that I first saw, on looking into the box, what appeared to be 2 pairs of large eyes staring at me, when, in fact, the nestlings had their eyes closed in sleep. Careful examination revealed that the eyelid skin was light pearl gray (color 81) with a tuft of sparse white feathers near the outer corner, and that centrally on the lid there was a prominent area of short black feathers. The effect of this pattern was to make the eyelids, when closed and viewed in the weak light of the nest, excellent mimic eyes (Fig. 2). This appears to be an adaptation for startling a predator who might look into the nest hole in daylight, after the nestlings are no longer brooded by an adult owl.

*Summary.*—This paper presents observations of the nesting of the Tropical Screech Owl (*Otus choliba*) and discusses development of the nestlings, their food, defense behavior of the adult and the nestlings, as well as a description of a probable warning color pattern development of eyelid feathers as a defense strategy.

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**Three more new specimen records for Guatemala.**—During continuing studies of the avifauna of the Pacific lowlands of Guatemala near La Avellana, Santa Rosa Department (Dickerman, Wilson Bull. 87:412-413, 1975), I collected 3 more species of birds not previously taken in the country. During April and May 1975 Richard R. Viet and in April 1976 Alexander Brash and Thomas Will participated in the field work. Collecting was done under permit from the Departamento de Vida Silvestre, Instituto Nacional Forestal of Guatemala and specimens are deposited at the American Museum of Natural History.

*Calidris bairdii*, Baird's Sandpiper.—Although Baird's Sandpiper is a regular migrant at least in interior areas of Mexico, and winters in South America, there are few specimen records from Central America, and to date none from Guatemala. On 21 April 1976 Thomas Will identified 2 Baird's Sandpipers and I collected one, on mud flats between the villages of La Avellana and Monterrico, Santa Rosa Department. The birds were found in the afternoon following a major rainstorm the night of 20-21 April that continued to mid-morning of the 21st. The specimen collected, an immature female, weighed 33.3 g and was moderately fat.

*Calidris alpina*, Dunlin.—An adult male Dunlin, well advanced in prealternate molt, was taken about 21:30, 6 April 1976 from nets set on the same mud flats mentioned above. This is apparently the southernmost specimen record for the species in the New World. Its wing chord measures 115 and the culmen 36.5 mm; the specimen was identified by John Farrand, Jr. as *E. a. pacifica* based both on measurements and on the deep coloration of the fresh alternate plumage.

*Sterna albifrons*, Least Tern.—Although the AOU Check-list (1957) records *S. a. browni*, the race that nests along the coast of California and Baja California, as probably ranging south to Guatemala in winter, Land (Birds of Guatemala, Livingston Publ. Co., Wynnewood, Pa., 1972:112) knew of no specimens of the species from Guatemala. Accordingly