

GENERAL NOTES

Barred Owl Nesting on the Ground.—On January 6, 1957, Ralph Johnston, lookout at Seven-Mile Fire Tower, Everglades National Park, sent me word that a Barred Owl (*Strix varia*) had established a nest on the ground at the foot of the tower. Despite its exposed situation, the nest was maintained until the three eggs hatched in early February, the nestlings surviving for about one week. The nest's unusual location and the extreme tameness of the parent birds gave opportunity for more satisfactory observation than is ordinarily possible at Barred Owl nests. At my suggestion, Johnston entered his daily observations in the tower log, and Fred K. Truslow devoted a number of days to watching the nest and obtained an excellent series of photographs. I am greatly indebted to Messrs. Johnston and Truslow for permission to report information that they recorded.

Nest Site: Seven-Mile Fire Tower is located in the open Everglades of Dade County, Florida (Section 30, Township 55S, Range 36E), seven miles south of the Tamiami Trail (U. S. Route 41) at a point about 35 miles west of Miami. The tower site is a two-acre fill enclosed by a canal, and the tower itself is of open steel frame construction 85 feet high. The nest was placed within the base of the tower behind a concrete block that forms the bottom step of the first flight of stairs. The step may have afforded some shelter to the nest at the northwest side but, because of their location and angle of ascent, the stairs provided neither overhead cover nor shade. The site had been newly mowed at the time the nest was established, and the incubating adult was in no way concealed or enclosed (Plate 7, *Below*). Bent (1938: 185) reported that Barred Owls may devote considerable effort to lining and reshaping nests when they utilize old nests of hawks or squirrels, but in the present case no attempt at nest-building was evident. The eggs were laid in a very shallow oval depression (about 10" x 6"), apparently a natural irregularity in the ground surface, and the sparse nest-lining consisted only of lawn clippings that were at the site and still-rooted grasses matted down during the course of incubation.

Nest Chronology: In his five previous winter seasons as a lookout, Johnston had often seen and heard Barred Owls around Seven-Mile Fire Tower. During November and December 1956, two owls consistently frequented the immediate area and were seen a number of times in full daylight, either perched on the framework of the tower or on the ground beneath it near the eventual nest site. About 6:00 p.m. on January 5, one held its position at the foot of the tower as Johnston walked by within a few feet, and it was still there later that evening. At 9:30 a.m. on January 6, the bird was seen to leave, and a check of the spot showed that one egg had been deposited.

The date of the first egg (probably January 5) indicates a rather early nesting, the earliest date in 22 Florida records summarized by Bent (1938: 197) being January 11. Howell (1932: 295), however, recorded Barred Owl egg dates in Florida as early as December 23. The course of events at the nest after January 6 was as follows—*January 7*, second egg laid; seen in the evening, only one present earlier in the day. *January 10*, third egg suspected at 9:00 a.m., but the full clutch of three not seen until the nest was vacated briefly after dark on January 14. *February 7*, three eggs still unhatched at dusk. *February 8*, one egg shell seen beside the bird on the nest at 7:30 a.m., the first indication of hatching. Morning of *February 9*, another egg shell visible beside the sitting bird. (In both instances, the shells disappeared shortly, but the method of disposing of them was not

observed.) *February 12*, third nestling believed hatched, but not seen until *February 14*. *February 15*, two of the nestlings found dead at 7:00 a.m., one in the nest and one about six inches away from it. (They were removed and preserved as alcoholic specimens in the Everglades National Park collection.) The surviving member was smaller than the others and was believed to be the latest one hatched. It appeared vigorous and was being fed when last seen at 9:00 a.m. *February 16*, two Barred Owls heard calling repeatedly at 5:30 a.m. The nest was checked and found to be empty.

It is probable that the first two nestlings died of exposure, while the third may have been taken by a predator. The nearest weather station, 40-Mile Bend, Dade County, recorded a minimum temperature of 46°F on the night of *February 14-15*. This temperature in combination with high humidity and heavy dewfall may have been enough to chill the nestlings. Certainly the ground nest afforded them less protection than is usual in nests of the species. Johnston again observed both adult birds near the tower on *February 17* and many later dates.

Attentive Behavior: In the period *January 6-9* when the nest contained one or two eggs, it frequently was unattended. Johnston believed that the adult was away from the nest for one-third to one-half of the time during daylight hours. No regular pattern of daytime attentive behavior was apparent at this time, but the eggs were incubated at night. A marked increase in daytime attentiveness was noted on *January 10*, presumably with the addition of the third egg to the clutch. For the remainder of the incubation period, the nest was attended almost continuously, except for regular brief periods in the late afternoon or early evening. The incubating bird sometimes left the nest as early as 5:00 p.m. and as late as well after dark, about 7:30 p.m., but most of the departures occurred shortly before 6:00 p.m. The evening absences were brief, usually 15 minutes or less, and none was observed to exceed 30 minutes. On several occasions, the adult also left the nest in mid-morning. These morning inattentive periods occurred irregularly and tended to be of longer duration (9:00 a.m. to at least 9:45 a.m. on *January 24*). With the completion of hatching, attendance at the nest became even more constant. In close observation on *February 14* and *15*, the adult was seen to leave only three times (just before dawn on the 14th, and at 6:45 a.m. and 4:50 p.m. on the 15th), and none of the absences exceeded 10 minutes.

It is not known definitely whether nest duties were shared, because the opportunity to mark the adults for individual recognition was missed. In several days of nearly continuous observation by Truslow, the same individual was on the nest from early morning until dusk. The second adult occasionally appeared near the nest during the incubation period as late as *February 9*, but it was never observed to relieve the incubating bird. The possibility of a night shift-day shift division of labor cannot be altogether excluded, but the fact that the nest often was left unattended for brief periods suggests that only one member of the pair (presumably the female) was involved in incubation. Kendeigh (1952: 215) reported that incubation and brooding in all species of owls are taken care of chiefly by the female, although the male may assume some part in these activities.

The behavior of the present individuals served to extend the Barred Owl's reputation as one of the tamest of raptorial birds. In the first few days, the incubating bird responded to too close an approach by opening its beak, calling softly, and pecking toward the intruder. The common Strigiform threat-alarm behavior of beak-snapping was employed only once or twice. Later, all of these

responses were inhibited, and the bird on the nest appeared undisturbed by traffic passing within a few feet, except that it customarily swivelled its head to follow movements nearby. On January 30, Johnston lifted the incubating adult from the nest with a short section of fishing rod without eliciting any sign of annoyance. On February 3, I noted that the second adult spent the entire morning and early afternoon perched within the dense foliage of a small guava tree about 35 yards from the nest. When branches were pulled aside so that it could be photographed, the bird showed no response beyond narrowing its eyes against the unaccustomed light.

Incubation: Bendire (1892) assigned the Barred Owl an incubation period of three or four weeks, and Bent's (1938: 186) statement, "The incubation period is said to be between 21 and 28 days," apparently was taken from Bendire. More recent ornithological literature appears to contain no additional information on this point, but Mrs. Nice (1954: 173, 176) has noted that early authors consistently attributed too short incubation periods to owls, the Barred Owl on occasion having been credited with an incubation period of 17 to 18 days. The periods from laying to hatching for the three eggs in the present nest were: January 5 or 6 to February 7 or 8; January 7 to February 8 or 9; and, January 10 (probable) to February 12 to 14. Thus, the eggs were in the nest for 33 or 34 days, 32 or 33 days, and 33 to 35 days—the most likely period in each case being about 33 days. The central tendency shown by these data and also the fact that hatching extended over several days indicate that effective incubation began with the first egg. It was apparent, however, that incubation became more constant when the clutch was completed. Truslow watched the nest for a total of ten daylight hours on January 6 and 8, and observed that the eggs were not under incubation during this time. Instead, the adult sat at the edge of the nest with wings slightly opened apparently shading the eggs, and shifted position a number of times during the day keeping the eggs in its shadow.

Feeding Habits: The incubating bird apparently was not fed at the nest by the other member of the pair. No food was observed at the nest site until the morning of February 8, its appearance coincident with the hatching of the first egg. The only food items noted were small rats. From Johnston's description, I judge that these almost certainly were Cotton Rats (*Sigmodon hispidus*), a superabundant rodent that is the dietary staple of many Florida raptors. Holt and Sutton (1926: 430) noted that Barred Owls in the Cape Sable area of southern Florida subsisted largely on Cotton Rats.

From February 8 through 15, one to several fresh or partly eaten rats were usually in evidence beside the nest. No deliveries of food to the nest were witnessed, and most of these, as well as some of the feeding of the young, must have taken place after dark. Johnston first saw one nestling being fed at 7:15 a.m., February 10, and he and Truslow observed the process several times on subsequent days as late as the 15th. As an unvarying feeding routine, the adult held the rat against the ground with one foot and in leisurely fashion proceeded to dismember it with the beak. Rougher portions, such as the legs and tail, were eaten by the adult, while the owlets were fed small scraps of muscle tissue snipped from the rat's body and flanks and placed carefully in the nestling's open beak.

Discussion: Examination of Bent's "Life History" and the indices to literature published since 1936 discloses no reference to Barred Owl nests located otherwise than in natural tree cavities or the abandoned (usually) nests of hawks, crows, or squirrels. The closest approach to ground nesting is found in the few recorded

observations of nests located in stumps. Notably, the three examples to come to my attention all relate to Barred Owls in Florida. Bent (1938: 198) mentions a nest in the Kissimmee Prairie region "in an open cavity on the top of an oak stub only 6 feet high, in a dense hammock of large live oaks." The other two nests of this sort were found by Roy C. Hallman in a cypress swamp in St. Johns County from which the larger trees had been cut: one, March 25, 1934, in a hollow cypress stump three feet high, and one, March 4, 1936, in a similar four-foot stump. The single egg in each of the nests rested on dead cypress needles and rotten wood near ground level. The two nest locations were approximately 40 feet apart and, in all probability, the nests belonged to the same pair. Bent (1938: 184) has recorded other instances of the persistent attachment of Barred Owls to particular patches of woods in the face of disturbance by lumbering. I am much indebted to Mr. Hallman for permitting me to mention these records and to examine photographs of a parent bird at the first nest taken by Samuel A. Grimes. Two of the photographs have been published (*Bird-Lore*, 36: facing p. 283, 1934; *Florida Nat.*, 10: 64, 1937): the first bears a brief explanatory legend, the other has no description of the circumstances involved. These stump nests, being located in natural cavities and within forest habitats, do not provide a close parallel to the ground nest here reported. They may, however, suggest that the Barred Owl in its Florida range is more prone to utilize unusually low nesting sites.

Individuals that depart markedly from the norm in choice of a nest site are of interest, because each such episode holds the potential of increasing the ecological amplitude and geographical range of the species, should it succeed and become established in part of the population. In the present instance, the source of the pioneering impulse is obscure, because typical Barred Owl nest sites are available nearby. The sawgrass marsh that predominates around Seven-Mile Fire Tower, encloses many island stands of mixed subtropical hardwood forest where natural cavities are present, if not plentiful, and both the Red-shouldered Hawk (*Buteo lineatus*) and Common Crow (*Corvus brachyrhynchos*) nest regularly in the immediate vicinity.

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A New Breeding Record of the Wandering Tattler in Alaska.—Although the Wandering Tattler (*Heteroscelus incanum*) has been known for years as a migrant along the Pacific Coast of North America, its breeding place remained undiscovered until 1912, when a nest was found 25 miles south of the Arctic Ocean west of the Alaska-Canada border. Since that time, only a few other nests have been found, all in Mount McKinley National Park, central Alaska (Dixon, Condor 35: 173-179, 1933; Murie, Condor 48 (6): 258-259, 1946). At this primitive stage of research into the breeding biology of the Tattler, it is felt that a series of