

Ereunetes pusillus. Semipalmated Sandpiper: 3 records, 21 individuals, all apparently in winter plumage.

Ereunetes mauri. Western Sandpiper: 4 records, 24 individuals.

Crocethia alba. Sanderling: 5 records, 13 individuals, 2 in partial breeding plumage, others in winter dress.

Sterna hirundo. Common Tern: 1 individual.

Chlidonias nigra. Black Tern: 4 records, 20 individuals, all in first winter or adult winter plumage.

All of the 17 species listed above winter in greater or lesser numbers in the Rockport area, but none of them is known to breed there. Mr. Jack Hagar tells me that this summering of non-breeding species is a regular occurrence in the Rockport area; it presents an interesting problem in the study of the migration and breeding habits of birds.—R. A. O'REILLY, JR., *Detroit, Michigan*.

Crow killed by a Duck Hawk.—The observation by Philip Baumgras, "Crow killed by a Red-tailed Hawk" (1945, *Wils. Bull.*, 57:129), adds interest to a similar record of my own. On May 14, 1936, at North Cape, Erie Marsh, Monroe County, Michigan, my attention was attracted by the loud cawing of Crows (*Corvus brachyrhynchos*) in a near-by clump of cottonwoods; a moment later, however, an adult Duck Hawk (*Falco peregrinus anatum*) came from the trees carrying a Crow in its talons, with another Crow in wild pursuit. I assumed that the Hawk had taken a young bird from a Crow's nest.—JOHN J. STOPPLET, 2612 Maplewood Avenue, Toledo 10, Ohio.

Snake depredations at bird nests.—During the past nine years I have recorded 12 instances of snakes discovered in the act of rifling bird nests or found coiled in the boxes after having presumably swallowed the broods. Most of the 12 instances occurred in Warner Parks, Nashville, Tennessee, a natural park situated among wooded hills, with thickets, open meadows, and tiny streams, where I have conducted a Bluebird (*Sialia sialis sialis*) nestbox project for the past decade.

In three instances, although moving too fast for capture, the predators were identified as black racers (*Coluber* sp.). On June 17, 1937, I approached a box as a racer clung there with a 10-day-old Bluebird in its mouth, which proved to be the last of the brood of five. The adults were flying excitedly from perch to perch near by. The snake made off with the screeching nestling and disappeared into a crevice before it could be overtaken. On July 26, 1940, a racer was seen inside a Bluebird box as it was swallowing the last of three large nestlings, and on June 8, 1943, a racer dropped out of a box when I arrived. The nest was found to be empty.

In nine instances, the predators were pilot snakes (*Elaphe* sp.), known locally as "chicken" snakes because they frequent chicken houses and eat chicks and eggs. Seven of these large, slow-moving reptiles were found coiled inside of Bluebird boxes which had contained nestlings—apparently remaining there to digest the meal. They measured from 48 to 60 inches in length, usually completely filling the large-size boxes. One was sent to Jesse M. Shaver, of Peabody College for Teachers, who identified it as the Southern Pilot Snake (*Elaphe obsoleta obsoleta*). The first of these was taken in 1938. On July 6, 1940, in abnormally cool weather, three were caught during the morning, two in Warner Parks and one on private grounds where several boxes had been placed. The 60-inch individual had apparently eaten four Bluebirds, at least 16 days old, due to leave the box on that or the following day. One snake, measuring 52 inches, that was opened contained three 10-day-old Bluebirds and one egg. On May 10, 1943, a 53-inch pilot snake was found resting in a box that had contained a brood of five, also 10 days old.

Two more pilot snakes were pulled out of boxes on April 21, 1944, and July 17, 1945, after having presumably consumed broods of four and five respectively. I have never found a snake occupying a box while it was vacant between nestings, and a snake found coiled and sluggish in a box that has just previously contained nestlings may presumably be assumed to have eaten them.

In Warner Parks, there are several houses that are occupied by the families of park employees, many of whom cooperated with me in banding operations by notifying me of birds nesting at their homes. Chimney Swifts (*Chaetura pelagica*) regularly used chimneys of these houses, and occasionally a nest with young dropped into the fireplace or the space behind the hearth. In 1944, at the home of Mrs. Luther Love, a brood had dropped to a ledge, accessible from the fireplace. Mrs. Love made occasional observations by means of a mirror in order to let me know when the nestlings were of proper size for banding. On July 10, instead of nestlings, she and her niece found a large pilot snake where the Chimney Swifts had been.

On the afternoon of May 29, 1945, while I was making the circuit of Bluebird boxes, I heard Catbirds (*Dumetella carolinensis*) fussing in a tangle of vegetation near a spring. Investigating, I found the Catbird pair frantically fluttering above their nest among the brambles, where a large dark-colored pilot snake was coiled, a thickened area in its body showing that it had already swallowed the contents of the nest.

In the course of the Warner Parks study, close observations have indicated that snakes rank high as natural enemies of birds in this area and are a serious problem in the management of a nest-box project. During the early years of this work, I did not ascertain the degree of snake depredation as accurately as has been possible during later years when a careful study of both Bluebirds and their predators has developed an understanding of the habits of each. An analysis of field data of the past five years shows that eggs or young from 23 to 40 per cent of the nests were probably taken each year by snakes. There is no way to determine the number of close-sitting females that may have been swallowed in addition to the contents of the nest. Because snakes rob nests without damage to the structure and leave no clues such as many mammals do, it is necessary to know the laying and hatching dates of each nesting attempt, as well as specific nest-occupancy periods, in order to estimate nesting success. With this knowledge it is possible to judge whether the young may have left the nest at the usual time or have been taken by predators before maturity. Bluebird nestlings are particularly vulnerable to predators because they do not leave the box until they are at least 16 days old. Even at that age, they do not fly out at the approach of a possible enemy but crouch low, with heads bent downward. With a predator blocking the only exit, there is no possible escape for any of the brood as there is for fledglings in open nests.

I have tried various devices in an attempt to protect nest boxes from predators. Guards of tin or other metal are effective in thwarting mammals such as cats or opossums, but nothing has proved effective against snakes, not even bands of long sharp-pointed nails covering the front of the box and the post.

The first year that boxes were placed in new territory, the success percentage was high. By the second year, snakes started to rob nests, and in the third season, only occasional broods escaped. It became obvious that after boxes are found by snakes, they are visited periodically, whereas new territories are fairly safe from depredation by snakes the first season.

Although absolute certainty is not possible, the evidence indicates that of 142 nests, 47 (33 per cent) were robbed by snakes in 1941; in 1942, of 174 nests, 40 (23 per cent); in 1943, of 151 nests, 60 (40 per cent); in 1944, of 144 nests, 53 (37 per cent); in 1945, of 136 nests, 53 (39 per cent).—AMELIA R. LASKEY, *Graybar Lane, Nashville, Tennessee.*