

BLACK RATSNAKE PREDATION
UPON NESTING BARN AND CLIFF SWALLOWS

BY GEORGE V. OLIVER JR.

SNAKE PREDATION upon nesting birds is not uncommon; many observers have written of it in detail (see, in particular, Walkinshaw, 1943, *Wilson Bull.*, 55: 56; Parmelee, 1959, *Bird-Banding*, 30: 13; Sulton, 1960, *Jack-Pine Warbler*, 38: 50; and Stickel, 1962, *Auk*, 79: 118-19). Comparatively little, however, has been reported concerning snake predation upon swallows. Sawyer (1907, *J. Maine Orn. Soc.*, 9: 83-84) wrote of an "adder" found devouring eggs of "Eaves" or Cliff Swallows (*Petrochelidon pyrrhonota*) under the eaves of a barn in Maine. Since the Hog-nosed Snake or so-called Puff Adder (*Heterodon platyrhinos*) is not scansorial we must assume that Sawyer used the term "adder" very loosely indeed. Cameron (1908, *Auk*, 25: 44) wrote of a "rattlesnake" that "climbed the veranda poles and devoured all nestling [Cliff] swallows within reach" at a ranch in Montana. Here the snake may well have been a "true" rattler of



BLACK RATSNAKE AND ADULT BARN SWALLOW

Photographed by George A. Newman on 21 July 1968 at a culvert near Willis, Marshall County, Oklahoma.

the genus *Crotalus*. Rattlers do not climb much, but the "veranda poles" may have slanted in such a way as to make ascent to the swallows' nests easy for the snake. H. H. Bailey (1913, *Birds of Virginia*, p. 261), writing of the Rough-winged Swallow (*Stelgidopteryx ruficollis*), stated: "The mortality in this section is great, their chief enemy being the black snake." Bailey's "black snake" almost certainly was the species widely known today as the Black Ratsnake (*Elaphe obsoleta*).

Swallows that nest in burrows in banks would appear to be easy prey for snakes, but swallows evidently choose their banks with care. Lunk, in his study of the Rough-winged Swallow in Michigan, observed no actual snake predation, though he did see a "garter snake (*Thamnophis* sp.) about 18 inches long . . . part way up a bank some five feet below Roughwing Nest 39." This particular nest was in a small colony of Bank Swallows (*Riparia riparia*). Lunk watched the snake "as it made repeated attempts to climb a steeper section of the sand bank toward a group of [Bank Swallow] burrows" (Lunk, 1962, *Publ. Nuttall Orn. Club*, 4: 130). Stoner, in his exhaustive study of Bank Swallow colonies in New York, observed no actual predation by snakes though he did find a two-foot garter snake in each of two nest-burrows that were "unoccupied by birds" (Stoner, *Auk*, 43: 208).

Nests of the Cliff Swallow and Barn Swallow (*Hirundo rustica*) are so often built on or above vertical walls at considerable distance above ground-level in or on buildings, in culverts, or under bridges, that they would appear to be inaccessible to snakes; yet in late June and throughout July 1968, in Marshall County, south-central Oklahoma, George M. Sutton, George A. Newman, and I observed considerable ratsnake predation on a mixed colony of Barn and Cliff swallows that were nesting in a concrete culvert under State Highway 99 a quarter of a mile southwest of the village of Willis. The culvert, which ran east and west near the north end of a large bridge crossing Lake Texoma, was 122 ft., 8 in. long, 7 ft. high, and 5 ft. wide. Its walls were vertical and for the most part smooth, though there was a narrow seam at the top of each, and a few narrow, vertical cracks that extended upward 3 to 5 ft. from the concrete floor. During the entire period of our observations, water 1 to 1½ ft. deep stood in the bottom. In late July I counted 29 Barn Swallow nests and 21 Cliff Swallow nests, those of the Cliff Swallow at the junction of wall and ceiling, those of the Barn Swallow a few inches below this junction. Several nests of both species had obviously been repaired, for the mud at the rims was of different color from that of the old part of the nests.

On 21 June, when Dr. Sutton's class in Ornithology at the University of Oklahoma Biological Station first visited the culvert, we saw only a few Cliff Swallows. In one Cliff Swallow nest were five well developed young, one of which flew off strongly while we were removing the brood for banding. The

four banded young stayed in the nest when we returned them to it. In no other Cliff Swallow nest did we find young birds, eggs, or fresh lining. Most of the Barn Swallow nests, on the other hand, were in use. Some contained almost-fledged young, others small young or eggs. A few young Barn Swallows were on the wing. Some of the Cliff Swallows that were flying about might have been young birds.

At 11:35 on 21 June we found a medium-sized Black Ratsnake in a Cliff Swallow nest 60 ft., 9 in. from the west end of the culvert. The nest was so completely filled that it came to pieces while we were removing the snake. Running my thumb along the snake's belly, I forced it to regurgitate four broken swallow eggs and the much digested remains (large wing feathers chiefly) of an adult swallow. We naturally assumed that the remains were of a Cliff Swallow and its eggs, but the opposing facts (1) that most Cliff Swallow nests were empty, old looking, and without lining, and (2) that the closest nest was an empty, fully lined Barn Swallow nest 16 ft., 6 in. away, obliged us to realize that the snake might well have obtained its meal at the Barn Swallow nest and moved to the privacy of the Cliff Swallow nest. Furthermore, we had no way of ascertaining that both swallow and eggs had been obtained at the same nest. During the enforced process of regurgitation the eggs had come out first: that much we knew.

I permanently marked the snake by clipping off the second and fourth right subcaudal scales (thus giving the individual the number 0-2, 4), and released it in the culvert. The water was muddy, so when the snake swam off under water we lost track of it. Before leaving the culvert, however, we found it neatly lodged in one of the above-mentioned vertical cracks, its entire body a little above water-level.

On 12 July at 07:20, we found another Black Ratsnake, about the same size as the first, in a Cliff Swallow nest 4 ft., 6 in. from the east end of the culvert, again on the north wall. I forced the snake to regurgitate two fresh swallow eggs. The closest nest was an empty, unlined Cliff Swallow nest a few feet to the west; farther west (8 ft., 3 in. from the nest in which the snake had been coiled) was an empty, well lined Barn Swallow nest. I scale-clipped the snake (0-3, 6) and released it in the culvert.

On 21 July, at 15:30, again in a Cliff Swallow nest on the north wall (39 ft., 5 in. from the west end of the culvert) we re-took the first ratsnake. This time I "palped" a fresh adult Barn Swallow from the stomach (see photo). The nearest nest was a Barn Swallow nest (1 ft., 8 in. west of the snake's retreat) holding two fresh eggs. On 20 July this nest had held one egg only. Again we had no way of knowing where the snake had obtained its prey; we thought strange, however, that a nest less than 2 ft. away should still contain eggs. After measuring the snake—finding it to be 108 cm. (about 42½ in.) long

--we released it in the culvert.

The climbing ability and arboreal habits of ratsnakes, especially of *E. obsoleta*, are well known. In reaching the swallow nests the two ratsnakes probably did not swim in (though most snakes swim well), but made their way along the half-inch-wide seam at the top of the north wall. The seam appeared to be too narrow to accommodate a snake 42 in. long, but when we held one of the scale-clipped snakes against the seam it took hold immediately and clung there without difficulty. It did not, however, attempt to move forward, possibly because of the traumatic palpating it had just experienced.

In Oklahoma the Black Ratsnake is largely nocturnal in summer. The snakes we captured may well have made their way into the culvert and captured the swallows at night. I feel fairly sure that they did not inhabit the culvert continuously, for on six occasions between 21 June and 21 July I checked every swallow nest and examined every crack without finding a snake, and on only three occasions during that same period did anyone observe a snake there. Even on bright days the culvert was a cool, rather dark place. For a well-fed snake a Cliff Swallow nest was a made-to-order retreat.

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THE BLACKPOLL WARBLER IN THE SOUTHERN GREAT PLAINS

BY CHARLES A. ELY

THE BLACKPOLL WARBLER (*Dendroica striata*) is a transient through the Southern Great Plains. It occurs regularly, often commonly, in the spring but only irregularly and rarely in the fall. In spring it is much more common along the wooded eastern edge of the plains than in the restricted wooded areas of the plains themselves. In Kansas it is considered "common" in the east, "uncommon" in the west (Johnston, 1965, A directory of the birds of Kansas, Univ. Kansas Mus. Nat. Hist., Misc. Publ. 41, p. 48), a status similar to that reported for Oklahoma (Sutton, 1967, Oklahoma birds, p. 509).

Dendroica striata breeds in the northern spruce forests from Alaska to Labrador and in the mountains of New England and eastern New York; it winters in northern and central South America (AOU Check-list of North American birds, pp. 500-501). Most spring migrants funnel northward through the West Indies and Florida, then fan out over the eastern United States, the