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## PREDATION ON THE FREE-TAILED BAT BY THE GREAT HORNED OWL

BY R. K. CHESSER AND M. L. KENNEDY

The bat caves of Oklahoma, especially those of the western third of the main body of the state, have received much attention during the past decade or so. A common bat of these caves is the Mexican Free-tailed Bat (*Tadarida brasiliensis*). Predation on young free-tailed bats by the Great Horned Owl (*Bubo virginianus*) at Conner's Cave in Major County, northwestern Oklahoma, was reported by Perry and Rogers (1964, *Southwest. Nat.*, 9: 205). The finding of skeletal parts of at least 46 free-tailed bats in 24 Great



### REED CAVE, SOUTHWESTERN OKLAHOMA

*Entrance to chamber in which two Great Horned Owls roosted in September, 1972. Just above center is a feral Rock Dove (*Columba livia*)—possibly the first ever to have been photographed in Oklahoma. Photographed on 4 February 1973 by W. K. Reisen.*

Horned Owl pellets (and several pellet fragments) at Reed Cave in Greer County, southwestern Oklahoma, was reported by Taylor (1964, J. Mammal., 45: 300-301). Predation on free-tailed bats by hawks and owls at Vickery Bat Cave, in Major County, was discussed by Looney (1972, Bull. Oklahoma Orn. Soc., 5: 1-4) and by Hardin (*ibid.*, pp. 4-5). Perry (1965, Oklahoma State University Doctoral Dissertation, p. 27) estimated the free-tailed bat population of Reed Cave at four million in the summer of 1963.

*Tadarida brasiliensis* is strongly migratory. Its winter home is in central and tropical Mexico (there are winter records, too, for Central America and northern South America). Breeding takes place in February and March, so when the hordes return to their summer home in the north, most of the females are pregnant. Thousands of young bats are born each summer in the above-mentioned caves. A female free-tailed bat, banded as a baby in Oklahoma in the summer of 1968 and recaptured at Estación Tamuín, San Luis Potosí, Mexico, on 14 November of that year, had travelled about a thousand miles in reaching its winter home in the tropical lowlands just south of the Tropic of Cancer (Barbour and Davis, 1969, Bats of America, p. 206).

The main mouth of Reed Cave faces south and is about 40 feet wide and 20 feet high. A few feet to the east of this entrance, and approximately 20 feet above it, is a smaller opening that faces west and leads into a passageway that is about 11 feet high and 11 feet wide. This chamber narrows sharply about 8 feet back from its mouth. On its floor on 16 September 1972, we collected 28 pellets and seven pellet fragments, all of which had, presumably, been regurgitated by the two Great Horned Owls that were roosting there. One owl was noticeably smaller than the other. The owls must have been roosting there regularly, for we flushed them from the same chamber on three occasions subsequently. Whenever anyone approached their roost they flew out and away, but returned shortly if not disturbed.

All of the pellets and pellet fragments except one contained free-tailed bat remains. The exception appeared to be a very old pellet. The pellets contained the remains (chiefly fur, skulls, and larger wing and leg bones) of at least 95 free-tailed bats. The 78 skulls were of both young and adult animals. Eight was the largest number of skulls that we found in any one pellet. We did not find identifiable remains of any other bat than *T. brasiliensis*, though several other bat species are known to inhabit southwestern Oklahoma (Hall and Kelson, 1959, The mammals of North America, 1: 157-203). Most of the pellets and pellet fragments contained bat remains only, but four contained also the remains of small rodents and a fifth contained also the remains of a lizard. We found no bird remains in any of the pellets. At no time during the summer and fall of 1972 did we see any other bat species than *T. brasiliensis* in Reed Cave.

Obviously the two owls that we continued to flush from their roost chamber had been preying principally on free-tailed bats during a period when

vast numbers of the animals were readily available. We had no way of knowing, of course, how long a period the pellets and pellet fragments represented, whether the two owls regurgitated all of their pellets at that particular roost, or just where the owls caught the bats — i.e., whether in the cave or while the bats were flying out of, or into, the cave.

When free-tailed bats have left Oklahoma for the winter, such important predators as the Great Horned Owl must turn their attention toward other sources of food. Now that we know something about the summer food habits of the Great Horned Owls that roost (and perhaps even nest) in free-tailed bat caves, these same birds should, if possible, be studied carefully during winter and spring. The owls are believed to be non-migratory. At this writing we can only assume that they continue to use the caves as roosts in winter, faring forth to obtain food other than bats outside the caves.

We wish to thank Dr. Charles C. Carpenter for identifying the lizard remains for us, and Kathy Nipper and Cecil R. Chesser for their assistance in obtaining the pellets.

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## ON THE FEEDING BEHAVIOR OF THE RED CROSSBILL

BY GEORGE M. SUTTON

The Red Crossbill (*Loxia curvirostra*) visits Oklahoma irregularly in winter, presumably when coniferous trees west and north of Oklahoma fail to produce cones. It does not feed on seeds of conifers exclusively while here, but if it is known to be in a given area it certainly is to be looked for in that area's coniferous trees. Since moving to Oklahoma in 1952, I have seen the Red Crossbill chiefly in Cleveland County, in the central part of the state, though during this same period it has been reported from several other counties. In 1955-56 (17 November to 9 February), 1960-61 (5 November to 3 April), 1966-67 (13 October to 14 May), and 1972-73 (25 October to 1 May), I saw it almost daily on the University of Oklahoma campus in the city of Norman.

The species was especially common in 1966-67 and 1972-73. As a rule the ten to 30 birds that I continued to see during those winters were in a loose flock. They fed regularly in the 20-some fairly large Austrian pines (*Pinus nigra*) growing on the campus between the Zoology Building (Richards Hall) and Lindsey Street; but I saw them from time to time also in pines on the old golf course just east of the campus, in pines among dormitories just south of Lindsey Street, in a ragged stand of wild sunflower at the corner of Asp and Lindsey, and, toward the end of their stay during each period, on the ground under two large red cedars (*Juniperus virginiana*) at the northeast corner of