

orientation, though perhaps not this extreme, has been noted in natural substrates elsewhere (Stoner, Roosevelt Wild Life Annals, 4:126-233, 1936; Beyer, Wilson Bull., 50:122-137, 1938).

The length of completed burrows in the sawdust piles also varied, usually from 47 to 60 cm (ca. 18-24 inches). A few were up to 120 cm in depth. Thus, burrow depths in the sawdust banks correspond in general to depths recorded for burrows in easily excavated natural substrates such as sand (Stoner, op. cit.; Gross *in Bent*, U.S. Natl. Mus. Bull., 179:405, 1942).

Importance of sawdust as a nesting substrate.—Forbush (Birds of Massachusetts and other New England States, Part III, p. 160, 1929) and Gross (*In Bent*, op. cit.:404) speculated that sawdust is likely to be an unsuitable if not precarious nesting substrate for Bank Swallows because of the problems of erosion and slumping. Contrary to this view, I am unable to conclude that the erosion and slumping faced by Bank Swallows in sawdust heaps within a given breeding season are substantially more severe or prevalent than in certain natural substrates, especially in sand banks exposed to wave and current action, and spring flooding, along streams (cf. Stoner, op. cit.; Beyer, op. cit.). The large size of the colonies in the sawdust piles at Ashland (among the largest in northeastern Maine [unpubl. data]) suggests that over-all nesting was fairly successful. Burrows destroyed in the sawdust heaps are probably replaced by re-nesting attempts (Stoner, op. cit.).

The biggest disadvantage of the sawdust pile as a nesting substrate is its relatively short life. The old piles slowly wear down or are mined by local residents. Otherwise, within the short term, old sawdust heaps seem to offer both a suitable and perhaps an important local substrate for nesting Bank Swallows. Holes are readily dug in the compact sawdust. And the problems of slumping, wear, erosion, and even total bank destruction in natural substrates probably have provided important sources of selection in the evolution of ground-burrowing behavior in this species.

I gratefully acknowledge the help of S. H. Greenlaw, B. A. Greenlaw, and I. Currie in obtaining information on the colonies at Ashland.—JON S. GREENLAW, *Biology Department, C. W. Post College, Greenvale, New York 11548, 12 April 1972.*

Additional vertebrate prey of the Loggerhead Shrike.—On 4 April 1970 Casto and Dr. R. W. Strandtmann observed an adult Loggerhead Shrike (*Lanius ludovicianus*) flying 20 to 30 feet above the ground carrying a snake in its bill. The pair startled the bird which immediately dropped the dead reptile and flew on to alight on a nearby wire. The snake, a desert massasauga rattlesnake (*Sistrurus catenatus*) measured 0.41 m in total length. After preservation in formalin for over a year, the snake weighed 33 g (probably less than the living weight due to tissue dehydration by the preservative). This would represent a considerable burden for a bird that weighs a maximum of 49 g (Miller, Univ. Calif. Publ. Zool., 38:11-242, 1931). The ability of Loggerhead Shrikes to fly while carrying heavy prey has also been documented by Vaiden (*In Bent*, U.S. Natl. Mus. Bull., 197:142, 1950).

Later examination of the snake demonstrated a puncture wound in the neck and damage to the region behind the postocular scales. Thielcke (*Z. Tierpsychol.*, 13:272-277, 1956) noted that the Northern Shrike (*Lanius excubitor*) always kills its prey with a bite, or series of bites behind the head. The Loggerhead Shrike also punctures prey in the neck region by striking the prey repeatedly with the point of the bill (Wemmer, *Z. Tierpsychol.*, 26:208-224, 1970).

The incident reported herein represents apparently the only record of a shrike killing a poisonous reptile of any species. The snake, collected two miles west of Milnesand, Roosevelt County, New Mexico is deposited in the Herpetology Collection (Specimen 5401), The Museum, Texas Tech University.

A pair of Loggerhead Shrikes removed three Merriam's pocket mice (*Perognathus merriami*), a green treefrog (*Hyla cinera*), and a spring peeper (*H. crucifer*) from a study area one mile south of Riviera, Kleberg County, Texas in August 1966. Pocket mice are nocturnal but are occasionally taken by diurnal predators at dawn or dusk (Beal and McAtee, U.S. Dept. Agr. Farmers' Bull., 506:1-35, 1912). Although Northern Shrikes have captured a similar sized pocket mouse, *P. parvus* (Scheffer, U.S. Dept. Agr. Tech. Bull., 608:1-15, 1938), this is the first record of pocket mice being taken by Loggerhead Shrikes.

The frogs were impaled on a barbed wire fence near a stock tank. Desiccation lessened the food value of the frogs within 2 days, but the shrikes visited and pecked the mummified carcasses for eight months. It is not known how long that shrikes will visit impaled prey (Bent, loc. cit.). *Hyla* has been previously reported in the diet of *L. ludovicianus* but the species was not identified (Miller, 1931).

The observations at Riviera, Texas were made while the senior author was supported by a National Science Foundation grant GY 369 administered by Dr. R. L. Packard, Texas Tech University.—BRIAN R. CHAPMAN AND STANLEY D. CASTO, *Department of Biology, Texas Tech University, Lubbock, Texas 79409, 13 March 1972.*

Cowbird parasitism of Western Kingbird and Baltimore Oriole nests.—On 9 June 1971, in a farm woodlot in York County, Nebraska, I examined a Western Kingbird (*Tyrannus verticalis*) nest that contained three kingbird eggs and one Brown-headed Cowbird (*Molothrus ater*) egg. The nest was in a Siberian elm (*Ulmus pumila*) approximately 20 feet above ground. The eggs were being incubated.

Subsequent examinations at two day intervals indicated that all of the eggs hatched on approximately 18 June. Examination of the nest was conducted at irregular intervals after 19 June. However, I observed feeding of the young daily until 1 July when the nest was empty. Throughout the entire period the ground in the vicinity below the nest was searched daily. On 19 June a few bits of kingbird egg shell were found. A dead young kingbird was found on 23 June and another on 26 June. It appears that the cowbird and one kingbird were fledged from the nest.

Cowbird parasitism of Western Kingbirds appears to be rare. Friedmann (U.S. Natl. Mus. Bull., 233:49-50, 1963) notes one other instance of its occurrence and that one without precise data.

On 20 June at the same location, I observed a female Baltimore Oriole (*Icterus galbula*) enter her nest which was approximately 25 feet from the ground in a Siberian elm. I was standing a short distance away from immediately under the nest. My attention was directed elsewhere until I heard a soft "plop" on the ground under the nest. Examination showed the source of the noise to be a fresh cowbird egg that was broken. The female oriole was then observed on a twig next to the nest preening. It appears that the oriole removed the cowbird egg from the nest. This might explain the lack of records of cowbird parasitism of Baltimore Orioles as Friedmann (op. cit.:133) suggests.—THOMAS S. SMITH, *Department of Natural Resources, Nelson Hall, University of Wisconsin, Stevens Point, Wisconsin 54481, 26 March 1972.*