

province of Alajuela, represents the first record for Costa Rica. The specimen is assigned to *T. m. umbrinus*.

*Agelaius phoeniceus*. Red-winged Blackbird.—This blackbird has been known from two restricted regions in the republic. The birds of the Río Frio region, the more northern of the two areas, were tentatively assigned by Slud (op. cit.:343) to *A. p. brevisrostris* recently described by Monroe (1963. *Occas. Papers Mus. Zool., Louisiana State Univ.*, No. 26:6-7), while the population around the head of the Gulf of Nicoya is *A. p. costaricensis*. On 25 March Gordon Orians, Paul Cook, and I observed Red-winged Blackbirds in a large marsh known as Laguna de Arenal located approximately 25 km NE of the area known to be populated by *A. p. costaricensis*. I returned to this marsh on 3 August, secured a male (testes,  $13 \times 8$  mm), and located a nest with two eggs near the collection site. This specimen belongs to the race *costaricensis*. On 8 July I shot a pair in wet meadow along the Río Frio; the female specimen was subsequently destroyed. The male (testes: left,  $11 \times 7$  mm; right,  $6 \times 5$  mm) fits the description of *brevisrostris*.

The field work was supported in part by Public Health Service Research Grant TW00148 from the Office of International Research of the National Institutes of Health.—KEITH A. ARNOLD, *Museum of Zoology, Louisiana State University, Baton Rouge, Louisiana* (Present address: *Department of Wildlife Sciences, Texas A&M University, College Station, Texas*), 7 October 1965.

**Mallard predation by a Goshawk.**—In late afternoon, 15 January 1964, I flushed several Mallards (*Anas platyrhynchos*) from a tree-bordered drainage ditch on the Duck Creek Wildlife Management Area in southeastern Missouri. As they flew down the ditch ahead of me one female veered to pass through the trees and out over an adjacent, ice-covered reservoir. At the edge of the reservoir an adult Goshawk (*Accipiter gentilis*) struck it from behind and brought her down on the ice. For a moment the hawk paused, standing on the duck, then flew up and carried it off. The Mallard, though still alive, made no effort to escape.

The Goshawk flew about 50 yards and landed on the ditch bank. When I moved closer to observe, it flew off and left the duck to which it returned in about 12 minutes. The Mallard was now dead and the hawk quickly plucked some feathers and began feeding. It fed steadily for one-half hour, pausing only to change position or to pluck more feathers. Then it flew off in the gathering darkness.

I examined the remains and found the breast meat on the left side entirely eaten and the underlying sternum clean of flesh. About one-fourth of the right breast and part of the left wing and leg was also eaten. The body cavity was open and one lung plus the left lobe of the liver had been eaten. No other internal organs were touched. Most of the left ribs were gone and pieces of bone were bitten from the sternum. These were probably swallowed with the meat.

The partly eaten Mallard weighed 1.6 pounds. Weights of female Mallards range from 2 to 3 pounds according to Kortright (1942. "The Ducks, Geese and Swans of North America," p. 383). This female was in good flesh but not fat. I believe it was at the lower end of the weight range for females and probably weighed a little over 2 pounds. I estimate that the Goshawk ate about one-half pound of flesh while feeding for one-half hour. In a similar observation, Ammann (1959. *J. Wildl. Mgmt.*, 23:110-111) reported 7 ounces eaten in one-half hour by a Goshawk feeding on a Sharp-tailed Grouse (*Pedioecetes phasianellus*).

Fevold and Craighead (1958. *Auk*, 75:312-317) reported that a captive Goshawk maintained its weight in fall and winter on a daily ration of 124 grams (4.4 ounces) of

meat. This is only a little more than half the amounts estimated for the wild birds discussed above. Craighead and Craighead (1956. "Hawks, Owls and Wildlife," pp. 312-313) believe that the food requirements of raptors, adjusted to captivity, closely approximate those of wild raptors. Assuming that this is true, the difference in food intake per meal between wild and captive Goshawks may be due to irregular and less frequent feeding in the wild than in captivity.—JOHN P. ROGERS, *University of Missouri, Gaylord Memorial Laboratory, Puxico, Missouri, 23 August 1965.*

**An attack and riding of a Red-tailed Hawk.**—On 23 June 1965 while driving eastward about 4 miles from Barnsdall, Oklahoma, our attention was attracted to the erratic flight of a Red-tailed Hawk (*Buteo jamaicensis*). Closer scrutiny revealed a Scissor-tailed Flycatcher (*Muscivora forficata*) in close pursuit of the larger bird. As I slowed the automobile, we saw the flycatcher alight on the back of the hawk and ride it down into the roadside vegetation. Both birds became airborne again almost immediately. The flycatcher was still pressing the attack as they flew away.

This observation was made by myself and several of my vertebrate natural history students.—J. LELAND HEPWORTH, *Oklahoma Cooperative Wildlife Research Unit, Department of Zoology, Oklahoma State University, Stillwater, Oklahoma, 23 August 1965.*

**Running speed of Bobwhite.**—When conducting wildlife research in the spring of 1956 at the Olentangy Wildlife Experiment Station in Delaware County, Ohio, I frequently drove an automobile through a meadow on a road consisting only of two well-worn tracks. The vegetation-free tracks were about 18 inches wide, and there was vegetation on both sides of each track. This vegetation was 6 to 18 inches tall, increasing in height with advance of the season. A male Bobwhite (*Colinus virginianus*), presumably the same bird each time, was often found taking a dust bath or just standing in the track at or near a certain point on this road. When slowly approached, the bird ran down the track ahead of the automobile, so that his running speed was readily clocked with the automobile speedometer. I always followed 5 to 7 yards behind the bird, and it can be assumed his maximum running speed was usually attained. The bird was followed each time until he turned and ran into the adjacent vegetation.

In five observations, this bird was clocked at 8 to 10 (mean, 9.1; standard deviation,  $\pm 0.9$ ) miles per hour. Unfortunately, the accuracy of the speedometer was not checked, and speedometers are known to vary in accuracy. In two of the five observations, the bird started staggering as though tired after running 75 to 85 yards; then he soon turned and ran into the vegetation. The assumption of tiredness is, of course, subjective, and the staggering may have resulted from wavering intentions to stop running as the limit of the bird's territorial range was being approached or passed or from some unsuspected cause. The bird always left the road within 10 yards of the same point.

With birds also running ahead of an automobile, C. Cottam, C. S. Williams, and C. A. Sooter (1942. *Wilson Bull.*, 54:130) reported running speeds of 11 and 14 miles per hour for Gambel's Quails (*Lophortyx gambelii*). These birds were observed over distances of 20 and 30 yards, respectively, but no records were made of their behavior in their final stages of running.

The observations reported in this note were made when I was engaged in research supported by the Ohio Cooperative Wildlife Research Unit. The note was prepared when I was an employee of the U.S. Fish and Wildlife Service, and I am indebted to this agency for typing assistance and editorial review.—PAUL A. STEWART, *U.S. Department of Agriculture, Agricultural Research Service, Entomology Research Division, Oxford, North Carolina, 9 September 1965.*