Effects of prey size on Loggerhead Shrike predation.—The Loggerhead Shrike (*Lanius ludovicianus*) is a predatory songbird common to many sections of North America. Detailed analyses of stomach contents have been reported by Judd (1898), Beal and McAtee (1912), Miller (1931), and Knowlton and Harmston (1944). Field observations on the prey species of shrike have been recorded by Atkinson (1901), Holt (1913), Esterly (1917), Wayne (1921), Bent (1950), Balda (1965), and others. Few of these investigators have included information other than species composition and the number of prey. Miller (1931) stated that prey taken by shrikes is affected by size and abundance of prey and the efficiency with which a shrike can capture a particular animal. These factors concern only prey species utilization but not the selection of a particular individual within a prey population.

The purpose of this study was to investigate the importance of size of prey in influencing selection by the Loggerhead Shrike.

Six Loggerhead Shrikes (3 adults, 3 immature) were housed in 2 m × 3 m × 2 m pens at the Department of Zoology's Animal Behavior Laboratory, University of Oklahoma, Norman, Oklahoma. Each pen contained perches set diagonally across three corners and a black or white selection box (1 m × 1 m × 0.9 m) centered within the pen. Birds were tested 19 to 50 times (total of 200 tests) by releasing a group of eight black mice into the selection box and recording the size of the first mouse captured. The weights of the mice in each group increased from the smallest, relative size class 1 (4.0–6.0 g) to the largest, relative size class 8, in steps of from 0.9 to 2.0 g.

The selection frequencies for relative size classes for the six shrikes were not significantly different from each other ($\chi^2 = 28.92$, $P > 0.05$), so only totals are given in Table 1. The frequencies of selection for the relative size classes for test 21 and above did not differ significantly from tests 20 and below ($\chi^2 = 4.06$, $P > 0.05$). Thus background color, short-term experience, or age of shrikes had no effect on size selection. Total selection frequencies of the relative size classes differed highly significantly from random ($\chi^2 = 407.68$, $P < 0.01$).

Fig. 1 indicates the number of mice available and the number of mice chosen from weight classes of 2-g intervals. Only four mice were chosen in excess of 13.0 g body weight. Of the mice selected, 83.5% were under 8.6 g with a mean body weight of 7.15 g for all tests.

Miller (1931) stated that "maximum size of prey is determined by limits of the powers of the shrike to overtake and kill large-sized animals." He continued in saying that "when large prey were available, they were perhaps preferred since one or two captures may provide food for the entire day." My data are in contrast with these statements. Although one would expect an upper limit to the prey size that Miller considered as large-sized, one would not expect that limit to be as small as these data indicate. My shrikes apparently selected prey that would be easier to catch, thus requiring less energy expended, instead of larger prey that would provide more food once captured. It is possible that the energy expended to catch the larger prey is not worth risking as large prey may escape capture more often than small prey. This would suggest that some other motivation such as severe hunger would be necessary to induce shrikes to attack unusually large prey.

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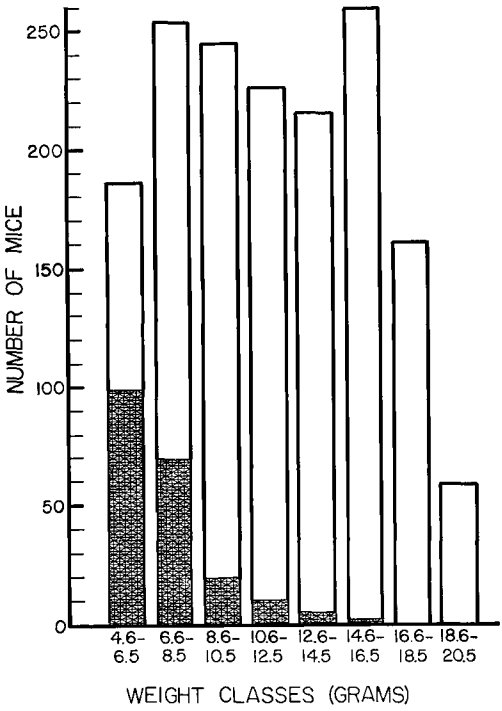

Fig. 1. Comparison of the number of mice available (light area) in eight weight classes and the number of mice taken (shaded area).

TABLE 1

CAPTURES OF MICE IN EIGHT RELATIVE SIZE CLASSES FOR TOTAL TESTS, BACKGROUND COLOR, AND THE EFFECT OF EXPERIENCE

	Relative size classes							
Treatment	1	2	3	4	5	6	7	8
All tests	106	59	20	7	4	3	1	0
White background	48	37	9	3	3	0	0	0
Black background	58	22	11	4	1	3	1	0
Experience								
Tests 1–20[1]	62	32	15	6	3	2	0	0
Tests 21 and above	44	27	5	1	1	1	1	0

[1] 21 tests for bird No. 1 and 19 tests for bird No. 6.

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Ground-nesting Purple Martins.—On 15 July 1974 my attention was drawn to an adult male Purple Martin (*Progne subis*) feeding unfledged young at the base of an elm tree in a fishing camp on Clam Lake near Siren in northwestern Wisconsin. The three well-feathered young were living in a natural cavity hollowed out in the base of the tree. Two young confined themselves to the cavity mouth, where only their heads could be seen. The third, a more venturesome bird, occasionally climbed a ridge on the trunk to a point perhaps a foot above the cavity, where it looked about and beat its wings at the approach of the parent. When either a person or a dog approached the tree, all three young retreated precipitously into the cavity. Of a dozen feedings witnessed, all were by the male parent; during 5 days there I saw no female parent in attendance.

My wife and I decided to examine the cavity at night (18 July), in order to avoid the risk of driving the young from the relative safety of their home. The oval-shaped cavity measured approximately 7 inches by 9 inches; the opening was about 6 inches high. A flashlight revealed two young birds (the third was never again seen), sleeping faced away from the cavity entrance. The floor of the cavity was bare ground, with no apparent "improvement." It was, as far as we could tell, quite clean; there was no evidence of nesting material, eggshells, or feces (we had earlier seen the adult carry away a fecal sac after a feeding).