

## FEEDING BEHAVIOR OF A NORTHERN SHRIKE

BY WILLIAM MONTAGNA

ON FEBRUARY 25, 1938, Doctor Fraser, Professor of Plant Breeding at Cornell University, found a Northern Shrike (*Lanius borealis*) in a trap set for banding Juncos. The shrike, in an attempt to capture a trapped Junco, had found its own way into the trap. (Professor Fraser tells that a similar incident occurred a year or two ago.) The bird was brought to the Laboratory of Ornithology and placed in a large cage for observation.

The first thing that interested us was to know how much food the bird could consume when it was given all that it wanted. That day it was given a dead English Sparrow. Two hours later, only a few remains were found impaled on the jagged end of a stump that had been placed in the cage. The cage consisted of two compartments: an enclosed and protected portion with a window leading into an open and spacious one. The stump was in the enclosed chamber. When I introduced a dead bird the next day, I could find no trace of the sparrow of the previous day, except for a confusion of feathers. A pellet was found to contain the tarsi and the bill of the sparrow.

Until the first of March the shrike was fed one dead bird a day. These were eaten in their entirety. When the tarsi and culmen were not swallowed, they were thoroughly cleaned of meat and bone. The neatly defleshed wing bones with some primaries attached to them were often found stuck through the jagged stump.

Dr. Alden H. Miller, in his 'Systematic Revision and Natural History of American Shrikes (*Lanius*)', speaks of the "wanton killing" and "impaling instinct" of the shrikes. In an attempt to observe this trait, we placed five live English Sparrows in the cage, and for more than an hour the shrike was observed. It perched very still and paid little attention to the excited newcomers. I abandoned my post and returned an hour later. A bird had just been killed and impaled. On close observation I found no injury besides a blood clot at the base of the skull: the atlas and axis were crushed. I plucked the bird and found some marking on the skin that suggested claw marks. After putting the dead bird back into the cage, I concealed myself. The shrike caught it by the neck and flew about with it, evidently with much ease. Then it impaled the bird, and its movements were so diligently performed that one could not help doubting that this was purely instinctive behavior. After the victim had been thoroughly impaled, the shrike pulled it with powerful jerks as if to make sure that it was well anchored, then began to eat it, tearing it into large pieces by seizing it with the hooked bill and jerking backward, accompanying each movement with a swift flip of the wings to give more strength to the pull. As usual, the head was eaten

first. The remaining live sparrows had no fear of the killer, and one of them stood a short distance away, stealing bits of meat that escaped from the vigorous tearing. During the afternoon another bird was killed and partially eaten.

That same night I walked quietly to the cage and suddenly flashed a light. One of the sparrows was roosting side by side with the shrike, almost touching it. During the next two days the sparrows, one by one, met their fate. It was puzzling to notice how economical the bird was with its food. It seemed to be possessed of an almost human insight. Never did it kill a bird before all of the preceding one had been thoroughly consumed, often leaving no other trace of the victim except the major wing feathers and rectrices. The surprising thing about its food was the enormous quantity consumed: the shrike, whose weight was 53.4 grams, ate an average of one sparrow and a half per day, totaling perhaps 30 grams.

When all the birds had been eaten, a diet of dead birds was resumed. A Horned Lark (*Otocoris a. praticola*) was placed in the cage. The shrike was hungry and came for the food immediately; it clutched the lark with its feet and flew about in the outside cage. Then it perched on a drinking cup which was attached to the side of the cage, two feet from the floor, and seized the lark with its bill at the base of the skull, performing a fast biting motion of the lower mandible. Then it flew again and came back to the cup. This maneuver was repeated several times at short intervals, during which the shrike raised its head high, as if to view its surroundings and reassure itself that there were no enemies about to take away its prey. The bird looked with some interest at the cup on which it was perched, then lifted the lark and began wedging it between the cup and the wire mesh of the cage. This task was a new one and required some skill. Each movement suggested much forethought, as there was no hit or miss. When the victim slipped, it was lifted completely out of the angle and wedged back with deliberate jerks of the shrike's head and body, each jerk accompanied by a flip of the wings. From time to time, as dead birds were given to it, the shrike would repeat the mock-killing maneuvers. This seemed to be entirely instinctive, for even when the shrike was unusually hungry it behaved in this fashion.

One afternoon a live English Sparrow was put into the cage. The shrike although hungry, was indifferent and showed no apparent interest in the victim. As it was perched, I noticed an opening and closing of the mouth, as if the bird were trying to utter some notes but could not. Later, however, it seemed to be gasping. Then this became more complicated, and each time it opened its mouth there were convulsive jerks of the throat and shakes of the head. The bird was greatly fluffed and appeared ill. Its movements suggested that it was trying to vomit something, and I guessed

that it was undergoing the steps preliminary to the disgorging of a pellet. After twenty minutes of seemingly painful distortion of the throat, it threw the pellet off with a successful vigorous shake of the head. Now the bird appeared in greatly improved condition. It rubbed its bill laboriously on the perch, and began to look inquisitively at the sparrow. It made a few passes at the victim by flying toward it, and the sparrow, which had shown no fear until this time, began to fly about excitedly. The chase was kept up for half an hour without success. This was probably due to the smallness of the cage, and although the shrike was by far the more graceful flier of the two, the sparrow succeeded in getting away in swift flights which the killer could not follow. However, the pursuer was becoming more keen, and followed its prey with more vigor and enthusiasm. As the sparrow was making excited gyrations, the shrike flew at it in mid-air and seized it with its feet; then making a half circle, brought the screaming sparrow to the floor. Here, with tail outspread and wings drooped, the shrike's pose bore close resemblance to that assumed by hawks after a kill. With a last effort, the sparrow freed itself. A fervent chase ensued. Three or four times the shrike grasped the elusive prey with its claws unsuccessfully, but at last brought the sparrow down. With feet outstretched and head thrown back, it looked about in defiance; then grasped the prey at the base of the skull with its bill, biting rapidly. The sparrow's screaming ceased at once; it was dead. The shrike repeated the fast-biting motion of the bill several times, as if to make sure that the victim was dead. Then it flew about with the dead bird in its clutches, and soon began eating the head.

A day later a dead Starling was put into the cage. The shrike eyed the bird with interest, then hopped around it and made a single attempt to lift it to the cup. It succeeded in lifting the Starling only a foot into the air, and even this seems phenomenal, for the Starling weighed 89 grams—almost 36 grams more than the shrike. However, showing an understanding of the situation, it dragged the bird toward the stump, which had not been used for several days, and proceeded to impale the Starling. All of this took some effort, and the movements of the bird were not automatic like the movements associated with instinctive behavior; it seemed as though the bird were thinking about every movement that it made. The next day all that remained of the Starling were the major bones of the wings, the partly chewed sternum and the neatly cleaned leg bones. Only part of the viscera had been eaten. Dead mice and birds were introduced at divers instances into the cage, and the shrike invariably showed a preference for mice. Here again the head was eaten first as with birds.

The behavior described above has been observed from time to time, and has proved to be quite constant with this individual. The writer, however, does not claim that this observation is complete and thorough. It is pos-

sible that the behavior of this bird may have been abnormal because it was caged and in unnatural surroundings.

*Laboratory of Ornithology  
Cornell University  
Ithaca, New York*