

Post-mortem digestion of stomach contents in the Savannah Sparrow.—Van Koersveld (Proc. 10th Intern. Ornith. Congr.: 592–594, 1951) demonstrated that digestion in Corvidae continues for 20 to 30 minutes after death unless stopped in some manner. He also demonstrated that soft-bodied forms such as earthworms were completely digested within that time and wireworm larvae were nearly gone in the same time. Harder forms were less completely digested in that time.

As part of a study of the feeding habits of Savannah Sparrows (*Passerculus sandwichensis*), I compared the stomach contents of 80 sparrows collected by me from 1959 to 1961 with the contents of 47 sparrow stomachs obtained from the U. S. Fish and Wildlife Service, collected from 1877 to 1938. The 80 sparrows were injected immediately after they were killed with 1.0 cc of 10 per cent formalin to stop digestive action. The 47 stomachs were presumably not injected at the time of their collection because no collector mentioned any immediate preservation methods in his records. The injected birds contained parts of 13.75 animals per bird whereas the non-injected birds contained parts of only 5.13 animals per bird. Only birds containing some animal food were utilized.

The number of animals of each order eaten was then considered as a percentage of all the animals eaten for the two groups. These percentages agreed fairly closely between injected and non-injected birds in all orders except Homoptera and Lepidoptera. The Homoptera are relatively soft-bodied and comprised over 30 per cent of the animals in injected birds and less than 9 per cent in the non-injected birds. Most harder-bodied forms comprised a slightly higher percentage of the items in non-injected birds. Lepidoptera, consisting mainly of caterpillar mandibles, were three times more abundant in non-injected birds. They accounted for less than 4 per cent in the injected sparrows and over 13 per cent in the non-injected ones. Beetles made up over one half of the animals found in both groups of sparrows.

In the course of the study two immature Savannah Sparrows were caught alive in 1961. One bird was fed one cutworm larva and three leaf-hoppers and was killed 15 minutes later and injected. When the stomach was opened it contained two leaf-hopper heads and the larval skin with one mandible but minus the head capsule. The second bird was fed in a 5-minute period the following items in order: one beetle, beetle larva, bug, snout beetle, bug, and harvestman. Five minutes later the bird was killed and injected. Upon later examination the heads of the two bugs, one with antennae attached, were present. Part of the head and one elytron of the adult beetle were present and the snout beetle was whole. There was no trace of the beetle larva or harvestman in the stomach.

These latter data indicate that digestion is rapid in the Savannah Sparrow, possibly even more rapid than in the Corvidae. The former data might indicate a change in feeding habits but are more likely due to the continuation of digestion after death as in the Corvidae when the process is not halted by some means. Hard parts, such as mandibles, are like gravel and apparently can remain in the stomach for some time. This is pertinent to the interpretation of all food habits studies based on stomach analyses. Various groups of prey animals are digested at different rates both before the birds are collected and also after collection if digestion is not stopped immediately. Aphids, for example, might be eaten commonly but show up rarely in stomach analyses because of their rapid breakdown. Mandibles, on the other hand, may accumulate and give falsely high figures. Interpretations of findings, therefore, must be made with this in mind.—DEAN G. DILLERY, *Biology Department, Albion College, Albion, Michigan.*