

**An analysis of the stomach contents of some Cooper's Hawks (*Accipiter cooperii*).**—The Cooper's Hawk is known to be a killer of gamebirds, poultry, and songbirds. It is also said to kill rabbits and squirrels and, when food is scarce, to capture such animals as snakes, lizards, mice, grasshoppers, and crickets (E. H. Forbush and J. B. May, *Natural history of the birds of eastern and central North America*, Boston, Houghton Mifflin Co., 1939; see p. 105).

The stomachs of 58 Cooper's Hawks collected between 1924 and 1947 were obtained from the U. S. Fish and Wildlife Service. All major geographical regions of the United States were represented, and two specimens were from Ontario, Canada. Nestlings, immature birds, and adults of both sexes were in the collection. Of the 58 stomachs, 54 contained fragments of prey and 4 were empty.

Parts of birds, in some cases only a few feathers, were present in 37 stomachs. Identifiable fragments included those of passerine birds found in 13 stomachs and those of gallinaceous birds in 8 stomachs. Two of three hawks that had been shot near game farms had fed recently on Bobwhite (*Colinus virginianus*).

Mammalian fragments were found in 19 stomachs. Of these fragments, 12 represented rodents: 3 squirrels (*Sciurus*), 2 chipmunks (*Tamias* and *Eutamias*), 2 ground squirrels (*Citellus*), and 5 mice (3 *Peromyscus*, 2 *Microtus*). Rabbit (*Sylvilagus*) remains were found in 2 stomachs.

Reptilian fragments occurred in 5 stomachs. Those that could be identified were 2 anoles (*Anolis*), 2 five-lined skinks (*Eumeces*), and 2 eastern fence lizards (*Sceloporus*). One of the stomachs containing *Anolis* fragments also contained the remains of the only amphibian observed in this study, a tree frog (*Hyla*). The hawk that had eaten the anole and tree frog had been shot near Bellamy, Alabama, in June, 1939.

Insect fragments found in 6 stomachs consisted mainly of exoskeletal pieces of grasshoppers (Orthoptera) and beetles (Coleoptera). Adult scarab beetles (Scarabaeidae) were the insects most frequently seen. Some or all of the insects could conceivably have been killed by other vertebrates that had then fallen prey to the Cooper's Hawks, rather than by the hawks themselves.

Lizard remains were found in the same stomachs with fragments of passerine birds, and 12 stomachs contained fragments of both birds and mammals.

Thus, of 58 Cooper's Hawk stomachs examined, fragments of birds were found in 64 per cent, mammals (mostly rodents) in 33 per cent, reptiles and amphibians in 10 per cent (only one amphibian), and insects in 10 per cent.—STEWART DUNCAN, *Department of Biology, Boston University, Boston, Massachusetts*.

**Notes on stomach contents and weights of some Chilean birds of prey.**—On 8 October 1961, 20 members of the hunting club of Collipulli, Malleco Province, Chile, hunted birds of prey between 0800 and 1800 hours near Collipulli. These birds were considered undesirable by the hunters because they thought that they preyed on small birds, game, and farm animals. The following were killed: 1 White-tailed Kite (*Elanus leucurus*), 1 Rufous-tailed Hawk (*Buteo ventralis*), 2 Harris' Hawks (*Parabuteo unicinctus*), 1 Cinereous Harrier (*Circus cinereus*), 3 Crested Caracaras (*Polyborus plancus*), 30 Sparrow Hawks (*Falco sparverius*), and 1 Great Horned Owl (*Bubo virginianus*).

Analysis of the stomach contents revealed the following: two female Harris' Hawks, weighing 834 and 946 g, had between them eaten a lizard (*Liolaemus* sp.), a rat (*Rattus* sp.), and parts of a rabbit (*Oryctolagus cuniculus*); the female White-tailed Kite (317 g) had eaten a lizard (*Liolaemus* sp.) and an Andean Sparrow (*Zonotrichia*

TABLE 1  
STOMACH CONTENTS OF 30 SPARROW HAWKS AND 3 CRESTED CARACARAS

Item	Sparrow Hawks		Crested Caracaras	
	Frequency in stomachs	Number of individuals	Frequency in stomachs	Number of individuals
<i>Liolaemus</i> sp.	15	22	—	—
<i>Akodon olivaceus</i>	1	1	—	—
Sheep remains	—	—	1	1
Earthworms	—	—	1	7
Carabidae				
Larvae	21	235	—	—
Adults	4	28	—	—
Elateridae	—	—	1	64
<i>Pinotus</i> sp. (Cuculionidae)	1	1	—	—
Other Cuculionidae	1	1	1	1
Other coleopterans	3	4	1	6
Diptera	7	not counted	—	—
<i>Antandrus</i> sp. (Orthoptera)	1	2	—	—
Other orthopterans	8	10	—	—
Lepidoptera				
Larvae	12	74	3	96
Adults	1	1	—	—
Hymenoptera	1	1	—	—
Scorpionida	1	2	—	—
Arachnida	6	19	—	—

*capensis*); the male Rufous-tailed Hawk (950 g) had eaten a Southern Lapwing (*Belanopterus chilensis*); and the Great Horned Owl had eaten a common field mouse (*Akodon olivaceus*).

The stomach contents of 12 male and 18 female Sparrow Hawks, weighing an average of 109 and 139 g, respectively, and of 3 Crested Caracaras, averaging 1130 g, are listed in Table 1. The invertebrates were identified by Bullock.

Dr. George J. Wallace read and commented on this paper.—J. KEEVER GREER, *The Museum and Department of Zoology, Michigan State University, East Lansing, Michigan*, and DILLMAN S. BULLOCK, *El Vergel, Angol, Chile*.

**Utilization of shad as winter food by birds.**—In two earlier papers (*Wilson Bull.*, 75: 42–55, 1963, and 76: 121–137, 1964) I reported that the primary food of Bald Eagles (*Haliaeetus leucocephalus*) wintering in an area near Savanna, Illinois, was gizzard shad (*Dorosoma cepedianum*). This fish is extremely abundant in the Mississippi River and its backwaters. Small shad (3 to 4 inches long) are especially numerous but occasionally larger individuals (up to 12 inches long) are also present. Several portions of the river and the backwaters remain unfrozen, or open periodically, in the winter. Ice conditions and the distribution of open areas were usually stabilized by late December and, at about this time, shad began to appear in large numbers at the open holes. Factors affecting ice conditions were discussed in the above-cited papers. Undoubtedly this area would be unable to support a large population of wintering eagles (up to 267 in February, 1962) without the availability of gizzard shad. Continued studies in 1964 and 1965 substantiated the value of this species as food for eagles. Although other food sources exist, they do not occur in abundance or with the regularity of shad.