ON THE FOOD OF CERTAIN OWLS IN EAST-CENTRAL ILLINOIS.

BY ALVIN R. CAHN, PH.D. AND JACK T. KEMP.

DURING the last three years, opportunities have arisen which led the writers to make an intensive investigation of the food of the Owls in the immediate vicinity of the State University at Urbana, Illinois, in order to determine what vertebrates contribute to the diet of the various species. The finding of a roosting place inhabited by Long-eared Owls through two successive winters afforded pellets in great numbers, and equally favorable opportunities have arisen for a study of the food of other species as well. The data herein offered, excepting only those relating to the rare Snowy Owl, have been gathered entirely from an investigation of regurgitated pellets, of which 1587 have been critically examined. The pellets were soaked for some hours in water, then placed in running water and the enveloping hair washed off, leaving a clean mass of bones in the bottom of the dish. The results of identification of the bones will be summarized under each species of Owl concerned. It is needless to say that pellets of unknown origin have not been considered. To the writer's collection of pellet remains have been added several bottles of bones in the possession of the zoology department of the University, which represent previous collections made from Owl pellets, and bearing the identifications of Dr. L. R. Dice. In order to determine the number of individuals of the smaller mammals involved in the various pellets, a lower mandible was arbitrarily fixed upon as the key, first, because each animal carries but two; and secondly because the mandible is a firm bone that is not often broken and hence is usually recognizable.

Tyto alba pratincola. BARN OWL.—The Barn Owl is now a very rare species in east central Illinois. It was, therefore, with much interest that I received fifty-four pellets which were sent to the University by a farmer living near Philo, Illinois. The pellets had been gathered in a barn in which a pair of these birds spent some three weeks before they were thoughtlessly killed. The pellets showed the following contents.

Mammals.

Microtus austerus	14	28%
Mus musculus	21	42%
Mus norvegicus	6	12%
Blarina brevicauda	2	4%
Peromyscus maniculatus bairdii	3	6%

Birds.

Passer domesticus	4	8%

Asio flammeus. SHORT-EARED OWL.—During the fall of 1926, two birds of this species frequented the fields just south of the University. Careful examination of the ground in these fields yielded 137 pellets regurgitated by these birds, and these pellets contained the following skeletal remains.

Mammals.

Microtus austerus	33	29.2%
Peromyscus maniculatus bairdii	46	40.7%
Blarina brevicauda	4	3.5%
Mus musculus	26	23.0%
Scalopus aquaticus machrinus	1	.9%

Birds.

Sturnella magna magna	2	1.8%
Pooecetes gramineus gramineus	1	.9%

Asio wilsonianus. LONG-EARED OWL.—During the winters of 1926 and 1927, a little "colony" of seven Long-eared Owls wintered in an evergreen in the heart of the residence district of the city of Urbana, within a few blocks of the University. The number of birds that returned each day to roost in this same tree varied, of course, but never a day passed but four or five birds were to be seen sleeping in the deep shadows. The largest number seen at one time was seven, and as this number was observed on no less than forty-four occasions, it is believed that represents the total number of birds in the group. The average number seen on all occasions was five. Weekly trips were made to the tree, and all pellets found were brought in from November 8, 1926 when the birds were first located, to the following April 2, when they left for the summer. In 1927 the birds returned to the same tree on October 21 and remained until the following March 16. In all, 1201 pellets were found and examined. This, on a basis of five birds to the "roost" is a trifle less than one pellet per bird per day. While care was taken to get every pellet possible, no doubt some escaped collection, and certainly not all the food eaten was regurgitated in this one spot. In the case of many pellets which contained skulls which had not been disarticulated, it is interesting to note that in almost every case the otic and occipital regions had been crushed, and the parietal

bones were seldom intact. This indicates that the Owl kills by crushing the skull at its widest point, and death must be rapid. The following vertebrates have been identified in the pellets of this species of Owl.

Mammals.		
Peromyscus maniculatus bairdii	52	4.24%
Peromyscus leucopus noveboracensis	621	52.3 %
Microtus austerus	318	26.5 %
Blarina brevicauda	34	2.84%
Mus musculus	122	10.2 %
Mus norvegicus	19	1.5 %
Condylura cristata	2	.16%
Lasiurus cinereus	2	.16%
Nycticeius humeralis	3	.25%
Geomys bursarius	1	.08%
Tamias striatus lysteri	2	.16%
Sciuropterus volans	2	.16%
Birds.		
Cardinalis cardinalis cardinalis	1	.08%
Sturnella magna	1	.08%
Junco hiemalis	5	.42%
Passer domesticus	8	.66%
Zonotrichia albicollis	2	.16%
Amphibia.		
Ambystoma microstomum	1	.08%
Rana pipiens (?)	1	.08%
Reptiles.		
Storeria dekayi	1	.08%

In the department of Zoology are several vials containing in all 393 lower right mandibles of *Peromyscus leucopus noveboracensis*, bearing the label: "Long-eared Owl pellets; Urbana, Illinois," but with no further data. These are not included in the above tabulation.

Strix varia varia. BARRED OWL.—With the disappearance of areas of "big timber," the larger owls have tended to desert the region under discussion, though the Barred Owl is still occasionally met with near Urbana. During the winter of 1925 two birds of this species inhabited Brownsfield woods for several months, and fifty-four pellets belonging to this species were collected from the area at that time. Fourteen more were gathered at Turkey Run, Indiana, in 1928, and since this region is just across the state line and but little south and east of the area under discussion, these pellets have been included in the following summary.

Mammals.		
Sylvilagus floridanus mearnsi	5	15.%
Microtus austerus	11	31 %
Peromyscus leucopus noveboracensis	8	24 %
Sciurus carolinensis leucotis	2	6 %
Didelphis virginiana	1	3.%
Birds.		
Woodpecker sp.	1	3 %
Planesticus migratorius migratorius	2	6 %
Zenaidura macroura carolinensis	1	3 %
Corvus brachyrhynchos brachrhynchos	1	3 %
Poultry (remains in 5 pellets)	1 (?)	3 %
Amphibia.		
Rana pipiens	1	3 %

In the case of the above species, the percent based on the number of individuals involved is of less significance than in the case of the preceding species, as the relative size of the mammals involved varies so greatly. In this tabulation it should be noted that probably more than five rabbits are represented. Rabbit bones were found in forty one pellets but only five lower incisors (left) were found, so that that number at least must have been present. Other bones were so badly broken that it was impossible to use them in determining the number of rabbits involved. A single rabbit yields many pellets. Chicken bones were present in five pellets, but there was no way of determining how many birds were included. Still, as all the pellets containing poultry were found together, it is doubtful from the data at hand if more than one bird was killed.

Otus asio naevius. SCREECH OWL.—Screech owls are common throughout the state. Near the University they may be found at all seasons of the year if one searches for them. During the late fall and winter of 1928, 143 pellets cast by this species were collected from the forestry preserve and the cemetery south of the campus, and these give an excellent clew to the winter food of the species.

Mammals.		
Mus musculus	88	68.8%
Peromyscus leucopus noveboracensis	23	18. %
Blarina brevicauda	5	3.9%
Peromyscus maniculatus bairdii	2	1.5%
Birds.		
Passer domesticus	5	3.9%
Certhia familiaris familiaris	2	1.5%
Sitta carolinensis carolinensis	1	.8%
Penthestes atricapillus atricapillus	1	.8%
Sturnus vulgaris	1	.8%

Nyctea nyctea. SNOWY OWL.—The unusual southern migration of the Snowy owl which occurred in the winter of 1926-27, brought to our attention seven records in central Illinois of this ordinarily very rare bird. Of these seven birds, three passed through our hands while still in the flesh, and the stomachs of these were examined for their food contents. While in no sense fat, these birds were in excellent condition, though their stomachs were disappointingly empty. One stomach was entirely empty; the other two showed the following items:

Mammals.

Peromyscus leucopus noveboracensis	3
Blarina brevicauda	1

Birds.

Junco hyemalis	1

Perhaps the fact that all three of these Owls were shot late in the afternoon accounts for the few items discovered.

DISCUSSION.

Because of the nocturnal feeding habits of Owls, little information is at hand as to the feeding grounds of the various species—whether they feed and hunt in the woods or in fields or swamps. An examination of the vertebrate remains found in the regurgitated pellets gives a very good index to this subject. *Peromyscus maniculatus bairdii,* the white-footed prairie mouse, is distinctly an inhabitant of the open fields, and in Illinois is practically never to be found in woodlands or associated with stumps and other cover. On the other hand, *Peromyscus leucopus noveboracensis,* the white-footed wood mouse, has a distribution that is co-extensive with the woodlands and is rarely taken in the open fields. With these facts in mind, it is interesting to note that the Short-eared Owls found 46 prairie mice and not a single one of the woods species. The Long-eared Owl found 52 of the prairie mice as against 621 of the wood mice. There can be but little question where these two species of Owls are doing their hunting. The Barn Owl found 3 prairie mice, but no wood mice, and the Barred Owls 8 of the wood mice, and none of the prairie forms. *Microtus austerus,* the so-called prairie vole, requires cover of some sort, be it trees and brush or merely clover or alfalfa, and in central Illinois is more frequently an inhabitant of the high ground rather than of the

low. It is found, however, in about equal numbers in the woods and in the fields. It is interesting to note that the Short-eared Owls found 33 of these animals, while the Long-eared Owls found 318. But when these are reduced to a percentage basis, we find the vole comprising 29.2% of the food of the Short-eared Owl, and 26.5% of the food of the long-eared species, which is about what one might expect from the distribution of the birds. The very common house mouse, *Mus musculus*, which also plays an important part in the menu of the Owls is, like *Microtus austerus*, of general distribution through the woods and fields, which accounts for its appearance in the diet of four of the six species of Owls discussed. During the winter, however, it is more common in the woods, and the Screech Owl has picked up 68.8% of its food from this species of mouse, associating it with the white-footed wood mouse which makes up 18% of the food budget. The appearance of five bats of two species in the food of the Long-eared Owl is interesting, and offers food for speculation, since both Owl and bat are active at the same time. It seems doubtful that the bats could have been caught on the wing.

Department of Zoology,
University of Illinois, Urbana, Illinois.