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THE FOOD OF THE BARN OWL IN THE SERENGETI NATIONAL PARK, TANZANIA,

by

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INTRODUCTION

The object of this study was to obtain information about the prey of the Barn Owl (*Tyto alba*, Scopoli), by identification of skulls in their regurgitated pellets and to compare the prey taken in different habitats. Differences in the contents of the pellets from various habitats may be due to differences in abundance of the prey species or differences in selection by the predator. The latter could be due to different vegetation cover or different hunting methods or a combination of both. Attempts were made to determine any prey selection by comparing the pellet contents with a small number of trapping records. Neither trapping nor pellet collection provide an unselective sampling method but comparison of the two can give some idea of the type of selection taking place. Other predators select in different ways; a number of droppings of the Genet (*Genetta genetta*, Linnaeus) were also examined for comparison with the owl pellet data.

Methods

The work was done in some of my spare time as a field assistant in the Serengeti Research Institute of the Serengeti National Park, Tanzania. Collections of pellets were made in the large granite outcrops or kopjes near Seronera, between 11th May and 31st July 1969—a very dry period. All pellets were from roosting sites at which Barn Owls had been seen. There were three main sites of collection:—

Site No. 1: Oloserian, the site of the Serengeti Research Institute buildings 3.219 km (*two miles*) from Seronera. At least one pair of Barn Owls were resident in a large rock outcrops during the study period but no new pellets were found after the beginning of July. The group of rock outcrops and buildings are situated in sparse acacia woodland east of Seronera.

Site No. 2: Masai Kopjes, a large group of thickly vegetated outcrops 8.047 km (*five miles*) south-east of Seronera on the border of the open plains and the woodlands. Barn Owls were disturbed on four different roosts and new pellets were found under one or more of them at each collection.

Site No. 3: Simba Kopjes, another group of large rock outcrops, 32.187 km (*twenty miles*) south-south-east of Seronera in the open plains. The vegetation is very like that of Masai Kopjes but slightly sparser. Two definite Barn Owl roosts were found here. The similarity to

Site No. 2 means that these two can be compared jointly as plains sites with Site No. 1, a woodland site.

439 pellets, together with a quantity of disintegrated pellet material were collected from these three localities and all lower jaws and skulls present were dissected out. These were identified to genera with the aid of "Keys to the Genera of Insectivora, Chiroptera and Rodentia of East Africa" by J. B. Foster and A. Duff-Mackay, and by subsequent comparison with specimens at the British Museum, London in December 1969. The bird skulls were not identified, nor were the only reptile remains—a lizard's lower jaw.

The wing and body cases of beetles were present in many pellets. These were not identified, nor was it possible to estimate the numbers of beetles contributing to the remains present in any one pellet. However, each pellet was recorded as containing or not containing beetle remains and the results of this analysis are shown below.

Genet droppings were collected on several occasions from a large rock near Oloserian. The skulls in these droppings were broken up to a considerable degree and not many reliable identifications could be made. Lower jaws, however, were found intact and their identification as far as the orders Insectivora and Rodentia was possible.

A little mammal trapping was done at Oloserian with Longworth traps. These were deliberately placed to attempt to catch a large variety of species; consequently numbers of those trapped by no means reflect the relative abundances of the small nocturnal mammals which would be available to the owls.

Results

	Site No. 1 Oloserian		*Site No. 2 Masai*		*Site No. 3 Simba*		*Total*	
	No.	*%Tot.*	*No.*	*%Tot.*	*No.*	*%Tot.*	*No.*	*%Tot.*
RODENTIA:								
Arvicanthis	24	6.8	145	17.8	22	20.4	191	15.1
Mastomys	58	16.8	52	6.4	12	11.1	122	9.7
Saccostomus	36	10.4	61	7.5	6	5.6	103	8.2
Steatomys	22	6.4	30	3.7	6	5.6	58	4.6
Zelotomys	1	0.3	12	1.6	0		13	1.0
Mus	4	1.2	9	1.1	0		13	1.0
Thallomys	3	0.8	9	1.1	0		12	0.9
Pelomys	2	0.6	1	0.1	0		3	0.2
Tatera	0		0		3	2.6	3	0.2
Tachyoryctes	1	0.3	0		0		1	0.1
INSECTIVORA:								
Crocidura	181	52.4	466	57.3	57	52.8	704	55.6
Elephantulus	3	0.8	0		0		3	0.2
CHIROPTERA:								
Tadarida	2	0.6	1	0.1	0		3	0.2
Taphozous	1	0.3	1	0.1	0		2	0.1
BIRDS	8	2.3	25	3.1	2	1.9	35	2.8
REPTILES	0		1	0.1	0		1	0.1
TOTALS	346	100.0	813	100.0	108	100.0	1267	100.0
BEETLES	37	34.0	178	62.0	23	53.0	238	54.0
NO BEETLES	73	66.0	108	38.0	20	47.0	201	46.0
TOTALS	110	100.0	286	100.0	43	100.0	439	100.0

Notes: Species were identified as follows:—

Mus minutoides (Smith)
M. bufo (Thomas)
Crocidura bicolor (Bocage)
Elephantulus rufescens (Peters)
Tadarida aegyptiaca (E. Geoffroy)
Taphozous (*Liponycteris*) *nudiventris* (Cretzschmar)

Trapping results: The following were captured in a total of 70 trap days in the rock outcrops at Oloserian.

Acomys spp.	20
Arvicanthis spp.	16
Mastomys spp.	13
Lemniscomys spp.	1
Graphiurus spp.	1
Crocidura spp.	4

Genet droppings: Few positive identifications could be made; the numbers of insectivores are compared with the number of rodents (lower jaws), from 43 droppings.

Rodentia:	23 (inc. *Arvicanthis*, *Steatomys* and *Mastomys* spp.)
Insectivora:	3 (probably *Crocidura* spp.)

Discussion

Various significant differences can be seen between the contents of pellets from different sites. The most obvious are between those from Oloserian and the other two sites. Oloserian has a significantly lower percentage of *Arvicanthis* and higher percentages of *Mastomys*, *Saccostomus* and *Steatomys*. Oloserian also has a very much lower percentage of pellets containing beetle remains. Some genera are completely absent in the samples from a particular locality; for example, *Tatera* is present only in the smaller sample of Simba, and *Elephantulus* was found only at Oloserian.

As stated earlier these differences could be caused by a difference in the small mammal populations or by differences in sampling or by a combination of both. The habitat differences between sites 2 and 3 are slight and this is reflected in the similarity of the pellet contents from these sites. The details of the way in which the habitat differences affect the small mammal populations require an extensive knowledge of the habitat preferences of the animals involved. Differences in sampling by the owls could result from the longer grass and thicker tree cover round the rock outcrops in the woodland and the presence of human habitation at Oloserian could also be involved.

From the trapping results, it can be seen that the identification of owl pellet remains gave no true picture of the small mammal population: three genera were trapped for which no remains were found in pellets at any site. *Acomys*, the spiny mouse, has the posterior dorsal hairs modified into rigid spines which could discourage owls (and genets) from eating or capturing them. *Graphiurus*, the dormouse, is presumably protected by its arboreal habits. *Arvicanthis* features prominently in trap data and they were often seen during daytime in the area although occuring as rather a low percentage in the pellets from Oloserian. Possibly they are protected from owl predation by their largely diurnal habits.

The very high proportion of insectivores in the owl pellets compared with their almost non-existence in the genet droppings is noteworthy. Many carnivores (domestic cats, foxes and jackals) are known to dislike shrews but it seems that owls have no such dislike.

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