THE PREY OF OWLS IN THE NAMIB DESERT 1: THE SPOTTED EAGLE OWL *BUBO AFRICANUS* AT SOSSUS VLEI

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(With 1 figure and 1 table)

INTRODUCTION

The aim of this series of papers is to discuss the gross composition of the prey of owls from various localities in the Namib Desert and secondly, being undertaken from the mammalogist's point of view, to provide some data on the ecology, distribution and relative abundance of the mammalian microfauna in the vicinity of the owl roosts. The study of owl pellets from the Namib Desert has already produced valuable results, in so far as two new mammalian subspecies, the Desert Golden Mole *Eremitalpa granti namibensis* and the Gerbil *Gerbillus vallinus tytonis*. They were first described by Bauer and Niethammer (1959) from pellets collected at Sossusvlei. Subsequently, a study of pellets from Natab (Meester, 1962) further extended the known range of the golden mole. The pellets collected by Bauer and Niethammer were deposited by the Owl *Tyto alba;* the present paper deals with the contents of pellets collected at the same locality, but deposited by a different species of owl, viz. the Spotted Eagle Owl *Bubo africanus*.

When assessing the results of an analysis of owl pellets a few points must be kept in mind. Owls usually have a fairly well defined hunting territory and they usually hunt at night. This inevitably gives rise to a rather biased picture of the species, and their relative abundance, occurring at each locality — nocturnal and crepuscular species being those most frequently preyed upon. The factors, discussed below, may also influence the selection of prey. Davis (1959) has pointed out the value of regular collections of pellets from the same locality, especially when the fluctuation in numbers of different species are being investigated. When the pellets used for an analysis (as in the present case) were deposited over an unknown period this is, of course, not possible. Ideally, trapping should accompany regular collections of pellets; but this is not always possible. The study of pellets in itself is, however, a valuable aid for the quick assessment of the microfauna in the vicinity of the roost and can yield startling results as shown by the discoveries of Bauer and Niethammer.

MATERIAL AND METHOD

This analysis is based on two collections of pellets, one by Mr. O. P. M. Prozesky during August 1964, and the other by Mr. C. G. Coetzee during October 1965. The first collection consisted of 214 pellets, and the second of 38 pellets. In both instances some loose material (broken pellets) was also collected, though it is difficult to determine how many whole pellets this represents. During both collections the site (the floor of a dilapidated wooden hut) was cleared. The owl was identified by Mr. Prozesky at the time of the first collection.

Cranial remains from whole pellets were sorted, identified and counted separately from those in the loose material. In the case of the latter, left and right maxillae and mandibles of each species were sorted separately and the highest number was taken as reflecting the maximum number of specimens

Sossus Vlei (Southern Namib): site of observations.

preyed upon. The totals derived from the whole pellets and from the loose material then gave the grand total for each species.

When the first collections of pellets was made the owl was still using the roost. The owl must have deserted the roost soon after, judging by the small number of pellets collected the second time. At this time the roost was still deserted.

At the time of the second collection of pellets in 1965 some trapping was also done at Sossus Vlei, as well as in the bed of the Tsauchab River. Snap (breakback) traps were the only ones used. The collecting area, using traps, covered the floor and fringes of the pan and extended onto some of the dunes surrounding it.

DESCRIPTION OF COLLECTION AREA

Sossus Vlei, situated at 24° 42′ S, 15° 29′ E, is an expansion of the Tsauchab river-bed where the flow to the sea is interrupted by the high North-South stretching dunes of the central Namib. The river bed is approximately 300 yards to 1 mile in width where it cuts through the dunes, expanding to form a pan with an approximate diameter of some 3½ miles, though there is considerable encroachment by dunes onto the pan floor. This floor consists of hard, thick consolidated white silt; it is fairly uneven, exhibiting marked signs of erosion. Vegetation consists mainly of Narras bushes *(Acanthosicyos horrida)*, some tamarisk trees *(Tamarix articulata)* and on the northern side, extending some way onto the dunes, camelthorn trees *(Acacia giraffae)*. Grass is fairly scarce in the pan itself, though dune grass *(Aristida namaquensis)* occurs on the high dunes surrounding it. Depending on the amount of rain falling in the Naukluft mountains (where the Tsauchab originates) the pan may have permanent surface water, usually concentrated in one waterhole.

DISCUSSION

The results obtained by analysing the pellets and those obtained from trapping contrast markedly. Apart from the expected higher incidence of the diurnal *Rhabdomys pumilio* shown by the trapping, and also the occurrence of the tree-living *Thallomys paedulcus* (seldom found in pellets — Nel and Nolte, 1965, the discrepancy between the numbers of *Gerbillus paeba* and *Gerbillus vallinus tytonis* trapped, and those caught by the owl is so great that one must assume that the owl either had a very well defined hunting territory, or that a marked change in the relative numbers of these two species occurred subsequent to the owl deserting the roost. This will be discussed below in greater detail.

THE PREY

Mammals

Only 5 species of mammals were represented in the pellets. This is perhaps not surprising when one considers the restricted area and uniformity of the habitat. By far the most specimens belong to *Gerbillus vallinus tytonis*. Strangely enough *Eremitalpa granti namibensis* is the second most numerous species although it was previously believed to be rare. Then follows *Gerbillus paeba, Desmodillus auricularis* (not found when trapping) and *Rhabdomys pumilio*. According to the pellet analysis, therefore, it seems as if *G. v. tytonis* is the most common species, and that the others are of lesser importance. Trapping results, however, indicate nearly the exact opposite, *Rhabdomys* being the most common, followed by *Gerbillus paeba*. Only two specimens of *Eremitalpa* were obtained but it must be kept in mind that they are rather difficult to catch. Only one specimen of *Gerbillus vallinus tytonis* was trapped, and this some 16 miles from Sossus Vlei in the bed of the Tsauchab River. Both *G. paeba* and *G. v. tytonis* are nocturnal, but *G. v. tytonis* favours the harder silt of the river-bed itself, whereas *G. paeba* occurs more commonly on the dune slopes covered by Narras bush (Coetzee, *pers. com.*). This would appear to indicate that the hunting territory of the owl is strictly limited to the pan — and river-beds; but the occurrence of so many *Eremitalpa* (found only in the dunes bordering the pan and river-bed) rather negates this assumption. Perhaps the amount of cover available to the species preyed upon is of greater importance than their relative numbers. This would explain why some species tend to predominate as regards the prey — *G. paeba* and *Thallomys* (not represented in the pellets, but present) favour a habitat with some amount of cover, whereas *G. v. tytonis* and *Eremitalpa* occur where the ground cover is very sparse.

TABLE: **Gross composition of the prey**

MAMMALS Species	1964	1965	Total	Average weight (grams)	% Composition by weight	% Composition by number
Gerbillus paeba	34	2	36	24	5.9	6.9
Gerbillus vallinus tytonis	303	49	352	30	71.9	67.2
Eremitalpa granti namibensis	77	42	119	20	16.2	22.7
Desmodillus auricularis	12	1	13	53	4.7	2.5
Rhabdomys pumilio	4	—	4	50	1.4	0.8
Total	430	94	524	—	100	100
REPTILES Species						
Ptenopus sp. (garrulus — kochi)	14	4	18	5.5	38.4	47.4
Chondrodactylus angulifer	1	—	1	27.0	10.5	2.6
Palmatogecko rangei	15	—	15	5.8	33.7	39.5
Pachydactylus laevigatus	3	1	4	11.3	17.4	10.5
Total	33	5	38	—	100	100
BIRDS Species						
Mirafra africanoides	1					
Passer melanurus	1					
Sporopipes squamifrons	1					
Total	3					

Mammal component of prey:	93.2% (by number) 98.3% (by weight)
Reptile component of prey:	6.8% (by number) 1.7% (by weight)
Bird component of prey:	Negligible
Insect component of prey:	Negligible

However, this still does not explain the absence of *G. v. tytonis* in trapping results. Bauer and Niethammer also trapped some *G. paeba* at Sossus Vlei, but no *G. v. tytonis;* this would seem to rule out the possibility of a sudden and drastic decrease in the numbers of *G. v. tytonis* after the owl had deserted the roost. When comparing the results of the analysis of the pellets, and those obtained from trapping, the picture that emerges is that the hunting territory of the owl may be mainly over the floor of the pan and a considerable way up the river-bed, also covering at least part of the dunes surrounding the pan and river-bed; that the mammal species most frequently preyed upon are those occurring where cover is minimal *(Eremitalpa* and *G. v. tytonis)*; and that the largest concentration of *G. v. tytonis* is not at the pan itself, but some miles away.

Reptiles

The 5 species of reptiles represented in the pellets constitute only a fraction of the prey, both as regards total weight as well as the number of individuals caught. Here, however, the results from the pellets and those from trapping agree well; *Chondrodactylus* is the scarcest, and *Pachydactylus,* although more common, occurs under trees and on the trunks themselves where they are better protected against predation by owls. Apart from *Pachydactylus* the reptiles represented in the prey favour the dune 'streets' as well as the pan floor, where they would be more exposed to predation. All 5 species are noctural.

Birds

Only three specimens, representing three species, were found in the pellets. Birds thus form a negligible part of the prey. This contrasts with results obtained in the Transvaal (Kolbe, 1946; Davis, 1959 and de Greeff, 1960) where it was found that small birds form a fairly high percentage of the prey during the summer months, but it approximates more closely results from the Kalahari (Nel and Nolte, 1965) where birds also form only a small percentage of the prey.

Conclusion

At Sossus Vlei mammals constitute the largest percentage, by weight as well as numbers, of the prey of the Spotted Eagle Owl. When compared with trapping results, the relative percentage of each species in the prey would seem to indicate that species frequenting areas of sparse cover are those most commonly preyed upon but not necessarily the most abundant species. Some indication is given that in arid areas birds seem to form a much smaller precentage of the prey than elsewhere.

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