NOTES ON THE PREY OF OWLS IN THE KALAHARI GEMSBOK NATIONAL PARK, WITH SPECIAL REFERENCE TO THE SMALL MAMMALS

by

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INTRODUCTION

The object of the present study is twofold: firstly, to determine the gross composition of the diet of owls in the Park and secondly, to gain an insight into the distribution patterns of the smaller mammals.

Although the mammalian microfauna of the area surrounding the Park is fairly well known, as is evidenced in the works of Shortridge (1934), Roberts (1951) and Davis (1962), the smaller fauna of the Park itself was virtually unknown up to 1956, when a rapid survey was undertaken (Davis, 1958). During November-December 1963 some trapping was done, and in addition owl pellets were collected (see map). The value of the barn owl as an ally when studying the ecology of smaller mammals has already been pointed out (Davis, 1959).

Seasonal variations in the numbers of small mammals, birds and insects have been studied from regular pellet collections made in the central Transvaal by Kolbe (1946), Davis (1959) and de Graaff (1960). The collections from the various localities in the Park reflect pellet deposits over an unknown length of time and it is proposed to make regular collections from a number of localities in the Park in the near future.

Attention should, however, be drawn to the fact that, as shown by Coetzee, (1963), the study of owl pellet material tends to give a biased picture of the species and their relative numbers occurring in each locality. Owls hunt only by night (rarely on cloudy days, these being in any case infrequent in the Kalahari) and thus nocturnal and crepuscular species are those most preyed upon. This is borne out by the results obtained (Table 1). The rather strictly nocturnal gerbils are the most common, the genus

Gerbillus being the most numerous. Trapping results, however, indicate that *Desmodillus* may be more common than indicated in Table 1. Single specimens only of some species were recovered. Of special interest is the fact that over 10% of the total mammal prey are diurnal from like *Parotomys* and *Rhabdomys*. As no intensive trapping has been undertaken, it is at the moment impossible to arrive at a clear picture of the distribution pattern and relative abundance of each species occurring in the Park apart from the fact that some species have, as yet, not been recorded.

Material and Method

The Material consists of regurgitated owl pellets, collected at seven localities in the Kalahari Gemsbok National Park during April (Samevloeiing) and December, 1963. Four localities are in the Auob, two in the Nossob, and one at the confluence of these two rivers, some two miles from Twee Rivieren. All the localities are in the sandstone cliffs bordering the river beds, except Craighlockhart and Samevloeiing, where the pellets were collected below camelthorn trees *(Acacia giraffae)* and witgat trees *(Boscia albitrunca)*, respectively. The collections varied greatly in number, ranging from 24 pellets from Samevloeiing to 135 from Kransbrak, figures for the other localities being: Auchterlonie A 132; Auchterlonie B 44 (these two localities being 3 miles apart); Craighlockhart 38; and Kij Kij 123 pellets.

The pellets were not all of uniform size, indicating that at least two owl species, the barn owl *Tyto alba*, and the giant eagle owl *Bubo lacteus*, or the spotted eagle owl *Bubo africanus*, are responsible. At all the localities some loose material, consisting of broken pellets or parts of pellets, was also collected. From most localities all the pellets were taken away, but at one or two, notably Kransbrak, the size of the pellet deposit precluded this. 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 (the only cranial parts used in this analysis) for each species were sorted separately and the highest number recorded was taken as reflecting the highest number of specimens preyed upon. The totals of the whole pellets and of the loose material were then added up to give the grand total for each species at each locality.

In Table 1 the gross composition of the collections from each locality is given. In the case of mammals the number of individuals of each species or from each locality is also given (for Reptiles, see Table 2 and Birds, Table 3) as well as the percentage composition by numbers and weight, expressed as a percentage of the total mammal component and not of the diet as a whole. It was not feasible to do the same in the case of the birds and reptiles, as the body weights were unknown.

Notes on Prey

Insects:

Insect remains were found in pellets from three localities only. A fair number were present in the pellets from Samevloeiing and Batulama, but very few from Auchterlonie A. As already noted above, the pellets were probably deposited over a considerable length of time, so that in insect availability seasonal variations need not be considered. It would thus appear that insects do not constitute a major part of the owls' diet.

The insects proved to be: Scarabaeidae (dung-beetles) and Tenebrionidae (toktokkies).

Arachnids:

A few scorpions, belonging to at least two different species, were found in the pellets from two localities.

Amphibians:

Amphibian remains are rare in owl pellets, particularly in dry parts like the Kalahari where permanent open water is usually absent. The two unidentified frog skulls may represent specimens brought down by the floods of early in 1963 and subsequently caught within the confines of the Park.

Reptiles:

Reptiles constitute a very small percentage of the owls' prey. Most of the specimens caught are nocturnal species of geckos, although *Ptenopus garrulus* sometimes also hunt at dusk. The presence of *Agama* sp. and *Mabuya* sp. is rather baffling, as these are strictly diurnal forms, usually found basking in the sun on exposed rocks. Two small, unidentified snakes were found in the pellets from Batulama. For the distribution of the reptiles see Table 2.

Birds:

A total of 25 individuals representing 5 species, were found in the pellets. Of these, *Sporopipes squamifrons* (Scaly feathered Finch) proved to be the most numerous. All the birds caught by the owls are species which commonly sleep on or under low shrubs. The numbers of the various species recorded at each locality are listed in Table 3, as well as the percentage each species represents of the total number caught.

The numbers given alongside each name are those used by McLachlan and Liversidge (1957).

Mammals:

Parotomys brantsi

The distribution of the Karoo Rat throughout the Park is not continuous. In the southern part (south of the Auob) one can travel for miles through *Parotomys* colonies in the dune streets. Here colonies are seldom on the

steeper sloping sides of the dunes themselves. In the Auob itself, however, colonies were found very high up the sides of the dunes bordering the river bed. In the north the colonies tend to be smaller and isolated and the distribution is thus rather patchy. The colonies tend to have a very intricate burrow system (de Graaff and Nel, In Press) and single specimens are often seen sitting at the entrance holes, or scurrying from one hole to the other. In contrast to previous observations (Davis, 1958) they seem to be less strictly diurnal than previously assumed, for a fair number were trapped some two hours after darkness next to the laboratory building at the Twee Rivieren rest camp.

Thallomys paedulcus

This species is rarely found in owl pellets on account of its strictly arboreal habits. From observations it seems that these animals are not very abundant although they have previously been found in pellets in the Kalahari (Molopo); Davis (1958).

Chrysochloris damarensis: inc. sedis

Golden moles were previously unknown in the Kalahari or vicinity. A single claw was found in the pellets from Craighlockhart, in size comparing well with that of *Chrysochloris asiatica,* although this species is known to occur only in wet and very bushy areas along the East coast of South Africa. In 1838 Ogilby described a specimen collected by Capt. Alexander in "Damaraland", although the original type has since been lost and no subsequent specimens have been collected. In view of the fact that the locality given for this species is closest to the Kalahari, the specimen found at Craighlockhart is tentatively referred to *Chrysochloris damarensis.* It is proposed to make an intensive search in the near future for further specimens.

Dendromurinae:

Two specimens, belonging to different genera *(Dendromus* and *Malacothrix)* of this subfamily have been recovered from the pellets although previously (Davis, 1958) *Malacothrix* was also found in the Park. As these two genera are nocturnal in habits, it may perhaps be assumed that they are fairly scarce in the Park, although intensive trapping is needed to confirm this assumption.

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TABLE 1

Gross composition of the prey of Owls in the Kalahari Gemsbok National Park.

MAMMALS Species	Samevloeiing	Batulama	Craighlockhart	Auchterlonie A	Auchterlonie B	Kransbrak	Kij Kij	Total sp.	Approx. Body weight (g)	% Composition by species	% Composition by weight
Crocidura deserti	1	6	—	4	—	43	64	118	20g	8.8922	5.5566
Elephantulus intufi	—	—	—	1	—	—	2	3	40	.2260	.2825
Tadarida bocagei	—	—	—	1	—	4	—	5	12	.3767	.1412
Chrysochloris damarensis inc. sed.	—	—	1	—	—	—	—	1	?	—	—
Rhabdomys pumilio	3	5	3	7	—	27	6	51	45	3.8432	5.4035
Thallomys paedulcus	—	1	—	—	—	—	—	1	45	.0753	.1059
Mus minutoides	8	1	1	3	8	129	85	235	8	17.7091	4.4264
Dendromus melanotis	—	—	—	1	—	—	—	1	12	.0753	.0282
Malacothrix typica	1	—	—	—	—	—	—	1	20	.0753	.0470
Parotomys brantsi	3	6	7	56	2	9	5	88	80	6.6314	16.5756
Desmodillus auricularis	10	9	19	7	2	8	4	59	45	4.4461	6.2511
Gerbillus paeba	21	1	8	103	118	227	133	611	25	46.0437	35.9648
Tatera sp. (brantsi & schinzi)	3	17	4	14	5	60	50	153	70	11.5297	25.2166
TOTAL (locality)	50	46	43	197	135	507	349	1327	—	99.9240	99.9994
Insects	few	few	—	very few	—	—	—	—			
Reptiles	2	9	4	7	2	12	6	42			
Birds	2	1	—	10	5	—	7	25			
Amphibia	—	—	—	—	—	—	2	2			

TABLE 2

Reptile prey of Owls in the Kalahari Gemsbok National Park.

	Samevloeiing.	Auchterlonie A.	Auchterlonie B.	Batulama.	Craighlockhart.	Kij KKij.	Kransbrak.	Grand Total.	Comp. species %
Mabuya sp.	—	—	1	—	—	—	—	1	2.3809
Agama hispida.	1	1	—	1	—	—	—	3	7.1428
Chondrodactylus angulifer.	—	—	—	2	2	—	1	5	11.9047
Pachydactylus bibronii.	1	5	1	6	—	5	10	28	66.6666
Ptenopus garrulus.	—	1	—	—	2	1	1	5	11.9047
Total (locality)	2	7	2	9	4	6	12	42	99.9997

TABLE 3

Bird prey of Owls in the Kalahari Gemsbok National Park.

	Samevloeiing.	Batulama.	Craighlockhart.	Auchterlonie A.	Auchterlonie B.	Kransbrak.	Kij Kij.	Total.	Comp. species %
789 *Sporopipes squamifrons* .... (Scaly-feathered finch)	2	—	—	9	—	3	3	17	68.0000
459 *Mirafra africanoides* .... (Fawn-coloured Lark)	—	—	—	1	—	1	2	4	16.0000
650 *Prinia flavicans* .... (Black-chested Prinia)	—	—	—	—	—	—	2	2	8.0000
316 *Streptopelia capicola* .... (Turtle Dove)	—	1	—	—	—	—	—	1	4.0000
Falconidae/Aquilidae	—	—	—	—	—	1	—	1	4.0000
Total, Localities	2	1	—	10	—	5	7	25	100

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