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FOOD OF A BARN OWL *Tyto alba* IN NIGERIA

by Andrew Demeter

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INTRODUCTION

There is a good literature on pellet analysis of the widespread Barn Owl *Tyto alba* in Europe and North America. In Africa, the principal studies have been in the South, with a review by Vernon (1972) and a detailed investigation on material collected in South West Africa by Niethammer (1974-75). West Africa has been rather neglected and I know only of Barn Owl pellet analyses by Heim de Balsac (1965) and Heim de Balsac & Lamotte (1958). A drawback of the former of these two is that little or no quantitative evidence is presented, and there is a tendency to emphasize unusual records.

I thought it would be beneficial to analyse a small sample of 22 pellets which I collected on 21 December 1974, 1 km east of Samaru (11°10'N, 7°37'E), Nigeria. No attempt was made to search for roosting sites other than the one found, which was an erosion gully about 4 m deep. Although it was the breeding season, a single Barn Owl was repeatedly flushed from the wall of the gully, and I assume it roosted there solitarily. The surrounding vegetation is much-degraded Northern Guinea Savanna, presently uncultivated.

Pellets were prepared for examination using the technique of Vernon (1972). Specimens of the most abundant prey species, the rat *Mastomys natalensis*, were aged using a key based upon tooth wear (Delany 1971) to obtain information about the age structure of the population of this rodent. That might indicate a seasonal reproductive cycle (Sheppe 1973), as suggested for savanna rodents in Nigeria (Happold 1974).

RESULTS

Contents of the pellets are shown in Table 1. Rodents were identified, wherever possible, after Rosevear (1969), whose nomenclature is followed. It was not possible to identify birds from their skulls, due to lack of reference collection. Shrews (Soricidae) also presented difficulty. *Crocidura* sp. 1 is most probably *C. flavescens manni*, a large shrew with a wide distribution. The uncertainty lies in the fact that the authors who created this polytypic species (Heim de Balsac & Balroy 1966) themselves admit that distinction based solely on cranial characters from a still larger species, *C. griffardi*, is difficult. *C. f. manni* is a mainly Nigerian subspecies and the size of the specimen agrees well with the mean of a series of 32 *manni* given in the above paper.

The ten other small specimens, Crocidura sp. 2, are much more difficult to allocate and I am not sure whether they represent one or two species. Six have a coronoid height of 36-38 mm and four of 41-42 mm. A number of small forms have been described from West Africa, one, C. glebula Dollman, from Zungeru, Nigeria (Heim de Balsac 1968). At least the smaller specimens agree in size with the C. glebula group of small species.

Table 1 Prey species in 22 pellets of Tyto alba, Samaru, December 1974

SPECIES	No.	%
Birds		
? Estrildine finch	1	2
Warbler	1	2
Mammals		
Crocidura sp. 1	1	2
Crocidura sp. 2	10	19
Tatera kempi Wroughton	3	6
Mus haussa Thomas & Hinton	7	13
Arvicanthis niloticus Desmartes	6	11
Dasymys incomtus foxi Thomas	1	2
Mastomys natalensis A. Smith	21	37
Steatomys caurinus Thomas	3	6
TOTAL	54	100

Few skulls were intact in pellets, but it was possible to age M. natalensis in 20 out of 21 specimens, the upper molar row usually being intact with cuspidation and wear discernible. Individuals were allocated into age classes I to VI. Fig. 1 shows the age distribution of M. natalensis in the pellets. 70% are young and sub-adult animals (age classes I-III).

DISCUSSION

It is not possible to draw far-reaching conclusions from this small sample, and the great species diversity of Barn Owl prey, many with limited distribution, makes comparison even more difficult. The predominance of rodents is consistent with the results of most other pellet analyses of Tyto alba.

Shrews, which rated second in importance in the diet of the owl, were also second in abundance in South Africa on the whole, but constituted 41%

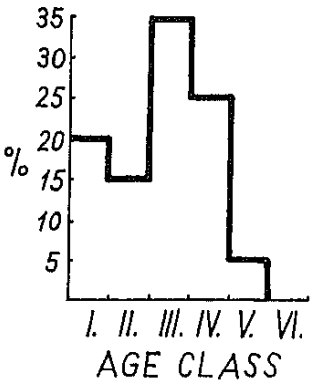

Figure 1 Age distribution of Mastomys natalensis in December 1974, from pellets of Tyto alba at Samaru (n=20)

of the prey at the suburban University of Natal (Vernon 1972) and more than half of the prey in the Serengeti National Park, Tanzania (Laurie 1971). Pygmy shrews of the religiosa-glebula species-group, to which Crocidura sp. 2 belongs, occurred in large numbers in pellets in the absence of rat and mice prey at Dori, Upper Volta (Heim de Balsac 1965). Birds may feature in the diet of the Barn Owl as prominently as 38% (Vernon 1972) and arthropods, reptiles, frogs and bats are preyed upon when rodents and insectivores are scarce (Niethammer 1974-75; Heim de Balsac 1965).

The dominant prey species Mastomys natalensis is a widespread and abundant rat; it will live away from habitation but today is chiefly associated with man's presence (in Nigeria, see Happold 1970, 1974 & 1975). That it constitutes much of T. alba pellet contents in settled areas is explained by Vernon (1972) by the attraction of these species to man's habitation. Crocidura flavescens manni is considered to be commensal by Happold (1975), who did not trap any in natural habitats; so the combined presence of these two species in the food of the owl suggests a semi-commensal nature even though it roosted some distance from houses and farmlands.

If Tyto alba kills M. natalensis without preference for any particular age class, the various age classes are represented in proportions comparable with those found in the wild, except the newborn young in the nest (Saint Girons 1973). Dean (1973) calculated a mean of 1.10 pellets/owl/day at roosting sites of T. alba, so 22 pellets collected on the 21st of the month contained prey representative for December.

Apart from Yankari Game Reserve (Happold 1970), where sub-adults and adults made up the population of M. natalensis at the end of the dry season, information about the age structure of rodent populations in Nigeria is lacking. Age distributions similar to Fig. 1 were obtained by Sheppe (1973) trapping in Zambia and Davies (1959) analysing Barn Owl pellets in South Africa at the equivalent time of the year, i.e. the second month of the dry season. Year-round study showed that those populations were seasonal breeding, displaying marked preference for the end of the rains and the early part of the dry season. From Fig. 1, that seems to stand true in savanna habitats of Nigeria as well.

It is worth noting the presence of Dasymys incomtus foxi in the pellets, for this is a species usually connected with wet ground (Rosevear 1969), which cannot be said of the area in which the pellets were collected. However, there is a growing list of exceptions to the above (e.g. Happold 1975) and this record stresses the point of Vernon (1972) who considered owls to be "efficient collectors" and a useful tool in the ecology and faunistics of small mammals.

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