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THE DIET OF THE MOUNTAIN OWLET-NIGHTJAR *Aegotheles albertisi*

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Faeces were obtained from six known roost sites and 18 individuals captured in mistnets between October and December 1986 at Mt Missim, Morobe Province, Papua New Guinea. Both stomach flushing and faecal analysis techniques showed Coleoptera to be the dominant prey item. No vertebrate remains were found.

INTRODUCTION

The Mountain Owlet-nightjar *Aegotheles albertisi*, is regarded as insectivorous. Beehler (1981) states that this species' diet consisted 'entirely of arthropods', while Beehler *et al.* (1986) noted that it fed on insects. Diamond (1972) found that the stomach contents of four individuals consisted of insect remains and Rand and Gilliard (1967) recorded exclusively insect remains from seven stomachs examined. This paper presents the findings of a study on the diet of *A. albertisi* based on faecal and stomach-flushing prey determination techniques.

METHODS

The diet of this species was investigated in an approximately 1 000 ha area of primary mid-montane rainforest on the south-western slopes of Mt Missim (7°16'S., 146°47'E.), Morobe Province, Papua New Guinea, between October and December 1986. Descriptions of the climate and vegetation structure of this area are given in Pruett-Jones and Pruett-Jones (1982) and Pratt (1983).

It was not possible to obtain direct observations on *A. albertisi* because of the lack of the light penetration below the rainforest canopy. Instead two techniques were employed to investigate the diet of this species:

Faecal analysis

Faeces were obtained by regularly visiting six known roost sites and from individuals incidentally captured in mist nets while surveying the bats of the area. Eighteen individuals captured in 1 009 mist net hours were placed in holding bags for a period of approximately ten minutes each. Any faeces produced while birds were in holding bags or from individuals during net extraction were collected and wrapped in paper towelling. These were then examined within 24 hours of collection by crumbling them with forceps into a dish filled with 70 per cent alcohol and sorting under a 20× hand lens illuminated by a small torch. Worm setae and lepidopteran scales were searched for by collecting floating filaments and scales on the surface of the alcohol and subsequently examining them under a light microscope. Determination of prey to a specific or family level was not possible in this study. Instead prey remains were identified to the level of order, following the classification of Barnes (1968). Thirty-two faecal samples were examined.

Stomach flushing

Faecal analysis suffers from the disadvantage that some prey items, such as soft-bodied inverte-

TABLE 1

Prey items (identified to level of order) recorded in faecal and stomach-flushing samples of the Mountain Owlet-nightjar *Aegotheles albertisi*.

PREY	FAECAL ANALYSIS <5%	5-75%	>75%	Total (n=32)	STOMACH-FLUSHING <5%	5-75%	>75%	Total (n=10)
Class Insecta								
Coleoptera	0	3	29	32	0	2	8	10
Lepidoptera	4	4	0	8	1	0	0	1
Diptera	5	2	0	7	0	0	0	0
Orthoptera	1	2	0	3	0	0	0	0
Class Oligochaeta								
Opisthopora	2	1	0	3	0	2	0	2

brates, are almost entirely digested and hence not detectable (Ford *et al.* 1982). To overcome this problem, stomach-flushing was used to supplement the data gained from faecal analysis.

The flushing technique used in this study followed that described in Ford *et al.* (1982). A tube four millimetres in diameter was found to be suitable for insertion into the alimentary tract. Four birds captured in the first 30 minutes following dusk lacked any prey remains in their alimentary tracts and these have been omitted from the analysis. Fourteen birds were stomach-flushed. This technique was not harmful as demonstrated by one banded bird that was netted and stomach-flushed on four occasions during a 60-day period with no sign of weight loss.

Stomach contents were collected on filter paper and examined in the same manner as faecal samples.

A quantitative analysis of prey consumption was not possible due to the fragmentary nature of the prey remains. Instead the presence of each prey type in individual faex and stomach samples, based on the number of prey fragments, was divided into i) trace – less than five per cent of the total amount in a sample; ii) five to 75 per cent of the total amount in a sample; and iii) greater than 75 per cent of the total amount in a sample.

RESULTS AND DISCUSSION

Four orders of insects (Coleoptera, Lepidoptera, Diptera and Orthoptera) and one order of earthworm (Opisthopora) were recorded as dietary items of *A. albertisi*. Both the faecal and stomach-flushing techniques demonstrated that beetles (Coleoptera) were the most commonly represented prey item. Faecal analysis recorded low abundances of Diptera and Orthoptera. These were not detected in stomach samples and this is attributed to the lower sample size of stomach samples examined.

Low abundances of earthworms were found using both the faecal and stomach-flushing techniques. In both instances these originated from samples collected following periods of heavy and/or prolonged rainfall. During such periods large numbers of earthworms emerged and moved about on the rainforest floor.

The predominance of Coleoptera in the diet of *A. albertisi* is similar to that found in the Australian Owlet-nightjar *A. cristatus* (Lea and Gray 1935, Rose 1973). Other recorded prey taken by *A. cristatus* are spiders (Arachnida) and insects of the orders Orthoptera, Hemiptera, Lepidoptera and Hymenoptera. No spiders or insects of the Orders Hemiptera and Hymenoptera were recorded for *A. albertisi* in the present study.

Frith (1969), Reader's Digest (1976) and Blakers *et al.* (1984) suggested that the bulk of prey of *A. cristatus* originated from ground-frequenting insects. This is also suggested for *A. albertisi* by the presence of ground-frequenting earthworms and insects as prey items (the latter known from limited observations), by the capture of all individuals in the bottom rung of mist nets (less than 50 cm above the ground) and by several birds that were flushed from the ground at night.

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USE OF REFLECTIVE GLASS BALLS TO DETER PREDATORY BIRDS

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As more species have become endangered, interest in captive breeding has increased, either for preservation in zoos or for the subsequent release of captive progeny back into the wild. With the establishment of captive colonies comes the need to protect captive stock from predation. Ground-dwelling predators, such as Foxes *Vulpes vulpes* and Cats *Felis catus* can be excluded by mesh or electric fences of appropriate design. Enclosing the top of the enclosure will also exclude predatory birds, but as some captive species require large areas for successful breeding, this can be difficult and expensive.

As part of a programme aimed at the conservation of the Malleefowl *Leipoa ocellata* in New South Wales, chicks and adults are held in 1 hectare enclosures of natural mallee on Yathong Nature Reserve (32°40'S., 145°30'E.). Despite the density of mallee within the enclosures predation of chicks by Spotted Harriers *Circus assimilis*, Swamp Harriers *C. aeruginosus* and Brown Falcons *Falco berigora* was common, although most kills occurred along the narrow cleared areas next to fences. Losses of chicks highlighted the need for protection, however fully enclosing the eight enclosures with mesh was too costly.