

Diet of the Sooty Owl *Tyto tenebricosa* at Blaxland, New South Wales

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The diet of the Sooty Owl *Tyto tenebricosa* was studied at Blaxland in the lower Blue Mountains, New South Wales, by analysis of regurgitated pellet material. Small and medium-sized mammals were the most common prey, as also documented by previous studies. However, birds and reptiles contributed an unusually high proportion of the diet, especially the Pink-tongued Skink *Cyclodomorphus gerrardii*, which was the second most important prey species, by both number and biomass.

INTRODUCTION

The diet of the Sooty Owl *Tyto tenebricosa* has been the subject of a number of studies, including Smith (1984), Loyn *et al.* (1986), Lundie-Jenkins (1993), Holmes (1994), Higgins (1999), Kavanagh (2002) and Bilney *et al.* (2006, 2007, 2011). These studies indicate that the Sooty Owl preys mainly on mammals, taking a wide range of arboreal and terrestrial mammals at each study site. Birds, reptiles and insects are also taken, but have been only a minor component of the diet in previous studies. Bilney *et al.* (2006) compared the current diet of the Sooty Owl in eastern Victoria with the diet before and shortly after European settlement, by analysing cave deposits at long-term roosts. They found that Sooty Owls took a wider range of terrestrial mammals in the past, but have since increased their consumption of arboreal mammals to compensate for the decline of their terrestrial prey species, a number of which are now locally extinct.

We report here on the diet of the Sooty Owl at Blaxland in the lower Blue Mountains, west of Sydney, based on analysis of regurgitated pellet material at one roost site. The results of the analysis are noteworthy because they indicate a greater dietary importance of reptiles and birds at this site than has been recorded at other locations.

STUDY AREA AND METHODS

Regurgitated pellets and broken-down pellet material were collected from beneath an occupied Sooty Owl roost-site in a sandstone overhang cave in a pocket of *Backhousia myrtifolia-Ceratopetalum apetalum* closed-forest (rainforest) surrounded by *Eucalyptus piperita-Angophora costata* open-forest in Saint Helena Gully, a tributary of Glenbrook Creek, in Blue Mountains National Park on the western side of the township of Blaxland. The study area (33° 45' S, 150° 36' E) is located about 65 kilometres west of the Sydney coastline, at an elevation of about 100 metres. Pellet material was collected on two visits in November 2002 and May 2003. A Sooty Owl was present on both occasions. Additional visits were made in March 2007 and November 2012, but the site was unoccupied and no further pellet material was found.

Prey items were identified from skulls and mandibles in the pellet material. For each collection date, all pellet material was combined and the minimum number of individuals was determined from a count of the number of left or right mandibles, depending on which were the more numerous. Mammal species were identified using Triggs (2004) and Watts and Aslin (1981), and by comparison with our reference collection of skulls and mandibles. Assistance with identification of reptile and bird material was obtained from Martyn Robinson and Walter Boles, respectively, of the Australian Museum.

Average weights for each mammal and bird species were determined from measurements made in previous mammal trapping and bird banding studies that we have carried out in the Blue Mountains, and from Menkhorst and Knight (2004). The Common Ringtail Possum weight was calculated from mandible length, using the formula provided by Bilney *et al.* (2011). Reptile and insect weights were estimated.

RESULTS AND DISCUSSION

A variety of animal species were represented in the Sooty Owl pellets from Blaxland, including four mammal, four bird, two reptile and one insect species (Table 1). By number, the diet consisted of 66 per cent mammals, 11 per cent birds, 21 per cent reptiles and 2 per cent insects. By biomass, the diet consisted of 67 per cent mammals, 2 per cent birds, 31 per cent reptiles and less than 1 per cent insects. The most frequent prey species, in decreasing order, were the Sugar Glider, Pink-tongued Skink, Common Ringtail Possum and Brown Antechinus (scientific names in Table 1). In terms of biomass, the main prey species, in decreasing order, were the Common Ringtail Possum, Pink-tongued Skink and Sugar Glider. The largest prey species, the Common Ringtail Possum, was represented mainly by sub-adults (five of six individuals).

The prey species are a mixture of arboreal and terrestrial species, but even the terrestrial species, the Brown Antechinus, Bush Rat and Pink-tongued Skink, spend part of their time in trees and shrubs (Cogger 2000; Menkhorst and Knight 2004; pers. obs.). Thus, it is unclear how many prey items were actually taken on the ground (if any) and how many were taken in trees and shrubs.

Table 1

Minimum number of prey items in two samples of Sooty Owl pellet material from Blaxland.

Prey species	Weight (g)	Nov 2002 sample	May 2003 sample	Total	% number	% biomass
Mammals						
Sugar Glider <i>Petaurus breviceps</i>	125	10	7	17	36	24.5
Common Ringtail Possum <i>Pseudocheirus peregrinus</i>	550	4	2	6	13	38.0
Brown Antechinus <i>Antechinus stuartii</i>	25	6		6	13	1.7
Bush Rat <i>Rattus fuscipes</i>	125		2	2	4	2.9
Total mammals		20	11	31	66	67.1
Birds						
Eastern Spinebill <i>Acanthorhynchus tenuirostris</i>	10	1		1	2	0.1
?Common Myna <i>Sturnus tristis</i>	110	1		1	2	1.3
Medium-sized honeyeater (Meliphagidae)	15	1		1	2	0.2
Small passerine (Passeriformes)	7	2		2	4	0.2
Total birds		5		5	11	1.7
Reptiles						
Pink-tongued Skink <i>Cyclodomorphus gerrardii</i>	300	3	6	9	19	31.1
Gecko (Geckonidae)	10		1	1	2	0.1
Total reptiles		3	7	10	21	31.2
Insects						
Cicada (Cicadidae)	1	1		1	2	0.01
Total insects		1		1	2	0.01
TOTAL		29	18	47	100	100

The dominance of small and medium-sized mammals in the diet at Blaxland, and the particular mammal species taken, are consistent with previous dietary studies. In particular, a comprehensive study by Kavanagh (2002) at a range of sites in south-eastern and central coastal New South Wales found that, although a wide variety of mammal species were taken, the same four species as at Blaxland - the Common Ringtail Possum, Sugar Glider, Bush Rat and Brown Antechinus (in a broad sense, including the Agile Antechinus *Antechinus agilis*) - were the most frequent prey species, and were taken at almost every site. The introduced Black Rat *Rattus rattus* was another important prey species near Sydney. Lundie-Jenkins (1993), in a study at Bowen Mountain, only about 20 kilometres north of Blaxland, found that the most frequent prey species there were the Black Rat, Sugar Glider, introduced House Mouse *Mus musculus* and Brown Antechinus. At Bowen Mountain, the two introduced species made up 68 per cent of the diet by number, whereas neither species was represented in the pellets from Blaxland.

The numbers of both birds and reptiles found in the Blaxland pellets were unusually high. Birds and reptiles have been reported previously as each comprising only 0–4 per cent of the diet by number (Smith 1984; Loyn *et al.* 1986; Lundie-Jenkins 1993; Holmes 1994; Higgins 1999; Kavanagh 2002; Bilney *et al.* 2006, 2007, 2011). At Blaxland, birds comprised 11 per cent of the diet by number, with four different species represented. In terms of biomass, however, their contribution to the diet was much less – only 1.7 per cent (Table 1).

Reptiles were an important component of the Sooty Owl diet at Blaxland, comprising 21 per cent of the diet by number and 31 per cent by biomass, with the Pink-tongued Skink being the main reptile prey species (Table 1). Like the Sooty Owl, it is a

species associated with rainforest and tall, moist eucalypt forest (Smith and Smith 1990). The Pink-tongued Skink was second only to the Sugar Glider in terms of its overall contribution to the diet by number, and second only to the Common Ringtail Possum in terms of its contribution by biomass. This contrasts with the findings of Lundie-Jenkins (1993) only 20 kilometres away at Bowen Mountain, where no reptiles were found in the Sooty Owl pellets analysed. As discussed above, Lundie-Jenkins (1993) also found a different mix of mammal species in the diet. These differences suggest that the Sooty Owl is an adaptable species whose diet can vary markedly from site to site, even over a short distance, presumably reflecting differences in the prey species available at the local level.

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