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The Diet of the Sooty Owl *Tyto tenebricosa* in the Blue Mountains, N.S.W.

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The Sooty Owl *Tyto tenebricosa* (Gould) is a true rain-forest bird, restricted to the wetter forested country of eastern and south-eastern mainland Australia and to the montane forests of New Guinea. It is the third largest of Australia's forest dwelling owls behind the Powerful Owl *Ninox strenua* and the Rufous Owl *N. rufa*. Male Sooty Owls range in size from 37-43 cm and females 44-51 cm (Schodde & Mason 1980). Both sexes are identical in colour and markings and there are no phases.

Sooty Owls are generally considered uncommon and are rarely sighted within the dense, dimly lit forests they inhabit. They are strongly territorial and emit a loud down-swooping whistle that appears to serve the same purpose as the territorial hooting of hawk owls (Schodde & Mason 1980). Previous dietary information for the Sooty Owl is limited but shows the species to prey on a range of terrestrial and arboreal mammals of small to moderate size (Smith 1984; Schodde & Mason 1980; Fleay 1968). Arboreal species appear to be taken

more frequently particularly Sugar Gliders *Petaurus breviceps* and Common Ringtail Possums *Pseudocheirus peregrinus*. Terrestrial species recorded in the diet of Sooty Owls include Bandicoots (*Perameles*), rats (*Rattus*) and marsupial mice (*Antechinus*). Birds have also been recorded as secondary prey.

During a spotlight survey at Bowen Mountain near the western boundary of the Blue Mountains National Park (33°36'S, 150°37'E), c. 20 km west of Richmond, New South Wales, a mature female Sooty Owl was sighted. A subsequent daytime search then located her nest and a number of feeding roosts. These feeding roosts were characterised by the presence of large accumulations of intact and fragmented pellets and were located in the cliffs above a densely vegetated creek gully. These sites offered both good vantage points over the area and cover. Owl pellets were collected from beneath a number of roosts during three visits to the site in 1984.

The primary vegetation type near the roost sites was Turpentine *Syncarpia glomulifera* mixed with a medium height understorey of Coachwood *Ceratopetalum apetalum* and Black Sassafras *Atherosperma moschatum* in a gully rainforest form. A scattered ground layer of shrubs, ferns, vines and mosses covered the area. The area was adjacent (2 km) to a low density rural subdivision where moderate land clearing had occurred.

Like other members of the family Tytonidae the Sooty Owl ingests its prey whole and the pellets they regurgitate consist of undigested remains of animals eaten and are known to accurately reflect the number and identity of prey consumed (Tilley 1982; Morton 1974). In the present study, intact pellets were weighed and their dimensions measured using vernier callipers. Prey remains within each pellet were then identified and counted, the number of small mammals represented in each pellet being determined from the number of mandibles found. A similar approach was adopted for broken pellets; however, no attempt was made to measure their external dimensions. Identifications for prey remains were confirmed by comparing mandibles and skull fragments with a reference collection of museum specimens. Estimates of prey biomass were calculated by combining frequency of occurrence data with live body weights for juvenile and adult prey species (Strahan 1983).

The contents of 20 intact pellets and approximately 380 g of fragmented pellet material were identified and a total of 140 individual prey items were recorded. Ten different prey groups were identified; the percentage occurrence of each of these groups in the total sample of pellet material is shown in Table 1.

Table 1 Prey items in Sooty Owl *Tyto tenebricosa* pellets from near Bowen Mountain, New South Wales.

Prey items	Adult body weight g ¹	Number of occurrences	Percentage occurrence
Arboreal mammals			
<i>Petaurus breviceps</i>	95-160	22	15.7
<i>Pseudocheirus peregrinus</i>	700-1100	4	2.9
<i>Trichosurus vulpecula</i>	1500-4500	1	0.7
<i>Cercartetus nanus</i>	15-43	4	2.9
Terrestrial mammals			
<i>Perameles nasuta</i>	850-1100	4	2.9
<i>Antechinus stuartii</i>	17-70	7	5.0
<i>Rattus rattus</i>	95-340	84	60.0
<i>Mus musculus</i>	10-25	11	7.8
Birds	110-270	3	2.1
Insects	—	Trace	Trace

¹ From Strahan (1983).

Terrestrial mammals represented the bulk of the identified material, with an overall percentage occurrence of 75.7%. This total included four different mammalian species, two native and two introduced. Rodents were easily the most consistent dietary animals, representing 67.8% of the total identifiable fragments and accounting for approximately 55% of the prey biomass. Arboreal mammals were less well represented in the Sooty Owl diet (22.2% of fragments) but included a number of the larger prey species notably Brushtail Possums *Trichosurus vulpecula* (1500-4500 g) and Common Ringtail Possums *Pseudocheirus peregrinus* (700-1100 g). Size of mammalian prey ranged from the House Mouse *Mus musculus* (10-25 g) to the Brushtail Possum. Cranial and mandible measurements of fragments of the larger species such as Brushtail Possums and Bandicoots *Perameles nasuta* (850-1100 g) recovered from owl pellets indicate that these animals were probably juveniles or sub-adults (Lyne 1982; Kingsmill 1962).

Birds and insects were the only non-mammalian prey species identified from pellet material. Their combined contribution in terms of prey biomass was minor, being less than 2%. The bird species identified were King Parrot *Alisterus scapularis* (210-270 g) and Crimson Rosella *Platycercus elegans* (110-170 g). The small amount of insect material identified consisted predominantly of beetles (Coleoptera).

Table 2 Comparative measurements for intact pellets of the Sooty Owl *Tyto tenebricosa* and three other species of owls.

Parameter	Barn Owl <i>Tyto alba</i>	Rufous Owl <i>Ninox rufa</i>	Powerful Owl <i>Ninox strenua</i>	Sooty Owl <i>Tyto tenebricosa</i>
Adult body weight (grams)	227-475	700-1300	1050-1700	500-1000
Pellet weight (grams)	3.9	3.20	3.40	3.31
Pellet length (cm)	3.7	3.85	4.90	4.18
Pellet breadth (cm)	2.7	2.66	3.00	2.82
Individuals per pellet	3.4	1.63	nm	1.50
Species per pellet	nm	1.20	5% > 1 sp.	1.30
Dominant food items	<i>Mus</i> & <i>Rattus</i>	<i>Antechinus</i> & <i>Rattus</i>	<i>Pseudocheirus</i> & <i>Petaurus</i>	<i>Rattus</i> & <i>Petaurus</i>
Reference	Morton 1974	Estbergs & Braithwaite 1985	Tilley 1982	This study

nm = not measured.

With the exception of bats, most small mammals recorded in the area by trapping and spotlighting were found in the pellet remains analysed. The notable absentee was the rabbit *Oryctolagus cuniculus* (960-2400 g) which occurs in reasonable densities around the adjacent housing estate. This would tend to indicate that hunting by the Sooty Owl occurred almost exclusively within the wooded gully and excluded the open areas inhabited by rabbits. No sightings of Sooty Owls have been recorded by residents of the housing estate (pers. obsv.).

The size and weight of intact Sooty Owl pellets was similar to that recorded by previous studies of the species (Fleay 1968; Smith 1984). When compared with pellets recorded for other large owl species (Table 2) the size and composition of Sooty Owl pellets were consistent with the relative size and habitat of the Sooty Owl. The number of individual prey items per pellet was slightly lower for the Sooty Owl compared with both the Barn Owl *Tyto alba* and the Rufous Owl but this was compensated by the comparatively larger size of the dominant food items selected by the Sooty Owls.

The diet of Sooty Owls studied in this work consisted predominantly of terrestrial mammals compared with previous studies of the species that reported a higher frequency of arboreal species (Fleay 1968; Schodde & Mason 1980; Smith 1984). Similarly the presence of insects has not previously been recorded in Sooty Owl pellets. These differences in their diet most likely relate to the effect of the adjacent rural subdivi-

sion on local small mammal populations. In particular the significance of both *R. rattus* and *M. musculus* recorded in this study probably reflect their elevated occurrence in a semi-disturbed environment. Previous studies of the Sooty Owl have generally been carried out in undisturbed patches of rainforest where densities of introduced rodents would presumably be lower than at the Bowen Mountain site.

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XXI INTERNATIONAL ORNITHOLOGICAL CONGRESS

The congress will be held in the Hofburg, the former seat of the Austrian-Hungarian Emperors, in the centre of Vienna from 20 August 1994 (Registration) through 25 August. The opening ceremony will be held in the Rathaus on 20 August and the closing get-together in Schönbrunn on 25 August. The weather at this time of year is pleasant with high temperatures of approximately 25°C and little chance of rain.

Registration: All prices are in Austrian Schillings (AS). Registration includes congress fees, proceedings and the opening and final ceremonies. Reduced rates include everything except the proceedings. Accompanying members may attend the ceremonies, afternoon and evening programs and some of the social activities. Registration before 31 May 1994: AS4000. Late registration: AS5000. Accompanying members: AS1800. Reduced rates: AS3000. Children under 16: free. Payments should be made by International Bank Draft in Austrian Schillings, Mastercard or Visa. Cancellation with complete refunding will be accepted up to four months before the congress (received by 20 May); thereafter only 50% can be refunded.

Financial Aid: Two forms of financial aid will be offered at the conference: reduced registration fees and some travel and accommodation aid.

Reduced rates will be given to a limited number of participants. Budgetary considerations necessitate limiting these to about 25% of the participants. These rates can apply for students, senior citizens or anyone requiring them due to financial circumstances. Letters of applications with an enrolment certificate or supporting letter from the university, department or professor for students should be forwarded with the registration of the Secretary-General.

Scientific Contributions: The forms of contribution to the congress include invited plenaries, open lectures, symposia, posters, round table discussions and special interest groups. The following symposia topics were selected by the Scientific Program Committee (titles condensed): Forest Bird Comm. Ecol.; Repr. Biol. Neotrop.; Passer. Migrants in Tropics; Food, Forag. & Reprod.; Mixed Species Forag.; Heritability & Selection; Phys. Constraints Migrat.; Environment. Endocr.; Endocr. Breed. & Puberty; Ecol. & Evol. of Leks; Non-putat. Offspr. & Monog.; Birds: Pollut. Indicators; Molec. Pop. Structure; Shore Birds & Conservation; Genet. Phenotyp Plasticity; Forest Bird Demog.; Arid Zone Birds; Nutrition; Control of Migrat.; Memory & Percept.; Functional Neurob.; Feeding Mechanisms; Food Choice & Nutr.; Cooperative Breed.; Brood Parasitism; Respon. to Human Activ.; Ancestry & Origin; Attitudes to Birds; Song: Neural Aspects; Molecul. Systemat.; Aging and Reprod.; Habitat Select.; Orientation; Intelligence; Energetics; Flight; Cold Acclimat.; Ontogeny; Ecol. Dispersal; Parasites; Hybrid Zones; Systematics; Mating Systems; Remote Sensing.

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