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# THE SUNBIRD

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## PREY OF THE SOOTY OWL IN SUBTROPICAL AUSTRALIA

GLENN HOLMES

Prey of the Sooty Owl *Tyto tenebricosa* is diverse but comprises mainly marsupials and rodents. Most species concerned are arboreal. Based on limited data, but obtained from several locations, it seems reasonable to conclude that the principal species are the Common Ringtail Possum *Pseudocheirus peregrinus*, Sugar Glider *Petaurus breviceps*, Bush Rat *R. fuscipes* and antechinuses *Antechinus* spp. (Hollands 1991, Kavanagh 1992, Loyn *et al.* 1986, Schodde & Mason 1980, Smith 1984). In a disturbed environment, Lundie-Jenkins (1993) reported a high proportion of the Black Rat *R. rattus* among prey items and emphasised the importance of terrestrial prey at that site. The Black Rat is somewhat arboreal (e.g. Watts & Aslin 1981, Strahan 1983).

Data concerning prey have been obtained essentially by the analysis of fragments in regurgitated pellets at roost or nest sites. Locations extend from the central coast of New South Wales south to eastern Victoria. No similar data have been documented for subtropical locations. This paper details the results of an analysis of bone fragments from pellets recovered from two roost sites in Border Ranges National Park (north-east New South Wales) and one site in Bunya Mountains National Park (south-east Queensland). Few of the pellets were intact and some were totally decomposed. Consequently, only minimum numbers of prey items could be determined.

All roost sites were in hollow Strangling Figs *Ficus watkinsiana* situated in subtropical rainforest. In Border Ranges National Park both were at Sheepstation Creek, at 550 and 600 m altitude and 1.3 km apart, but conceivably within one territory. They were occupied when first located in August 1980 and October 1981, respectively, but appeared to have been abandoned for several weeks when material was collected on 30 March 1984. In Bunya Mountains National Park the roost tree was on the Tim Shea Falls track at an altitude of about 950 m. One bird was present when pellets were collected on 18 January 1989.

At least ten animal species were recorded as prey (Table 1). Consistent with data from southern locations, the three most numerous species are arboreal

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mammals. Of these the Fawn-footed Melomys *Melomys cervinipes* has not been recorded previously. This rodent occurs from Cooktown to Gosford (Watts & Aslin 1981) so it is likely to be only a scarce prey item at documented sites in New South Wales.

**TABLE 1. Sooty Owl prey items at three sites in north-east New South Wales/south-east Queensland.**

Prey Species	Minimum Number			Total
	a	b	c	
Common Ringtail Possum	16	7	9	32
Fawn-footed Melomys	4	9	6	19
Sugar Glider	5	4		9
Bush Rat	2	3		5
Swamp Rat <i>R. lutreolus</i>	1			1
Brown Antechinus <i>A. stuartii</i>	1			1
unidentified rodent	4			4
unidentified small bird	1	2		3
unidentified skink	1			1
insects - orthopterans	1	1		2
- beetles		+		+
<b>TOTAL</b>	<b>36</b>	<b>26</b>	<b>15</b>	<b>77</b>

a,b Border Ranges NP; c Bunya Mountains NP; + present

#### ACKNOWLEDGEMENTS

I gratefully acknowledge A. Rose (Forster, NSW) and S. van Dyck (Queensland Museum) for identifying the fragments. A. Rose and ranger G. Croft helped collect material from the New South Wales sites. S. Debus helped to locate references.

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GLENN HOLMES, P.O. Box 112, Canungra, Q 4275.

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SPOTLESS CRAKE GROUNDED AT EUNGELLA,  
NORTH QUEENSLAND

MARION M. CROUTHER

Data for the Spotless Crake *Porzana tabuensis* in Nielsen (1992) focus attention on the uncertain status of this species in tropical Queensland, including a lack of published records from south of Mt Elliot. Two personal sightings from the Mackay biogeographic region are noteworthy, and the circumstances surrounding the capture of the more recent bird are especially so. The first was at Pinnacle in the Pioneer Valley (21°09'S, 148°44'E) in September 1985, and the second was at my home in the village of Eungella (21°08'S, 148°29'E) at an altitude of 700 metres.

On nights of heavy fog, many birds are attracted to the lights of my house, which is situated on a ridge at the edge of the Clarke Range. A Spotless Crake collided with an outside wall at 1915h on 20 May 1991. After being photographed, it was weighed, measured, banded and released successfully. Sometimes dozens of birds, mostly button-quails *Turnix spp.*, can be found wandering dazedly on the ground where the lights extend from the house. Most of them appear unhurt but confused. Some can be hand caught while others fly wildly when approached. Unless released in the dark, facing away from the light, they return repeatedly. Almost all are gone by morning, although Red-backed Button-quails *T. maculosa* can be found in the garden while the wet weather lasts. Larger species, such as Wandering Whistling-Duck *Dendrocygna arcuata*, Plumed Whistling-Duck *D. eytoni* and Maned Duck *Chenonetta jubata* land on the roof. This phenomenon was first reported to me by Veron Hansen, who used such data when compiling records for the *The Atlas of Australian Birds* (Blakers *et al.* 1984). Nielsen (1992) discussed nocturnal disorientation at Paluma, while McClure (1984) detailed the use of fires on mountain ridges at Luzon in the Philippines to attract birds for sale and food in similar weather conditions.

Such an influx of birds at Eungella seems to follow a period of heavy rain, and a lack of sightings of banded birds suggests that these stranded birds do not remain for more than a day or two after being grounded. The following species have been caught and banded (totals in parentheses) on foggy nights: Brown Quail *Coturnix australis* (7), King Quail *C. chinensis* (6), Red-backed Button-quail (101), Painted Button-quail *T. varia* (11), Little Button-quail *T. velox* (2), Red-chested Button-quail *T. pyrrhorthorax* (9), Superb Fruit-Dove *Ptilinopus superbus* (9) and Rose-crowned Fruit-Dove *P. regina* (1). Careful sampling of grounded birds can produce surprises, including Little Button-quail and Red-chested Button-quail, which are not recorded from close to the the Mackay region by either Storr (1984) or Blakers *et al.* (1984). A probably reliable report of a White-browed Crake *Poliolimnas cinereus* by a neighbour would be of considerable interest if confirmed, being otherwise unknown south of 20°S (Blakers *et al.* 1984).

Systematic appraisal and documentation of any such site can be extremely rewarding, as at Ngulia in Kenya, where 115 000 grounded birds were banded between 1969 and 1990 (Backhurst & Pearson 1992). While Palaearctic warblers *Sylviidae* are dominant in this massive total, it is significant that Kurrichane Button-quail *T. sylvatica* is regular in small numbers at night at Ngulia, and more than 1000 Harlequin Quails *C. delegorguei* have been banded there (P.L. Britton *in litt.*). Eungella, in rainforest on a ridge at about 700 metres a.s.l., and prone to low cloud and ground-level mist, is superficially similar to sites discussed by Moreau (1966), both in eastern Africa and Venezuela. Further monitoring of this and other high rainfall areas which combine mist and lights will add further to our understanding of nocturnal movements of birds within Australia.

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- MARION M. CROUTHER, P.O. Box 1, Dalrymple Heights, Q 4757.
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**RECORDS OF THE FOOD OF THE POWERFUL OWL  
*NINOX STRENUA* FROM QUEENSLAND**

CHRIS R. PAVEY

**ABSTRACT**

Unpublished observations and literature records of the food of the Powerful Owl *Ninox strenua* in Queensland are presented. Most records were either of sightings of owls holding prey during the day or of prey remains observed below owl roosts. This information is supplemented by the results of a small amount of pellet analysis. Records were obtained from 21 sites, mostly in south-east Queensland, representing at least 56 prey items. A minimum of 14 vertebrate species (seven mammals and seven birds) were preyed on. The most frequently reported prey were Common Ringtail Possum, Greater Glider, Squirrel Glider and fruit-bats. The inadequacies of examining Powerful Owl diet using only prey-holding and prey remains records are discussed.

**INTRODUCTION**

The Powerful Owl's distribution in Queensland extends from the New South Wales border north to at least Shoalwater Bay, central Queensland (J. Wombey *in litt.*). There has also been a sighting further north, from Eungella at 21° south (Pavey 1993). Queensland thus makes up a considerable part of the species' range. Very little ecological research has been conducted on the Powerful Owl in Queensland and no research is in progress or being planned. Most information on the species is based on the limited number of studies carried out in Victoria and New South Wales (Fleay 1968, Seebeck 1976, Van Dyck & Gibbons 1980, Tilley 1982, Chafer 1992). There are several long-term studies in progress in New South Wales (Garnett 1992, C. Chafer pers. comm., S. Debus pers. comm.).

The only publication on the diet of the Powerful Owl in Queensland is that of James (1980) from Girraween National Park, on the northern New England Tablelands. James found that a pair of Powerful Owls preyed mostly on Greater Gliders *Petauroides volans* and Common Ringtail Possums *Pseudocheirus peregrinus* during 1973 and 1974. Although the study was carried out over two years and was based on pellet analysis, only 29 prey items were recorded. In excess of 200 prey items would have been consumed by a pair of owls over a two year period (pers. obs.). This raises the possibility that the results were biased towards the possum and glider, which have large and readily identifiable bones.

Studies on the diet of the Powerful Owl at Brisbane show that the species eats a wide diversity of prey, which is sometimes captured in suburban gardens or in regrowth forest. A two year investigation of the food of a breeding pair at Mt Coot-tha, Brisbane (Pavey *et al.* in press) produced 209 prey items. The most

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frequently taken prey were fruit-bats *Pteropus* spp., Common Ringtail Possum and Scaly-breasted Lorikeet *Trichoglossus chlorolepidotus*. Data on the diet of a single Powerful Owl at Toohey Forest, Brisbane were obtained over two periods, two years apart (unpubl. obs.). Thirty-four prey items were recorded, with the main prey being Squirrel Gliders *Petaurus norfolcensis* and Common Ringtail Possums.

Apart from these studies, nothing else is known of Powerful Owl diet in Queensland. The habitats in which the owls were studied by James and Pavey do not represent the range of habitats utilised by this species, and the prey sample sizes of the Girraween and Toohey Forest studies are low. More data are clearly required. The current paper is an attempt to summarize all other published and unpublished information on the food of the Powerful Owl in Queensland. While there is not a large prey sample for any of these sites, the majority of records being of only one prey item, records were obtained from a number of sites covering much of the species' range, and provide a basic impression of the diversity of prey taken.

Most of the records presented here result from sightings of owls holding prey carcasses at their day roosts or at night, and are referred to as prey-holding records. Other observations are of prey remains found below roosts and nest trees (prey remains records). It has been noted that pellet analysis is essential for accurate examination of the diet of these birds (Pavey 1992). The use of prey-holding and prey remains observations is likely to overlook smaller prey species. If this disadvantage is taken into account, the data are still valuable, particularly considering that no other information is available. Pellet analysis was possible at a number of sites, but the overall number of records from pellets is low.

## METHODS

Records of food items of the Powerful Owl from Queensland were obtained during a survey of the distribution of the species in the State (Pavey 1993). Records were obtained from the following sources:

(a) all issues of the following journals were examined up to December 1992: *Emu*, *Sunbird*, *Corella*, *Australian Bird Watcher*, *Queensland Naturalist*, *Proceedings of the Royal Society of Queensland*, *Memoirs of the Queensland Museum*;

(b) all available issues of the newsletters of the following clubs were examined up to September 1989: Queensland Ornithological Society, Toowoomba Bird Club, Queensland Naturalists' Club, Darling Downs Naturalists' Club, Granite Belt Naturalists' Club, Chinchilla Naturalists' Club, Gympie Naturalists' Club, Bundaberg and Maryborough branches of the Wildlife Preservation Society;

(c) personal communications with 75 field observers during 1989, and

subsequent communications with a small number of these up to December 1992; and

(d) examination of pellets sent in by observers from a number of localities and, in the case of Tallegalla, data from pellet analysis conducted directly by a field observer (G. Leach). Bones and feathers contained in the pellets were identified by cross-reference with numerous specimens in the bird and mammal collections of the Queensland Museum.

The literature records cover the period from the 1870s up to 1989, while the unpublished observations were made between 1965 and 1992. Prey records from the Mt Coot-tha study, not included in Pavey *et al.* (in press), are also listed. These cover the periods July to August 1988, May to September 1991 and April to May 1993. The diet data presented in Pavey *et al.* (in press) are from May 1989 to May 1991. All locations from which prey records were obtained are shown in Figure 1.

## RESULTS AND DISCUSSION

Details of all records obtained during the study, except from Mt Coot-tha, are presented in Table 1. The sites are arranged according to the region of Queensland they are located in. The regions are based on those given in Dahms (1978), but are slightly modified as in Pavey (1993). Most of the records were obtained directly from field observers. However, records from five sites, Chinchilla, Coomoolaroo Station, Murphy's Creek, Toowong and Warwick, were obtained only from the literature. These data are 40 to 120 years old. The prey species mentioned by Illidge (1922) were not included, because it was uncertain as to which localities they refer.

It was not possible to quantify the number of individuals taken for some species at three of the sites, namely Murphy's Creek, Redwood Park and Coomoolaroo Station. In each of these cases the relevant information was contained in published articles. It was clear that several individuals of each of the prey species had been captured, but it was not possible to estimate the number. This is noted in Table 1, which lists food items of the Powerful Owl from 20 localities. The majority of these, 16, were in south-east Queensland. There are a minimum of 39 prey items listed (if each species without a number is considered as two items), representing at least 11 species.

The Koala *Phascolarctos cinereus*, Brown Hare *Lepus capensis*, Australian Brush-turkey *Alectura lathami*, Laughing Kookaburra *Dacelo novaeguineae* and Tawny Frogmouth *Podargus strigoides* were reported as prey only once. Each of these species has rarely been observed as prey of the Powerful Owl. The only previous report of predation on the Australian Brush-turkey was of an immature bird (< 50% of adult size) taken at Mt Coot-tha, Brisbane (Pavey *et al.* in press). The individual captured at Redwood Park was only about 30% of adult size (P. McConnell pers. comm.). It is unlikely that a Powerful Owl could capture

**TABLE 1. Unpublished and published records of food of the Powerful Owl *Ninox strenua* in Queensland from the 1870s to 1992. Records were obtained from personal communications unless a reference is provided.**

Location	Time Period (source of data)	Prey Species and Numbers
<b>South-east Queensland</b>		
Mt Crosby, Brisbane	14 November 1982 (P. Grimshaw)	Common Brushtail Possum, immature - 1
Toowong, Brisbane	July/August 1903 (Anon. 1903)	Laughing Kookaburra - 1
Upper Brookfield, Brisbane	August 1990 (J. Pettigrew)	fruit-bat sp. - 1
Coal Creek, Ipswich	May 1991 (A. Smyth)	Squirrel Glider - 2(b)
Nerang, Gold Coast	June 1986 (M. Devory)	Greater Glider - 3
England Creek, Fernvale district	1980s (G. Beruldsen)	Koala - 1
Tallegalla, Marburg district	June-September 1989 (G. Leach)	Greater Glider - 1 Squirrel Glider - 1(b)
Murphy's Creek, Toowoomba district	1945-1946 (Lord 1946a&b, 1956)	Common Brushtail Possum - 1 Greater Glider (a) Squirrel Glider -1(b)
Sheep Station Creek, Helidon district	July 1991 (R. Hobson)	
Redwood Park, Toowoomba district	1975-1992 (Hobson 1975, R. Hobson, P. McConnell)	Common Ringtail Possum - 1(b) fruit-bat sp. -1 Squirrel/Sugar Glider(a,b) Australian Brush Turkey, immature - 1, Pied Currawong/Australian Magpie - 1(b)
Bunya Mountains	1972 (A. Young)	Common Ringtail Possum - 1
Chinchilla district	1882/1885 (Broadbent 1886)	Common Ringtail Possum - 1
Glengallan Creek, Great Dividing Range	19 April 1983 (L. Nielsen)	Common Ringtail Possum - 1
Warwick district	1870s (Diggles 1877)	Common Ringtail Possum - 1



Widgee, Gympie district	1970s/1980s (Hughes & Hughes 1984)	Brown Hare -1
Girraween N.P., Granite Belt	1978/1979 (P. Grimshaw)	Greater Glider -1

### South Central Queensland:

Carnarvon N.P.	28 March 1965 (I. Venables)	Greater Glider -1
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### Mid-east Queensland:

Mt Robert, Calliope Range	30 June 1985 (R. Fidler)	Greater Glider -1
Coomooboolaroo Station, Duaringa district	1873-1925 (Barnard 1908, 1909, 1925)	Common Brushtail Possum (a) Common Ringtail Possum (a) fruit-bat sp. (a) glider sp. (a) Tawny Frogmouth -1
Kinka Beach, Yeppoon district	January 1986 (M. Crawford)	fruit-bat sp. -1

(a) Exact number taken not known, but at least two individuals

(b) identified in pellets.

an adult Brush-turkey (D. Jones pers. comm.). The only other bird captured was a member of the Family Cracticidae, either a Pied Currawong *Strepera graculina* or Australian Magpie *Gymnorhina tibicen*. The bones of this individual could not be positively identified to specific or generic level.

The most frequently recorded prey were Common Ringtail Possum, Greater Glider, Squirrel Glider and fruit-bats. Specific identification was not possible for any of the fruit-bats, since carcasses held by owls, and their remains and bones in pellets, are very difficult to separate to species. The observations are within the geographic range of the Grey-headed Fruit-bat *Pteropus poliocephalus*, Black Fruit-bat *P. alecto* and Little Red Fruit-bat *P. scapulatus*, all of which were preyed on by Powerful Owls at Mt Coot-tha (Pavey *et al.* in press). The small gliders preyed on at Redwood Park were not separated as Squirrel Glider or Sugar Glider *Petaurus breviceps* (Hobson 1975). Redwood Park is within the geographic range of both species. However, the vegetation in the area is more typical of Squirrel Gliders (pers. obs.).

The Greater Glider and Common Ringtail Possum were expected to be frequently

recorded as prey in a study such as this, for Powerful Owls have often been observed holding carcasses of both species. Half of the Common Ringtail Possum records date back to last century or early this century (Diggles 1877, Broadbent 1886, Barnard 1925). This does not indicate that the possum is now taken less frequently. It is the most common prey species of the Powerful Owl through most of its range (Pavey 1992).

Table 1 indicates that the Squirrel Glider is a common prey species of the Powerful Owl in Queensland. It is significant that, although it was reported from four sites, it was only detected by pellet analysis. At each site where pellet analysis was carried out, Coal Creek, Redwood Park, Sheep Station Creek and Tallegalla, this species was recorded. The Squirrel Glider is a small species weighing up to 200 grams. This observation reinforces a previous point (see Introduction), that pellet analysis is the most appropriate technique for assessing Powerful Owl diet.

The number of fruit-bat records was unexpected, for the Powerful Owl has been reported preying on them infrequently in earlier studies (Fleay 1968, Chafer 1992). Fruit-bats may be taken more regularly than is currently appreciated. The Mt Coot-tha study (Pavey *et al.* in press) found fruit-bats to be the major prey item over two consecutive years, both numerically and in terms of prey biomass.

Table 2 lists 17 food items taken by Powerful Owls at Mt Coot-tha, Brisbane. The method by which the items were detected is also given. It should be noted that only eight pellets were examined. This sample is unusual because each prey record was detected by only one method, whereas a given prey item will usually be noted more than once. For example, a fruit-bat carcass may be observed being held by an owl at its day roost and then appear in pellets produced that day.

None of the bird species preyed on at Mt Coot-tha was recorded at any of the other sites. The majority of records (12) were of prey being held by the owls. Adults of each of the species observed as 'prey held', except the Pied Currawong, weigh over 500 g. The Pied Currawong weighs about 320 g. The average weight of the Brown Goshawk *Accipiter fasciatus*, the sole species detected by pellet analysis alone, is 255 g. All weight estimates are from Pavey *et al.* (in press). The only previous record of Powerful Owl predation on this species, also from Mt Coot-tha (Pavey *et al.* in press), again resulted from pellet analysis. The absence of other smaller species in Table 2 is due to the limited number of pellets examined.

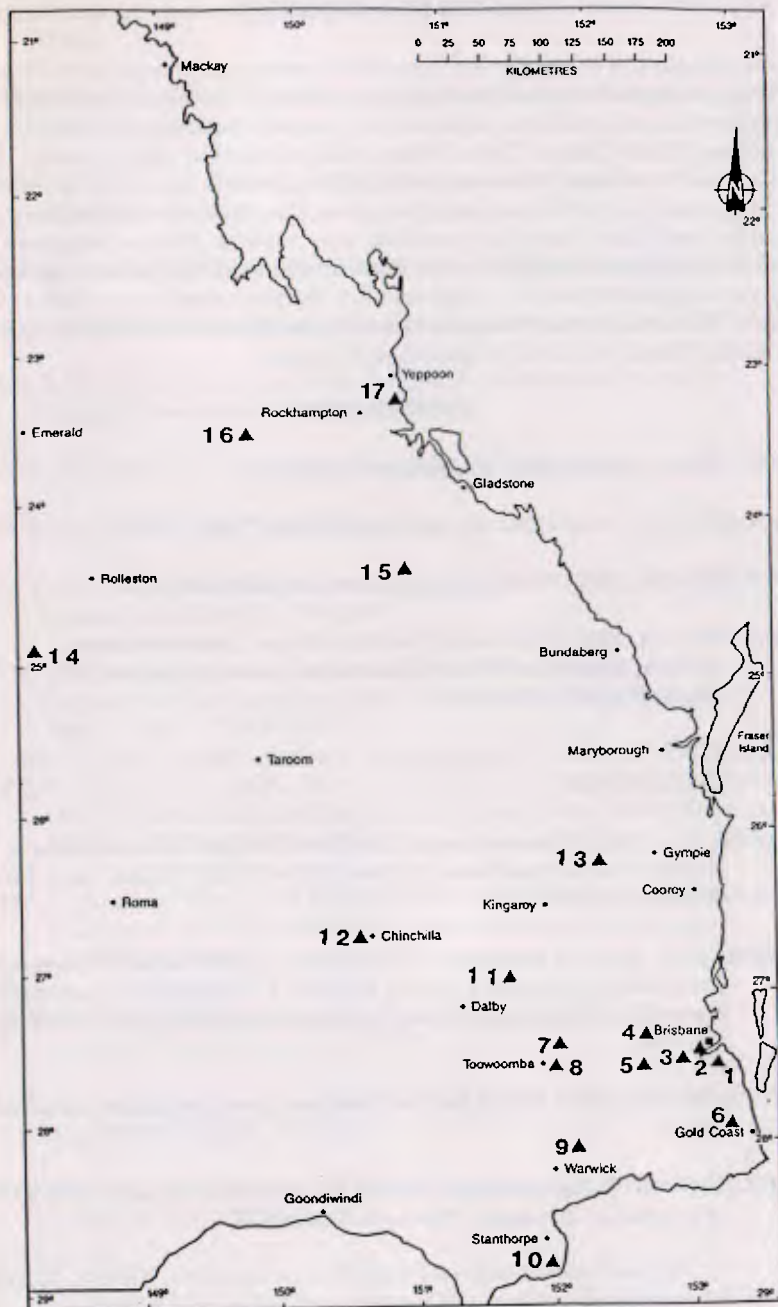
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**Fig. 1. Queensland localities from which records of the food of the Powerful Owl have been obtained.**

1. Toohy Forest, Brisbane.
2. Mt Coot-tha and Toowong, Brisbane.
3. Upper Brookfield, Brisbane and Coal Creek, Ipswich.
4. England Creek, Fernvale district.
5. Tallegalla, Marburg district.
6. Nerang, Gold Coast.
7. Murphy's Creek and Sheep Station Creek.
8. Redwood Park, Toowoomba district.
9. Glengallan Creek, Great Dividing Range and Warwick district.
10. Girraween National Park, Granite Belt.
11. Bunya Mountains.
12. Chinchilla district.
13. Widgee, Gympie district.
14. Carnarvon National Park.
15. Mt Roberts, Calliope Range.
16. Coomoolooloo Station, Duringa district.
17. Kinka Beach, Yeppoon district.

**TABLE 2. Food of breeding Powerful Owls at Mt Coot-tha, Brisbane, July to August 1988, May to September 1991 and April to May 1993.**

Prey species	Type of Record			Total
	prey held	prey remains	pellet	
<b>Mammals:</b>				
Common Brushtail Possum	4	0	0	4
Common Ringtail Possum	1	1	0	2
fruit-bat spp.	4	0	2	6
<b>Birds:</b>				
Brown Goshawk	0	0	1	1
Dusky Moorhen	0	1	0	1
<i>Gallinula tenebrosa</i>				
Pied Currawong	1	0	0	1
Torresian Crow	1	0	0	1
<i>Corvus orru</i>				
unidentified bird	1	0	0	1
<b>Total</b>	<b>12</b>	<b>2</b>	<b>3</b>	<b>17</b>





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- CHRIS R. PAVEY, *Department of Entomology and Department of Anatomical Sciences, University of Queensland, Brisbane, 4072.*
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**OBSERVATIONS ON THE ROOSTS, HUNTING BEHAVIOUR AND  
DIET OF A LESSER SOOTY OWL *TYTO MULTIPUNCTATA* IN  
FRAGMENTED RAINFOREST**

JIM WHITTLE

**INTRODUCTION**

While camping at Kingfisher Park at Julatten, North Queensland (16° 36'S, 145° 20'E) during July 1993, a Lesser Sooty Owl *Tyto multipunctata* was heard to call, located, then observed where possible, both day and night, for a period of eleven days (20-30 July 1993). The park is a small remnant of rainforest surrounded by pastoral and agricultural holdings. Hollands (1991) reports on the owls' use of mountain rainforest and their diet therein. There are few records from fragmented, agricultural landscapes and there is no knowledge of its diet in such modified environments. As fragmented habitat is the single greatest area of unreserved habitat, our understanding of wildlife usage has important conservation implications. Nomenclature follows Schodde & Mason (1980).

The owl was initially found by triangulation of its call from several different locations. With the use of a headlight I was then able to locate its eyeshine and its roost. Although it was dark within the rainforest, objects were discernible without use of an artificial light when only 40 m away on an adjoining road abutted by pastures. The owl remained at its roost until it was also dark outside the remnant. Thirteen pellets were collected under the day roosts. The contents were identified by comparison with material held at the Queensland Museum. Mammalian hair was not analysed.

**ROOST SITES**

An initial call, the well documented 'bomb whistle' (Fleay 1968, Schodde & Mason 1980, Schodde & Tidemann 1986, Hollands 1991) always came from the roost site, with up to seven calls in the half-hour period of light variation between inside and outside the remnant. The bird was induced to call more frequently by a mimicked whistle of its call. During the eleven days, five roosting sites used by the owl were located. Others known to exist were not found. On two non-consecutive days I could not locate the owl but considered it to be using a hollow in a large tree nearby. While the overall height of the canopy was in excess of 20 m, all sites located were in small broad-leaved trees with a maximum height of 7 m. All were within the remnant, at the side of a dry creek gully with a stagnant pool at the lowest point. The owl was always tucked right up under the leaf canopy and to the side. This gave it shelter from direct sunlight and obscured its visibility to other bird species. The change of roost site may have been in response to my presence, although it did use one site on five consecutive days and the remainder for one. At no time did I observe it returning to its roost with prey.

## HUNTING BEHAVIOUR

Most evenings, upon leaving the roost, the owl would fly a short distance and perch, obviously scanning the ground and listening for prey. Its choice of perch was usually a bare horizontal branch between 3 m and 5 m above the ground. On one occasion, when trying to relocate the owl, I picked up an immature Green Ringtail Possum *Pseudocheirus archeri* in my headlight. In less than a minute, the owl was perched in a stooped position no more than one metre above the possum. For some time the owl remained in this position, only to abandon the possum and fly off. Presumably the potential prey was either too large or perhaps too dangerous. On another occasion, it was observed to leave the rainforest, fly high into a senescent Forest Red Gum *Eucalyptus tereticornis*, perch on a large primary bough, then glide the entire length of a sports oval to perch in a stand of small trees on the other side, approximately 150 m from the rainforest. Although this area was a stronghold of Barn Owls *T. alba*, with seven hollows occupied by roosting and nesting birds, I noticed no aggression towards the Lesser Sooty Owl. On four occasions the Lesser Sooty Owl was observed to exit the rainforest, only to re-enter some 20-30 m further along its fringe.

## DIET

Analysis of pellets (Table 1) and sightings of vertebrates in the area (Table 2) indicate that, although the owl has a large choice of prey species, it tends to take small mammals to around 200 mm in length, weighing up to 156 g. Of the four species in Table 1, the two *Rattus* are wholly terrestrial (Strahan 1983). Although both species of *Melomys* are capable climbers, the habitat of *M. burtoni* (Strahan 1983) denotes a primarily terrestrial existence. The above, together with the owl's habit of hunting from a low perch, suggests that its hunting activity occurs close to or at ground level. While thirteen pellets are insufficient to properly represent the diet of the owl, they adequately reflect its diet at Kingfisher Park during July.

## ACKNOWLEDGEMENTS

The assistance of Steve van Dyck of the Queensland Museum in identifying some of the pellet material is greatly appreciated, as was the kind permission of Geoff and Sandy Nicholson of Kingfisher Park at Julatten to wander at will throughout their property at all hours of the day and night. Also thanks to Kevin Lamprell for the use of his Olympus Microscope, which enabled me to complete the pellet analysis, and to Chris Pavey for his comments on an earlier draft.

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TABLE 1. Analysis of pellets.

SPECIES	NUMBER	LENGTH(mm)	WEIGHT (g)
Fawn-footed Melomys <i>Melomys cervinipes</i>	1	95-200	45-110
Grassland Melomys <i>Melomys burtoni</i>	9	125-140	45-110
Cape York Rat <i>Rattus leucopus</i> <i>cooktownensis</i>	1	155-204	89-153
Swamp Rat <i>Rattus lutreolus lacus</i>	2	134-197	92-156
Total	13		

Sources for mammal lengths and weights are Covacevich & Easton (1974), Watts & Aslin (1981), Strahan (1983) and Cronin (1991).

TABLE 2. Mammals, reptiles and birds observed roosting in the open at night in the same area used by the owl.

Northern Brown Bandicoot	<i>Isodon macrourus</i>
Long-nosed Bandicoot	<i>Perameles nasuta</i>
Green Ringtail Possum	<i>Pseudocheirus archeri</i>
Striped Possum	<i>Dactylopsila trivirgata</i>
Red-legged Pademelon	<i>Thylogale stigmatica stigmatica</i>
Water-rat	<i>Hydromys chrysogaster</i>
White-tailed Rat	<i>Uromys caudimaculatus</i>
Fawn-footed Melomys	<i>Melomys cervinipes</i>
Grassland Melomys	<i>Melomys burtoni</i>
Prehensile-tailed Rat	<i>Pogonomys mollipilosus</i>
Canefield Rat	<i>Rattus sordidus</i>
House Mouse	<i>Mus musculus</i>
Feral Cat	<i>Felis catus</i>
Unidentified Rat	<i>Rattus</i> sp.
Boyd's Forest Dragon	<i>Hypsilurus boydii</i>
Leaf-tailed Gecko	<i>Phyllurus cornutus</i>
Grey Whistler	<i>Pachycephala simplex</i>
Spectacled Monarch	<i>Monarcha trivirgatus</i>
Peaceful Dove	<i>Geopelia placida</i>

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- JIM WHITTLE, 21 Melinda Court, Kallangur, Q 4503.*
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**REGENT BOWERBIRD FEEDING ON A GREENGROCER CICADA****PETER F. WOODALL**

The Regent Bowerbird *Sericulus chrysocephalus* feeds primarily on fruit, although it has also been recorded feeding on insects (Cooper & Forshaw 1977), such as earwigs, grasshoppers, beetles and ants (Barker & Vestjens 1991), and has been observed hawking on the wing for moths (Chaffer 1932).

On 9 December 1992, while walking along a track in very tall, notophyll, closed forest near Tenison Woods Mountain (27° 18'S, 152° 45'E, 700 m asl), Brisbane Forest Park, a female Regent Bowerbird fluttered to the ground 10 m ahead of me with a cicada in its bill. The bird was watched, quite undisturbed, with 8x30 binoculars. On the ground it proceeded to remove the cicada's legs and wings by holding the appendage in its bill and then giving a quick flick. The abdomen was separated from the thorax in a similar way but required more time and manipulation. The bird consumed the contents of the abdomen before flying off with the thorax.

The cicada's wings were collected and readily identified as those of the Greengrocer *Cyclochila australasiae*, a large green cicada (with other colour forms). It is common in suburban gardens of both Sydney and Melbourne, but around Brisbane it is confined to higher altitudes such as Mts. Tambourine, Nebo and Glorious. It is most common from October to early December (Moulds 1990).

Cicadas may form a more important part of the Regent Bowerbirds' diet than previously thought, for the processing method described above would leave few identifiable remains in stomach contents. Unattached wings and a complete Greengrocer Cicada minus the abdomen were found in other parts of Brisbane Forest Park in the week prior to this incident.

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**AN APPARENT FEEDING ASSOCIATION BETWEEN THE AZURE  
KINGFISHER *CEYX AZUREA* AND THE PLATYPUS  
*ORNITHORHYNCHUS ANATINUS***

GUY J. TROUGHTON and STEPHANIE WRAY

An apparent feeding association was noted between the Azure Kingfisher *Ceyx azurea* and the Platypus *Ornithorhynchus anatinus* at Eungella National Park, Queensland on 24 June 1991. Over a period of 50 minutes from 5pm, two Azure Kingfishers were observed following the movements of a foraging Platypus along Broken River. The Platypus activity was concentrated along a section of river bank approximately 40m in length. During each dive made by the Platypus, the birds perched at a convenient point on the bank, apparently watching for fish that were disturbed. When the Platypus surfaced after catching prey, one of the Kingfishers dived into the disturbed area, often being successful in procuring a food item. Seven such dives were recorded. The birds appeared to dive into disturbed waters only if they had previously been able to observe the movements of the Platypus, and then only after the Platypus had surfaced. The Platypus' feeding did not appear to be inhibited by the action of the birds, and the behaviour appeared to be a commensal feeding association, presumably of benefit to the Kingfishers and neutral to the Platypus.

We have failed to locate a published account of any such association between a bird and a mammal, other than the somewhat similar relationship between Cattle Egrets *Ardeola ibis* and large mammals. The association between Cattle Egrets and domestic cattle, discussed by Thompson *et al.* (1982), involves a likely benefit to cattle, although this has proven difficult to verify. The commensal relationship tentatively proposed here has not been substantiated and it would likewise be difficult to prove. It is hoped that this note might prompt others to document similar observations.

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- GUY TROUGHTON & STEPHANIE WRAY, *Bristol Ecological Consultants Ltd., School of Biological Sciences, Woodland Road, Bristol, BS8 1UG, England.*
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## BOOK REVIEW

**BIRDS AND THEIR HABITATS: STATUS AND CONSERVATION IN QUEENSLAND (1993)** Edited by C.P. Catterall, P.V. Driscoll, K. Hulsman, D. Muir & A. Taplin. QOSI, St Lucia. \$15 QOSI members; \$10 conference participants; \$25 retail; \$5 postage within Australia.

As an undergraduate studying environmental science in New South Wales in the late 1970's, I was taught that Queensland had the largest number of national parks but the smallest total area actually gazetted. Although such figures were the source of bitter humour, they caused relatively little consternation among southern environmentalists at the time; the real conservation problems (we thought) were in temperate Australia. Queensland seemed 'safe', mainly by virtue of its low population and vast area.

Today this picture has altered radically. While on the one hand the National Park estate has been doubled (and includes many ecosystems previously unrepresented in reserves), the pressure on land associated with extraordinary population growth (due primarily to interstate immigration) is mounting at a truly alarming rate. While numerous measures have been instigated that aim to minimise impact, those concerned about planning for conservation have been confronted by two debilitating obstacles: a lack of detailed and appropriate information, and no clear order of priorities among the many challenges being faced. It is within such a vital context that this book has been published. An appreciation of its content should provide a sound basis for the removal of these obstacles.

In July 1991 the QOSI hosted a conference and workshop on the Status and Conservation of Birds and Their Habitats in Queensland. The attendance was well beyond the expectations of the organisers, particularly in terms of the authoritative and comprehensive knowledge of those who offered to speak. The scope of the agenda extended well beyond the State, and gave a truly national perspective to the conference.

Rather than a dry and academic event, those attending heard clear, detailed, sensible and often impassioned accounts of the state of the State and its future. The tone of these talks has been well preserved in the papers prepared for publication here, in a book which is generally highly readable. In addition, this volume provides considerable new data and relevant references, enhancing its value as a research and reference tool.

The organisation of the proceeding reflects that of the conference though with the invaluable addition of a concise but focused Introduction. This chapter summarises the overall tone of the book and succinctly outlines a number of strategic recommendations arising from general discussion but especially from

the various workshops. This section alone justifies the holding of the conference; it is the considered distillation of a wide cross-section of opinion of the most authoritative scientists and enthusiasts working in these diverse fields/disciplines. This summary in easily understood language could be used with considerable influence in government spheres.

Following the Introduction there are two Overviews. The first is by Pat Comben, the former Minister for Environment and Heritage, who amply demonstrates his ornithological credentials and enthusiasm. The second, by Henry Nix, is a remarkable state-wide-and-beyond view of the importance of Queensland in the conservation of not only Australian birds but also New Guinean/Papuan and Palaearctic migrants.

The bulk of the rest of the book consists of papers arranged in two major categories: Birds, Habitat and Threatening Processes (12 papers), and Planning and Management Issues (5 papers). The concluding section contains brief summaries of the key issues and recommendations emanating from the nine workshops conducted during the conference. These workshops provide the most lasting legacy of the conference in the mainly well conceived priorities facing conservation authorities.

Among the many excellent papers, those by Frank Crome, Carla Catterall and Mark Kingston stand out as of particular interest to Queensland ornithologists. In the first, Crome, in his characteristic style, alerts us to the possible problems facing birds in the Wet Tropics World Heritage Area in the north (358 species have been recorded in north-east Queensland). Although the logging has stopped, the resultant patchiness and attendant issues such as weeds and feral animals are cause for concern, but very little can be reliably stated because of the lack of data. Crome also reminds us that the tropical north-east is not just rainforest; wet sclerophyll woodlands and mangrove also need careful attention as vital habitats.

At the other end of the State, and in contrast to optimistic visions of the future, Catterall and Kingston's paper is a thorough and deeply sobering report on the extent and rate of disappearance of bushland in south-east Queensland. In areas below 60 m elevation, 82% to 92% of the bushland has gone, leaving only isolated fragments. Alarming, the rates of loss have not slowed down, with half of all the *Melaleuca* being lost within the last two decades. And this as we face a massive population expansion that will see about 800 000 new people arrive in the next 20 years. Quite obviously the situation in the south-east of the State is of extreme concern.

The QOSI is to be congratulated for having the enthusiasm and vision to support, promote and now publish this profoundly valuable work. From the outset it was

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an ambitious project which could have been a mere exercise in theoretical extrapolation and academic whingeing. On the contrary, this book makes our challenges clear and real. It is a book every Queensland ornithologist and conservationist should own and every planner and legislator should read.

*DR DARRYL JONES, Faculty of Environmental Science, Griffith University,  
Nathan, Q 4111.*

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*The Sunbird* is published quarterly by the Queensland Ornithological Society to further the knowledge of birds in Queensland and adjacent northern regions of Australia.

Papers are invited from non-members as well as members on all aspects of ornithology, e.g. life history, taxonomy, distribution, behaviour and ecology. Articles may take the form of major articles on specific birds, birds in specific areas or habitats, or short notes on either birds themselves or the literature on birds, such as reviews of books or comments on published articles.

Submission of a paper implies that the results reported have not been published and are not being considered for publication elsewhere. The editor reserves the right to submit records of rare birds to the Records Appraisal Committee of the Royal Australasian Ornithologists Union.

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SLATER, P. 1970. *A Field Guide to Australian Birds. Non-Passerines*. Adelaide: Rigby.

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