

## Predation of a Mardo *Antechinus flavipes leucogaster* by a Southern Boobook, and Mobbing of Boobooks by Other Birds

GRAHAM R. FULTON

School of Natural Sciences, Edith Cowan University, 100 Joondalup Drive,  
Joondalup, Western Australia 6027 (Email: grahamf2001@yahoo.com.au)

---

### Summary

A Southern Boobook *Ninox novaeseelandiae* was observed taking an adult Mardo (Yellow-footed Antechinus) *Antechinus flavipes leucogaster*. The Mardo is the largest vertebrate prey recorded, to date, taken by a Boobook in south-western Australia, although future analyses of diet will likely reveal that vertebrates are commonly taken. Mobbing of the Boobook by medium-sized birds also suggests that they regard it as a predator.

### Introduction

The diet of the Southern Boobook *Ninox novaeseelandiae* has been described in parts of southern and eastern Australia (e.g. Higgins 1999; McNabb 2002; Olsen *et al.* 2006). The accumulation of recent information (since that in Higgins 1999) on the food items of this species has brought about a changed understanding of its ecological role. For example, Penck & Queale (2002) found predominantly insects in the gizzards of 117 Boobooks. However, these were taken from mainly road-killed Boobooks in the collection of the South Australian Museum, and birds collected along roads may show a bias in their diet to invertebrates that have been dazzled by car headlights or attracted to street-lights (cf. Fulton *et al.* 2008). Recent studies have found that the Boobook also takes larger prey, including mammals (e.g. Black Rat *Rattus rattus* and juvenile Common Ringtail Possum *Pseudocheirus peregrinus*) and birds up to the size of the Black-faced Cuckoo-Shrike *Coracina novaehollandiae*, Common Myna *Sturnus tristis* and Crimson Rosella *Platycercus elegans* (McNabb 2002; Olsen *et al.* 2006; Trost *et al.* 2008). Knowledge of the diet of the Boobook has shifted from a belief that this species is predominantly insectivorous (e.g. Hollands 1991; Higgins 1999) to understanding it as predominantly a predator of vertebrates, at least by biomass (McNabb 2002; Olsen *et al.* 2006; Fitzsimons & Rose 2007). In addition, the Boobook may show dietary preferences among vertebrates. Fitzsimons & Rose (2007) found that the House Mouse *Mus musculus* made up ~90% of the diet by mass, yet other, native, vertebrates such as Yellow-footed Antechinus *Antechinus flavipes flavipes* and Brush-tailed Phascogale *Phascogale tapoatafa* were not taken in central Victoria, although they were present in the locality. In contrast, little is known of the diet of the Boobook, and owls in general, from south-western Australia, despite Boobooks being the most common forest owl there (Liddlelow *et al.* 2002). Johnstone & Storr (1998) stated that in Western Australia it takes mainly insects, small lizards including geckoes, and small mammals including the House Mouse.

This paper describes a single predatory event from Dryandra in south-western Australia where a Boobook took an adult Mardo *Antechinus flavipes leucogaster*, the south-western subspecies of the Yellow-footed Antechinus. In addition, I report on the frequency of aggression shown to Boobooks at Dryandra by medium-sized birds.

## Methods, Observations and Results

Dryandra (32°48'S, 117°0'E) is a large, 27 000-ha remnant of old-growth woodland in the Wheatbelt of Western Australia. The Western Australian Wheatbelt has been cleared of up to 97% of native woodland (Saunders & Curry 1990; Saunders & Ingram 1995). For a fuller description of Dryandra Woodland and the methods used in this study, see Fulton (2006a,b).

I observed the Boobook taking the Mardo in Wandoo *Eucalyptus wandoo* woodland at a site centrally located within Dryandra. I observed it on the ground with the Mardo, after which it flew to a mid-canopy perch where it ate the prey. The incident was brought to my attention by four Yellow-plumed Honeyeaters *Lichenostomus ornatus*, which harassed the Boobook for 5 minutes before I left the area. The Honeyeaters mobbed the Boobook from perches near the ground and then from higher perches when the Boobook moved. The Boobook did not appear to react to the Honeyeaters. The harassment involved the Honeyeaters perching ~2–4 m from the Boobook and squawking, although they did not swoop the Boobook. This occurred in the late afternoon (1–2 hours before sunset, time unrecorded) on 28 July 2004.

Boobooks were commonly harassed by other birds at Dryandra. They were detected 23 times in 141 bird surveys at four sites, during three breeding seasons (August to January inclusive), 2002–03, 2003–04 and 2004–05. They were harassed by other birds 15 times (65% of occurrences). They were either harassed by a single bird or mobbed by single- and mixed-species groups. Bird species that harassed Boobooks were Yellow-plumed Honeyeater, Red Wattlebird *Anthochaera carunculata*, Brown-headed Honeyeater *Melithreptus brevirostris* and White-naped Honeyeater *M. lunatus*.

### *Species masses*

The Mardo may be the largest mammal reported to be taken by a Boobook in south-western Australia. Mean mass for the Mardo in the Western Australian Museum was calculated at 29.0 g  $\pm$  standard error 1.3 g, with the largest 72.0 g ( $n = 110$ ; includes unsexed individuals). Females averaged 24.8  $\pm$  1.8 g, with the largest 72.0 g ( $n = 55$ ), and males averaged 33.7  $\pm$  1.9 g, with the largest 59.0 g ( $n = 51$ ). The gender of the Mardo taken by the Boobook was unknown, although this prey was adult-sized and its mass is likely to have been greater than the averages given here, which include juveniles. For the nominate subspecies of Yellow-footed Antechinus *A.f. flavipes*, masses are given for males as 26–79 g (mean 56 g) and for females as 21–52 g (mean 34 g) (Crowther 2008). Crowther *et al.* (2002) suggested that the Mardo is smaller and finer than the nominate subspecies, based on cranial and dental measurements, although the measurements given above do not support any substantial mass difference between the two subspecies. The mass of Boobooks from south-western Australia is 168–300 g (Johnstone & Storr 1998).

## Discussion

The Boobook has not previously been recorded taking an adult Mardo in south-western Australia (Johnstone & Storr 1998; Higgins 1999). In the present study it was seen to be harassed by different birds: singles, groups and groups of different species, which indicates that it may be known to these birds as a predator or nest-predator. The birds identified here harassing the Boobook were all honeyeaters, and honeyeaters in general have been labelled as 'pugnacious' (Longmore 1991),

although some are less aggressive than others or are selectively aggressive (Davis & Recher 1993; Fulton 2008). Interspecific aggression in these honeyeaters at Dryandra was linked to breeding sites of birds with nests or young (Fulton 2007; GRF unpubl. data). Other studies of aggression in honeyeaters have found that it is directed toward competitors and predators (Ford & Debus 1994). It therefore seems reasonable to interpret the aggression shown to Boobooks as a sign that Boobooks take birds as prey, as they do in eastern Australia.

The diet of the Boobook, and of other owls, in south-western Australia is poorly understood, and further study is needed. Thus, I suggest that efforts be made to collect pellets from roosts and nests in south-western Australia to increase our knowledge of the diets of these birds.

### Acknowledgements

I thank the Department of Environment & Conservation for financial support. I thank Stephen Debus for advice on the manuscript, and Ric How for the data on Mardo specimens held in the Western Australian Museum. I acknowledge my supervisors, Harry F. Recher and Pierre Horwitz, and two referees. I acknowledge the Nyoongar people, the traditional owners of the land where this study was undertaken.

### References

- Crowther, M.S. (2008), 'Yellow-footed Antechinus', pp. 86–88 in Van Dyck, S. & Strahan, R. (Eds), *The Mammals of Australia*, 3rd edn, Reed New Holland, Sydney.
- Crowther, M.S., Spencer, P.B.S., Alpers, D. & Dickman, C.R. (2002), 'Taxonomic status of the Mardo, *Antechinus flavipes leucogaster* (Marsupialia: Dasyuridae): A morphological, molecular, reproductive and bioclimatic approach', *Australian Journal of Zoology* **50**, 627–647.
- Davis, W.E. Jr & Recher, H.F. (1993), 'Aggression by honeyeaters and its consequences for nesting Striated Thornbills *Acanthiza lineata*', *Corella* **17**, 25–27.
- Fitzsimons, J.A. & Rose, A.B. (2007), 'The diet of a Southern Boobook *Ninox novaeseelandiae* in Box–Ironbark country, central Victoria', *Australian Zoologist* **34**, 85–88.
- Ford, H.A. & Debus, S. (1994), 'Aggressive behaviour of Red Wattlebirds *Anthochaera carunculata* and Noisy Friarbirds *Philemon corniculatus*', *Corella* **18**, 141–147.
- Fulton, G.R. (2006a), 'Observations of predation, nest-predation and other disturbance events at Dryandra, south-western Australia I: Birds as predators', *Australian Field Ornithology* **23**, 144–151.
- Fulton, G.R. (2006b), 'Observations of predation, nest-predation and other disturbance events at Dryandra, south-western Australia II: Birds as prey of other animals', *Australian Field Ornithology* **23**, 152–158.
- Fulton, G.R. (2007), 'Willie Wagtail No. 51: An Australian Christmas story for a friend in Tokyo', *Wingspan* **17**(4), 20–23.
- Fulton, G.R. (2008), 'A possible territorial and nesting association between Pied and Grey Butcherbirds *Cracticus nigrogularis* and *C. torquatus* and the Yellow-throated Miner *Manorina flavigula*', *Corella* **32**, 30–34.
- Fulton, G.R., Smith, M., Choi, M.N. & Takahashi, S. (2008), 'Road ecology from a roadside assemblage of forest birds in south-western Australia', *Ornithological Science* **7**, 47–57.
- Higgins, P.J. (Ed.) (1999), *Handbook of Australian, New Zealand and Antarctic Birds*, vol. 4, Oxford University Press, Melbourne.
- Hollands, D. (1991), *Birds of the Night*, Reed, Sydney.
- Johnstone, R.E. & Storr, G.M. (1998), *Handbook of Western Australian Birds: Volume 1, Non-passeriformes*, Western Australian Museum, Perth.
- Liddel, G.L., Wheeler, I.B. & Kavanagh, R.P. (2002), 'Owls in the southwest forests of Western Australia', pp. 233–241 in Newton, I., Kavanagh, R., Olsen, J. & Taylor, I. (Eds), *Ecology & Conservation of Owls*, CSIRO, Melbourne.
- Longmore, N.W. (1991), *Honeyeaters and Their Allies of Australia*, Angus & Robertson, Sydney.

- McNabb, E.G. (2002), 'Notes on the diet and observations of the Southern Boobook (*Ninox novaeseelandiae*) in southern Victoria', pp. 192–198, in Newton, I., Kavanagh, R., Olsen, J. & Taylor, I. (Eds), *Ecology & Conservation of Owls*, CSIRO, Melbourne.
- Olsen, J., Fuentes, E., Rose, A.B. & Trost, S. (2006), 'Food and hunting of eight breeding raptors near Canberra, 1990–1994', *Australian Field Ornithology* **23**, 77–95.
- Penck, M. & Queale, L.F. (2002), 'The diet of Southern Boobooks in South Australia', *Emu* **102**, 355–360.
- Saunders, D.A. & Curry, P.J. (1990), 'The impact of agricultural and pastoral industries on birds in the southern half of Western Australia: Past, present and future', *Proceedings of the Ecological Society of Australia* **16**, 303–321.
- Saunders, D.A. & Ingram, J.A. (1995), *Birds of Southwestern Australia*, Surrey Beatty, Sydney.
- Trost, S., Olsen, J., Rose, A.B. & Debus, S.J.S. (2008), 'Winter diet of Southern Boobooks *Ninox novaeseelandiae* in Canberra 1997–2005', *Corella* **32**, 66–70.

Received 23 October 2009

