

## SHORT COMMUNICATIONS

### FOOD OF THE POWERFUL OWL *Ninox strenua* IN SOUTH-EASTERN QUEENSLAND

The Powerful Owl *Ninox strenua* is the largest of the Australian owls and is found from the Portland district in Victoria to the Dawson River in central Queensland (Slater 1970). It is a nocturnal hunter, preying almost exclusively on native arboreal mammals, in particular the Greater Glider *Schoinobates volans* and the Common Ringtail *Pseudocheirus peregrinus* (Fleay 1944, 1968). Seebeck (1976), working in western Victoria, where *S. volans* does not occur, found that *P. peregrinus* formed the bulk of the diet.

A study of the food of this Owl was made in Girraween National Park, south-eastern Queensland, during 1973 and 1974. The vegetation of the Girraween National Park area has been described as an

open forest containing *Eucalyptus blakelyi*, *E. melliodora* and *E. nova-anglica* (Specht *et al.* 1974).

On three occasions between February 1973 and December 1974 numerous casts were collected from two roosting sites. A count of the casts was not possible because many of them had disintegrated by the time of collection. Skeletal material was separated out, identified and counted. Before the first collection a spotlight count of arboreal mammals had been made in the park on transects within a radius of 1,500 metres of these roosting sites.

Results are presented in Table I (cast analysis) and Table II (spotlight counts and comparison with cast analysis.).

It was assumed that the abundance of the arboreal mammals in the diet and in the habitat of the Owls was indicated by the techniques used. The possibility that bones of the smaller species, particularly *Acrobates*, were digested rather than cast cannot be overlooked, although the bones of this species are found in casts of the Barn Owl *Tyto alba* (unpubl. obs.), and the two smaller species may be less easily seen in the spotlight than the larger ones. As they stand, however, the data collected show that *S. volans* and *P. peregrinus* were favoured in preference to other arboreal mammals found in the area. As regards these two possums only, a chi-squared test showed no significant difference ( $P < 0.05$ ) between proportions in the diet and in the habitat, indicating that Powerful Owls did not favour one of these species in preference to the other. Seebeck (1976) did not attempt to measure abundance of prey and thus was unable to detect any preferences that may have occurred but *P. peregrinus* was the dominant species of prey taken from an arboreal mammalian

TABLE I

Remains of mammals found in pellets of Powerful Owl at Girraween National Park.

	<i>S. volans</i>	<i>P. peregrinus</i>	<i>P. breviceps</i>	Unknown
<b>Site 1. 26 March 1973</b>				
Mandible	1(1)	3(1)	2(1)	—
Scapula	—	2(1)	—	2(1)
Humerus	5(3)	6(3)	—	—
Ulna	—	4(2)	—	1(1)
<b>Site 1. 17 October 1974</b>				
Mandible	7(5)	6(3)	1(1)	—
Scapula	11(7)	5(3)	—	10(7)
Humerus	21(11)	14(9)	—	—
Ulna	8(5)	7(4)	—	4(2)
<b>Site 2. 12 December 1974</b>				
Mandible	2(1)	—	—	—
Scapula	—	—	—	1(1)
Humerus	1(1)	—	—	—
Ulna	1(1)	—	—	—
<b>Total</b>				
Mandible	(7)	(4)	(2)	—
Scapula	(7)	(4)	—	(9)
Humerus	(15)	(12)	—	—
Ulna	(6)	(6)	—	(3)

The numbers in parentheses indicate the minimum numbers of individuals after taking into account the numbers of right and left bone of each type. The column marked 'Unknown' records numbers of mammal bones too damaged to identify. Based on size alone, all could be from *S. volans* or *P. peregrinus*.

TABLE II

Recorded numbers of native arboreal mammals in the diet of the Powerful Owl and in its habitat (percentages in parentheses).

	No. in casts	No. in spotlight
<i>S. volans</i>	15(52)	12(23)
<i>P. peregrinus</i>	12(41)	16(30)
<i>P. brevipes</i>	2(7)	17(32)
<i>T. vulpecula</i>	0	6(11)
<i>A. pygmaeus</i>	0	2(4)

fauna that included *Trichosurus vulpecula*, *Petaurus australis* and *P. breviceps* as well as *Pseudocheirus peregrinus*. He stated, however, that *P. peregrinus* was the most abundant possum in his study area and suggested that the Owl was an opportunistic predator rather than highly selective, as other authors have stated. The selection of *P. peregrinus* and *S. volans* was unquestionable, however, at Girraween where both these species were present in a diverse fauna of possums, which also included the larger *T. vulpecula*, the smaller *P. breviceps* and the much smaller *Acrobates pygmaeus*.

The bulk of the data available on the diet of the Powerful Owl, including that provided by Seebeck (1976), supports the proposition that this Owl is a selective predator with a decided preference for the medium-sized possums *P. peregrinus* and *S. volans*, which it will take indiscriminately where both occur together.

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Although this study provided no indication of the rate at which these possums are taken, this large Owl probably plays a significant part in the regulation of their populations in the area.

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#### COOPERATIVE BREEDING BY TREECREEPERS

Cooperative breeding has been reported in no fewer than sixteen families of Australian birds (Rowley 1976). In this paper I summarize evidence of co-operation in another family, the Australian Treecreepers (Climacteridae). The tendency for some species of *Climacteris* to occur in groups during the non-breeding season has been noted elsewhere (Reader's Digest 1976; Noske 1976). All species are sexually dimorphic (see Disney *et al.* 1974).

I studied colour-banded Brown Treecreepers *C. picumnus* at Swan Vale, thirty kilometres west of Glen Innes, NSW; Red-browed Treecreepers *C. erythrops* at Wollomombi Falls, forty kilometres east of Armidale, NSW; and White-throated Treecreepers *C. leucophaea* at both places. During the 1977-78 breeding season, six groups of Brown Treecreepers nested: two simple pairs, two trios and two quartets. Five nesting groups of Red-browed Treecreepers consisted of four trios and one quartet but there were no pairs. In both species, there was only one female in each group. Contrary to Reader's Digest (1976: 452), the female alone incubated in these and other species of *Climacteris* that I have observed. Every individual participated in feeding the young of its own group and each male fed the incubating bird. One Brown trio and two Red-browed trios successfully reared two broods but the offspring of

the first brood did not help the adults at the second nest. In October 1978, I saw no fewer than six Brown Treecreepers (five males: one female) feeding at one nest. Of the four supernumerary males, two were a year old and the progeny of the primary (mated) male but the others were at least two years old. One of the last two simultaneously fed nestlings at another nest belonging to a different group, over one hundred metres away.

I have observed thirty nests of the White-throated Treecreeper and all have been attended by simple pairs. This is consistent with the strongly territorial social organization of this species, which is usually solitary during the non-breeding season (Noske 1976). I have also observed three nests each of the Rufous and White-browed Treecreepers *C. rufa* and *C. affinis* and one of the Black-tailed Treecreeper *C. melanura*. The three nests of Rufous Treecreepers, forty-six kilometres south-west of Iron Knob, SA, each contained young and were attended by trios, one of which had two females. Nests of White-browed Treecreepers in south-western Queensland were attended by simple pairs and during the non-breeding season I observed these birds singly or in pairs. The nest of the Black-tailed Treecreeper near Mount Isa, Qld, was attended by a simple pair. However, R. Orenstein (*in litt.*) has seen three