Diet of Powerful Owls *Ninox strenua* in Inner City Melbourne Parks, Victoria

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Summary

Most dietary studies of Powerful Owls *Ninox strenua* have been from forested habitats or partially disturbed habitats on the urban fringe. The diets of single Powerful Owls roosting in two inner city parks in Melbourne, Victoria, in 2008 and 2009 were analysed. Common Brushtail Possum *Trichosurus vulpecula* and Common Ringtail Possum *Pseudocheirus peregrinus* were the only prey species recorded in the Fitzroy gardens (occurring in equal numbers in the Owl’s diet), whereas Common Brushtail Possums and Black Rats *Rattus rattus* were recorded in the diet of the Flagstaff gardens bird. This is a less diverse prey selection than recorded in the only other inner city dietary analysis for this species.

Introduction

Most dietary studies of Powerful Owls *Ninox strenua* have been from forested habitats or partially disturbed habitats on the suburban fringe of cities. Here they are found to eat predominantly medium-sized arboreal marsupials, from those species that are most available at a given locality (Cooke *et al.* 2006).

There has been an increasing number of studies of the ecology and diet of Powerful Owls in Melbourne’s suburban fringe (e.g. Lavazanian *et al.* 1994; McNabb 1996; Cooke *et al.* 1997, 2002, 2006; Wallis *et al.* 1998; Webster *et al.* 1999) and suburban areas of other Australian cities (e.g. Pavey 1995; Kavanagh 2004; McAllan & Larkins 2005). However, despite the occurrence of Powerful Owls in inner city Melbourne parks potentially increasing (including the Royal Botanic Gardens, Fitzroy Gardens and Flagstaff Gardens: Cooper 1964; Menkhorst *et al.* 2005; Westerman 2007; Isaac *et al.* 2008), only one study of the diet of this species is known to have been published from this habitat type (i.e. Menkhorst *et al.* 2005). Powerful Owls are not known to breed in highly urbanised areas of Melbourne, most likely reflecting a lack of suitable habitat, namely large tree-hollows (Isaac *et al.* 2008).

In the study of the diet of a Powerful Owl in Melbourne’s Royal Botanic Gardens in 1989–1990, Menkhorst *et al.* (2005) found it to include predominantly Common Brushtail Possum *Trichosurus vulpecula* and Common Ringtail Possum *Pseudocheirus peregrinus*, as well as the Black Rat *Rattus rattus*, a prey species not previously recorded as a significant component of the Powerful Owl’s diet.

This paper provides further information on the diet of the Powerful Owl in inner city parklands, in Melbourne’s Fitzroy Gardens and Flagstaff Gardens.
Study area and methods

Fitzroy Gardens

A Powerful Owl was present in the Fitzroy Gardens between May (possibly earlier) and July 2008. The Fitzroy Gardens adjoin the eastern edge of Melbourne’s central business district (37°48′41″S, 144°58′45″E) (Figure 1). Together with the adjoining Treasury Gardens, they comprise an area of 31 ha of open parkland, planted with mostly non-Australian deciduous Plane Trees *Platanus* sp. Fitzroy Gardens are one of the major 19th-century landscaped city gardens in Australia. A creek bed extends north–south through the centre of the gardens, bordered by tree-ferns and native plants. The remainder of the gardens includes large avenues of trees, shrubs and expansive lawns.

Pellets were collected on seven days between 14 May and 31 July 2008, beneath two known roost-trees, a Lilly Pilly *Acmena smithii* and a Bunya Pine *Araucaria bidwillii*, located ~20 m apart, along a gully-line in the centre of the gardens.

Pellets were analysed by ABR, and the minimum number of individual prey items was determined for each collection date, by counting skeletal parts, analysis of fur and by comparison with reference material.

Flagstaff Gardens

A Powerful Owl was present in the Flagstaff gardens at least between 17 May and 28 June 2009 (as reported on Birdline Victoria 2009) (Plate 16), possibly the same bird that was in the Fitzroy Gardens the year before. The Flagstaff gardens (37°48′37″S, 144°57′17″E) are located within the north-central section of Melbourne’s central business district (Figure 1). The 7.2-ha gardens are characterised by large mature trees set in open lawns. The southern end of the gardens is dominated by deciduous trees, whereas the northern end contains numerous eucalypts.

Pellets were collected beneath a known roost-tree (an English Elm *Ulmus procera*) on six days between 21 May and 25 June 2009. Pellets were analysed by Barbara Triggs, using the same methods as outlined above.

Results and discussion

In the Fitzroy Gardens, 32 pellets and associated orts contained the remains of at least five Common Ringtail Possums and five Common Brushtail Possums (including at least one subadult of the latter species). The initial collection of 14 pellets under the Bunya Pine roost-site contained at least one individual of each possum species, but this is likely to be an underestimate of how many prey individuals were actually present in this sample. In the Flagstaff Gardens, ~26 pellets and associated orts contained the remains of 14 Common Brushtail Possums and four Black Rats.

Although the samples from both the Fitzroy and Flagstaff Gardens in this study were based on small sample sizes, and likely to be an underestimate of the total number of animals consumed in this period, the lack of variety of species in the diet is evident.

Common Brushtail Possums usually form a low proportion of the diet of the Powerful Owl in natural forested areas (Kavanagh 2002), yet this species made up half of the prey individuals in the Fitzroy Gardens and 78% of prey individuals in the Flagstaff Gardens. The Common Brushtail Possum is known to occur in high densities in the Fitzroy Gardens (McDonald-Madden *et al.* 2000), with counts revealing an average of almost 13 possums per hectare, more than 13 times the number found in many natural forest habitats (Melbourne City Council 2009a).
Interestingly, Common Ringtail Possums, which are considered to be in very low numbers in the Fitzroy Gardens (Melbourne City Council 2009b), constituted half of the prey individuals at this site. Common Brushtail Possums are also likely to be in high densities in the Flagstaff Gardens, which would explain their preponderance in the Owl’s diet at this site. The presence of Common Ringtail Possums in these Gardens seems likely, and their absence from the diet of the Flagstaff owl is surprising.

Out of a total of 91 prey items, Menkhorst et al. (2005) found Common Ringtail Possums and Common Brushtail Possums to contribute 34.1 and 15.4%, respectively, of the prey items of a Powerful Owl in the nearby Royal Botanic Gardens; Black Rats and unidentified rats comprised 30.8%, and birds, insects and a Grey-headed Flying-fox Pteropus poliocephalus the remainder.

The lack of rats in the diet of the Fitzroy Gardens owl (and low numbers in the diet of the Flagstaff Gardens owl) may be attributable to the foraging preferences of the individual owl, but is more likely related to the relative abundance of rats. Black Rats are far more commonly observed in the Royal Botanic Gardens than in the Fitzroy Gardens, and it is likely that the Royal Botanic Gardens are more productive, provide greater shelter and have a greater diversity of food for rats (P. Menkhorst pers. comm. 2009). Although Black Rats are known from the Fitzroy Gardens (as is the native Water-rat Hydromys chrysogaster: Loos 2000), they are likely to be in low densities.

In their study on the outskirts of Melbourne, Cooke et al. (2006) found that Powerful Owls preyed almost exclusively on arboreal marsupials, with 99% of their overall diet comprising four arboreal marsupial species (Common Ringtail Possum, Common Brushtail Possum, Sugar glider Petaurus breviceps and Greater Glider Petauroides volans). The diet of Powerful Owls at sites closer to Melbourne was composed entirely of the two possum species (Cooke et al. 2006). No glider species are known to occur in inner city Melbourne parks (Atlas of Victorian Wildlife Database: Martin O’Brien pers. comm. 2010). The differences in Powerful Owl diets between the Royal Botanic Gardens, Fitzroy Gardens and Flagstaff Gardens further support assertions made in past studies (e.g. Debus & Chafer 1994; Higgins 1999; Kavanagh 2002; Menkhorst et al. 2005; Cooke et al. 2006) that the species is reasonably flexible in its diet and probably reflects the location-specific effects of prey availability.

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References


Powerful Owl in the Flagstaff Gardens, inner city Melbourne

Plate 16 Photo: Dean Ingwersen

Figure 1. Location of the Fitzroy Gardens, Royal Botanic Gardens, Flagstaff Gardens and Carlton Gardens in relation to Melbourne’s central business district. Image source: Google Earth.


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