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Occurrence of the Eastern Barn Owl *Tyto alba delicatula* in the Centennial Parklands, Sydney

Matthew Mo

P.O. Box A290, Sydney South NSW 2000, Australia
Email: matthew.sk.mo@gmail.com

Abstract. The occurrence of owls in the urban environment has been of interest, with recent records of the Eastern Barn Owl *Tyto alba delicatula* in highly urbanised locations in Sydney, New South Wales. During the long-term monitoring of bird assemblages in the Centennial Parklands, Barn Owls were consistently found roosting under the crowns of Canary Island Date Palms *Phoenix canariensis* in six major time periods between 2013 and 2018. Atlas records show two earlier records of this species in the Parklands. Since December 2013, there have been some site visits in which 2–3 Barn Owls have been found roosting in the Parklands.

Introduction

The Barn Owl *Tyto alba* complex (family Tytonidae) has the most expansive distribution of any owl, occurring throughout the world except for polar and arid regions in Asia, Africa and North America, most of Indonesia and some oceanic islands (Aliabadian *et al.* 2016; Martin 2017). Numerous subspecies occur, with individuals on mainland Australia comprising the Eastern Barn Owl *T. a. delicatula* (as currently classified by BirdLife Australia 2017). This subspecies occurs in woodlands and open country, often associated with agricultural areas (Kavanagh & Stanton 2002; Tores *et al.* 2005). Its success in fragmented environments has been driven by its requirements for a few isolated hollow-bearing trees for nesting and roosting (Kavanagh 2004). In addition, unlike most raptors, it has a positive relationship with the agricultural sector as a natural predator of rodents (Kross *et al.* 2016), which incentivises co-existence.

The extent to which Australian owls have adapted to urban environments, such as the Sydney metropolitan area in New South Wales, has been of interest (Kavanagh 2004; McNabb *et al.* 2007; Mo & Waterhouse 2015). The Barn Owl frequents peri-urban and rural areas (Higgins 1999; Kavanagh & Stanton 2002; Cooper *et al.* 2016). However, its distribution in the Sydney region was previously associated with shale areas (Hoskin *et al.* 1991), which were cleared extensively for agriculture and are now being converted to residential development. Kavanagh's (2004) review of owl records in the Sydney region showed surprisingly few data for the Barn Owl, although sightings of the species were probably underreported because it is not listed as a threatened species under state legislation. There have since been numerous records, including from highly urbanised locations such as Glebe, Maroubra, Manly and Rockdale and adjacent green spaces such as the Centennial Parklands, Sydney Olympic Park, Sydney Park (ALA 2018) and the Royal Botanic Gardens (S.J.S. Debus pers. comm.).

This paper presents baseline information on the occurrence of the Barn Owl in the Centennial Parklands, south-east of the Sydney Central Business District (CBD). These observations are noteworthy because the Parklands represent a regularly used site close to the CBD.

Methods

The study site, the Centennial Parklands, is a 220-ha green space located 4 km from the Sydney CBD (Figure 1). The Parklands comprise sporting fields, lakes, gardens, equine facilities and remnant natural habitats, which attract more than 30 million visitors each year. Major plantings since the establishment of the Parklands have culminated in today's collection of native and ornamental trees, most notably figs, palms, pines, oaks and paperbarks. The 1.3-ha remnant Lachlan Swamp, dominated by

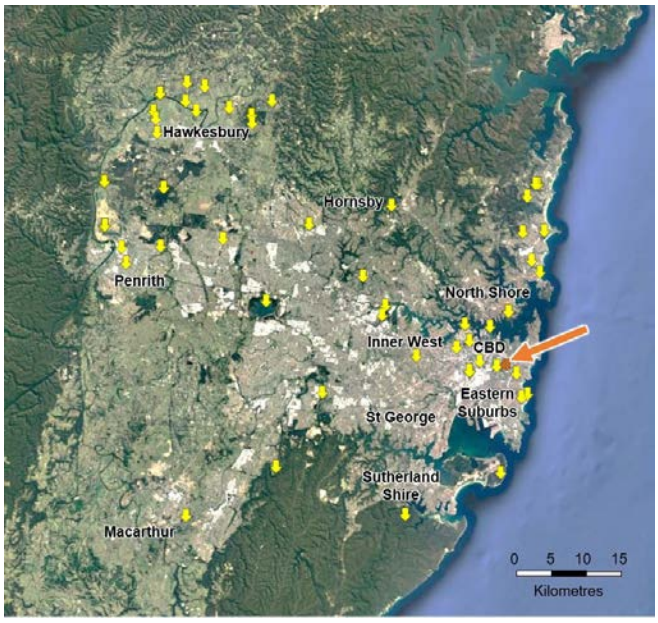

Figure 1. Location of Centennial Parklands (orange arrow) within the Sydney metropolitan area. Yellow arrows indicate sighting records of the Eastern Barn Owl since 2000 (ALA 2018; OEH 2018). Centennial Parklands records have been excluded from the map to avoid obstructing the view of the location.

Broad-leaved Paperbark *Melaleuca quinquenervia*, with some Swamp Oak *Casuarina glauca*, Swamp Mahogany *Eucalyptus robusta* and other paperbarks, represents the habitat that once covered much of the Parklands (Hamilton & Penny 2015). The wide expanse of green space provides a significant wildlife refuge within the highly urbanised surrounding landscape (Keast 1995; Burgin & Saunders 2007; Recher 2010; Martin *et al.* 2012; Mo 2019). Other owl species recorded here are the Powerful Owl *Ninox strenua* (Bain *et al.* 2014) and Southern Boobook *N. boobook* (pers. obs.).

The occurrence of birds in Centennial Parklands has been monitored almost daily since May 2008, providing data from >3000 observation days (A. & M. Coates unpubl. data). The daily observation routine mainly focused on walking along the Bushby's, Lily, Willow, Duck and Randwick Ponds, Lachlan Swamp, Mission Fields and the McKay Sports Ground, with casual divergence from this routine to cover other areas. The surveys were generally conducted in daylight, although there were also some visits at dusk. Observation periods varied and lasted up to several hours. Atlas records from the BioNet Atlas (OEH 2018) and Atlas of Living Australia (ALA 2018) were extracted on 25 September 2018 and analysed to identify previous or other records of the Barn Owl at the study site.

Results

The Barn Owl was first detected in the present study on 15 June 2013 (Table 1), >5 years after visits to Centennial Parklands commenced. However, there was an earlier record during the study period (26 August 2009: ALA 2018; OEH 2018). An even earlier record (13 October 1994: OEH 2018) appears to be the earliest atlas record for Centennial Parklands. In the present study, sightings of Barn Owls were consistently under the crowns of Canary Island Date Palms *Phoenix canariensis* (Figures 2–3), which have been planted here as early as the 1890s. Whitewash was located on the trunks of frequented roost-trees, and this generally persisted for 4–6 months, depending on weather conditions (Figure 4). Rainbow Lorikeets *Trichoglossus moluccanus* were also located underneath the palm crowns, and sometimes in the same tree as a Barn Owl. No signs of interspecific aggression or predation were seen. Other foliage roosts were searched for Barn Owls, but none were located.

The occurrence of the Barn Owl appeared in waves of 3–8 months but was not seasonal in nature (Table 1). The longest periods of consistent sightings were March–September 2014 and May–December 2018. On 8 December 2015, three separate Owls were located, which was the only confirmed occurrence of more than one Owl until July 2018. Between July and August 2018, up to three Owls per day were sighted.

During observations at dusk, Barn Owls were seen flying low over sporting fields, although actual hunting was not seen. On 16 August 2018, a roosting Owl holding an unidentified rat was observed for 35 minutes from 0815 h. The prey item was most likely a Black Rat *Rattus rattus*, based on appearance, location and habitat. Although the prey was mostly hidden from view above the perch, its tail was hanging in full view (Figure 5). The Owl awakened and began to feed on its prey, momentarily lifting the blackish furred body into view with its beak. The Owl was visited again at 1230 h, at which time the tail of the prey was no longer visible.

Figure 2. The beginning of a row of Canary Island Date Palms that constitutes the majority of canopy trees in a garden and lawn section of Centennial Parklands Photo: Matthew Mo

Figure 3. An Eastern Barn Owl roosting underneath the canopy of a Canary Island Date Palm in the Centennial Parklands. Photo: Matthew Mo

Figure 4. Whitewash smeared on the trunk (top) and base (bottom) of a roost-tree. Photos: Matthew Mo

Figure 5. An Eastern Barn Owl waking at its roost-site to continue feeding on an unidentified rat. Photos: Matthew Mo

Table 1. Occurrence of the Eastern Barn Owl in the Centennial Parklands, Sydney, May 2008–December 2018. *Record for 26 August 2009 was obtained from ALA (2018). ^Sightings of three Owls in December 2015 were recorded on a single day, 8 December 2015.

Year	*Month*											
	J	*F*	*M*	*A*	*M*	*J*	*J*	*A*	*S*	*O*	*N*	*D*
2008												
2009								1*				
2010												
2011												
2012												
2013						1	1	1	1			
2014			1	1	1	1	1	1	1			
2015										1	1	1, 3^
2016						1	1	1		1	1	1
2017	1	1	1	1								
2018					1	1	3	2–3	1–2	1–2	1–3	1–2

Discussion

Barn Owls are an important higher-order predator of the Centennial Parklands' bird assemblages and should be encouraged to co-exist with humans in urban green spaces, particularly as a regulator of introduced rodents (Heywood & Pavey 2002; Debus & Rose 2004; McNabb *et al.* 2005; Fitzsimons *et al.* 2008; Kross *et al.* 2016). Their roosting sites in the Parklands are somewhat secured by the retention of Canary Island Date Palms, which hold aesthetic and heritage values. Although sightings of this species have appeared more prominent since 2013, the Owls probably occurred in the Parklands earlier and evaded detection until the first wave of consistent sightings brought an awareness of their presence. The consistency of their occurrence during waves of sightings indicates that the species is at least partially resident in the Parklands. Whether gaps in the records represent dispersal from the study site or failure to locate Owls on site at these times is not known. The findings of this study might have been biased toward searching for the Owls in the Canary Island Date Palms; however, several attempts to locate them in other roost types were of no avail.

This study focused on the occurrence of Barn Owls roosting in Centennial Parklands, such that hunting attacks were not observed. Nevertheless, from the few observations at dusk, it seems likely that the Parklands represent part of the Owls' hunting area. Observations of Owls flying low over the sporting fields appeared to represent slow quartering behaviour, in which avian predators examine the ground for terrestrial prey by flying back and forth (Olsen 2014). Barn Owls may hunt as far as 10 km from their roosting sites (Hyem 1979), which raises the possibility of the urban areas surrounding the Parklands and other green spaces being used for hunting.

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