Eastern Grass Owls roosting in a wheat crop in inland New South Wales

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Summary. This note details two roosting Eastern Grass Owls *Tyto longimembris* flushed from a wheat crop by a combine harvester near Bellata in the Brigalow Belt South bioregion (northern inland plains) of New South Wales, in October–November 2013. Despite the observer searching on foot in a remnant of unharvested crop 9 × 500 m, a Grass Owl, known to be within the crop, evaded detection by walking, until flushed by the harvester. The flushed Owls retreated to a nearby dry gully vegetated with tall ground-cover. No nest and no owlets were found in the crop. The farmer considered that Grass Owls have occurred in his corn, sorghum and wheat crops over decades, although they appear to be absent in winter, after crops have been harvested. Crops may provide food (rodents) and roost-sites for the Owls, and/or may substitute for lost natural wetland habitats in the region. Further investigation of the Grass Owl's occurence in the sheep-wheat belt is warranted.

Introduction

The Eastern Grass Owl *Tyto longimembris* is an uncommon, highly cryptic species found from India and South-East Asia to New Guinea, Australia, New Caledonia and Fiji (Higgins 1999). Apart from the main Australian breeding population along the tropical and subtropical eastern coast [Queensland and northern New South Wales (NSW)], there were thought to be two other populations: one breeding in the Top End of the Northern Territory (NT), and one in the eastern interior, from the Barkly Tableland and Channel Country of Queensland through the Lake Eyre Basin to the western plains of NSW (Higgins 1999). There are no confirmed breeding records for the arid zone, and the far inland and northern tropical occurrences are believed to represent irruptive dispersal after good breeding seasons in the Owl's core range on the eastern coast, and the occurrence of wet years inland (Olsen & Doran 2002; Pedler & Parkhurst 2014). However, the core range may include the tropical floodplains where the Owl is present all year (NT: Corbett *et al.* 2014). The crop belt of northern inland NSW is modelled as within the Owl's main (though non-core) eastern range (Olsen & Doran 2002), and indeed there is a verified breeding record for a cotton crop adjoining a wetland near Wee Waa (30°13′S, 149°27′E) ~40 km north-west of Narrabri (Debus *et al.* 1998).

Eastern Grass Owls are dispersive, and can at times be found almost anywhere on the Australian mainland where there is suitable habitat (e.g. Olsen & Doran 2002). However, as a consequence of their cryptic behaviour they are extremely hard to find without deliberately flushing them repeatedly (e.g. see Pedler & Parkhurst 2014). Sightings are more often reported in coastal regions than in the

interior of the continent (Higgins 1999; Olsen & Doran 2002). This may, at least in part, be a consequence of the lower human and Owl population densities in the centre of the Australian continent, and the Owls' closer proximity to humans in coastal regions. Here I present observations of two Eastern Grass Owls flushed from a commercial wheat crop near Bellata, NSW (29°55′S, 149°47′E), halfway between Narrabri and Moree on the northern inland plains of NSW (Brigalow Belt South bioregion), in October–November 2013.

Observations

During the harvest of commercial wheat fields on a dryland broad-acre farm near Bellata, two Eastern Grass Owls were accidentally flushed by the combine harvester on 31 October and again on 7 November 2013. On both occasions a digital camera was used to obtain photographs (Figure 1, left). The photograph clearly shows the characteristic long, trailing legs of an Eastern Grass Owl.

On 31 October 2013 at ~1430 h, one male and one female Eastern Grass Owl, apparently a pair (the female being slightly taller and darker in plumage than the male), were disturbed by a combine harvester during the harvest of a field of ~90 ha of durum wheat (Figure 1, right). Both Owls evaded the header repeatedly, as it progressed row by row, by flying up at the last moment and diving back into cover again as quickly as possible (Figure 2). October is probably after the breeding season (which is apparently autumn–winter) of the Grass Owl in Australia, although data are few (Higgins 1999; Debus 2009). While the combine harvester was progressing, an attempt was made on foot to locate where the two Owls had originally flushed, but no nest, eggs or owlets could be found.

On 7 November 2013, a second adjacent field, of 90 ha of bread wheat, was harvested. Only one Eastern Grass Owl was flushed from it (at ~0800 h); the second bird found a week earlier was not seen again.

As Eastern Grass Owls are aerial predators (Higgins 1999; Debus 2009), an attempt was made to locate the two Owls, whose approximate location was known at the time, at dusk (~1800 h) on 7 November 2013 by trying to watch them fly up from their roosts. This was unsuccessful, despite the use of powerful night binoculars (military, nitrogen-filled Steiner Night Hunter 12 × 56, large aperture). A 9-m-wide row of wheat was left standing overnight to give the remaining Owl a chance to move on without being forced out by the harvester. With the single row (9 m × ~500 m) of remaining wheat still standing, and the Owl known to still be in it, an attempt was made on foot to locate it by walking between the individual rows of wheat plants, without success (although, in the process, eight Brown Quail *Coturnix ypsilphora*, four Australasian Pipits *Anthus novaeseelandiae* and thousands of locusts were flushed, seen and heard). The next day, before the last row of wheat was harvested, a second attempt was made on foot, but the Owl was not seen. The Owl was subsequently again flushed by the harvester, proving its presence in the remaining row of wheat, and that it had avoided its pursuer by walking away through the crop, rather than flying up. Once flushed, it vanished into tall growth (grass, sedges and weeds) in a dry gully on the edge of the farm.

Figure 1. Eastern Grass Owl in flight, Bellata, NSW, October 2013; left: showing the characteristic long legs protruding beyond the end of the tail; right: looking for cover in the remaining wheat. Photos: Michael Dahlem

Figure 2. Eastern Grass Owl evading the approaching combine harvester, Bellata, NSW; again, the long legs are prominently visible. Photo: Michael Dahlem

Neither Eastern Grass Owl was observed, during daylight or at dusk, to make an attempt to return to the area from which it had first flushed. No further attempt was made to determine their whereabouts once the Owls had dived into the vegetation in the nearby gully (i.e. more natural habitat).

When we visited the farm in August 2014, we found that remedial work had been conducted on the banks and bottoms of the gullies crossing the property, in the process removing all tall vegetation and hence the Eastern Grass Owls' alternative cover. Between November 2013 and August 2014, the farmer had not seen the Owls, which suggests that they must have left the area voluntarily before work on the gullies had started. Thus, to the best of our knowledge, Eastern Grass Owls are not present in winter, after crops have been harvested.

Discussion

Behaviour

As neither nest nor eggs/chicks were found, it is possible that the pair of Eastern Grass Owls was not nesting, but just roosting in the crop. The failure to locate the Owls, even when their approximate location was known, highlights the difficulty in establishing the species' presence, if it is not flushed (e.g. Pedler & Parkhurst 2014). The long legs clearly enable the Owls to walk away from predators, e.g. Red Foxes *Vulpes vulpes*, rather than to fly. Although the Owls walk to avoid predators that might not have seen or detected them, they do fly when hard pressed, or when startled by loud noise (Pedler & Parkhurst 2014).

Why do Eastern Grass Owls live in commercial crops?

The farmer on whose property the two Eastern Grass Owls were flushed is certain that he has seen the species on his farm repeatedly over decades (possibly since the 1970s); however, no detailed records were kept. The Owls' behaviour, of roosting on the ground and diving into cover again immediately when flushed, is unique, excluding the possibility of misidentification [although Eastern Barn Owls *Tyto* (*alba*) *delicatula* and Masked Owls *T. novaehollandiae* occasionally roost on the ground: Debus 2009; G. Clancy pers. comm.]. These Bellata records add to the cluster of records in the northern NSW crop belt, and indeed the spread of inland NSW records generally (e.g. Debus *et al.* 1998; Olsen & Doran 2002). This spread of opportunistic, albeit sparse, records throughout the south-eastern Australian sheep–wheat belt suggests that Eastern Grass Owls may be widespread in inland NSW, but crops are rarely surveyed by birders and ornithologists.

Given the fact that Eastern Grass Owls were found on this particular farm repeatedly, over a long time period, one can assume that the Owls tolerated any disturbances caused in the regular running of the commercial business (including being flushed at harvest time). However, being flushed, and potentially being left exposed in open country after the harvest, suggests that a commercial crop would not be an optimal habitat for Grass Owls. So why do they return and stay?

As Eastern Grass Owls prey mainly on rodents, a major attraction must be food supply, in the form of introduced House Mice *Mus musculus* and Black Rats *Rattus rattus* (major pests) in tall, ripe grain crops that provide abundant food and cover for prey, as well as roosting and foraging habitat for the Owls. Indeed, the abundance of rodents is a major factor in the residency or dispersal of Eastern Grass Owls (Clulow *et al*. 2011; Pedler & Parkhurst 2014).

Another possibility that must be considered is a loss of natural habitats in the region. Bellata is located ~50 km from the Mehi/Barwon River system near Moree, in particular the Gwydir Wetlands. The NSW National Parks and Wildlife Service is in the process of buying back former (cattle, grain and irrigated cotton) farms, and of re-establishing wetlands (e.g. the new Gwydir Wetlands State Conservation Area). However, for decades these wetlands were drier than in their original, natural state.

Other major wetlands in the region are the Macquarie Marshes, ~300 km south-west of Bellata, and Narran Lakes, ~50 km north-west of Walgett, NSW. Both were affected by the 10-year drought from 2000 to 2010 (e.g. Cooper *et al*. 2014), with only occasional flood events that did not break the long drought. These circumstances may have forced Eastern Grass Owls, which depend on tall, dense growth for cover, to move into alternative habitats. On the farm near Bellata, where the pair was observed, the Owls have so far been found in corn, sorghum and wheat crops. In coastal Queensland and northern NSW, Grass Owls also live in sugar-cane crops (Higgins 1999; Debus 2009). These crop plants can all substitute for reeds, sedges and tall, dense grass near wetlands, or indeed for rank inland grassland such as Mitchell grasses *Astrebla* spp. (e.g. Britton & Rose 1999). The structure of mature crops, with dense overhead cover and spaces close to the ground, may even allow easy movement within them, and thus, in concert with abundant prey, may be attractive to the Owls.

Conclusions

It is anticipated that the local farmer will report the Eastern Grass Owls' reappearance for further investigation. Surveys in other inland croplands, by other observers, would also be worthwhile (see Pedler & Parkhurst 2014 for useful methods). All *Tyto* road-kills could usefully be examined in detail, and salvaged for museums if in good condition (and especially if of rare species), as they are prone to confusion even in the hand (e.g. see Clancy 2004). An understanding of the value of crops to Grass Owls, the possible danger to their nests and chicks from agricultural practices, and their true distribution and residency status in inland NSW is relevant to the conservation and management of a state-listed Vulnerable species (NSW *Threatened Species Conservation Act 1995*). It may be that inland, crop-nesting Grass Owls require similar management to crop-nesting Swamp Harriers *Circus approximans*, i.e. cautious flagging of nest-sites and leaving a surrounding buffer strip of unharvested crop while the nest is active (see Tonelli 2014). A benefit of retaining breeding owls or raptors in cropland, by providing acceptable habitat and protecting nest-sites, is natural pest control.

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Addendum:

The June 2015 *Birding NSW Newsletter* (p. 23) reported that five Eastern Grass Owls were observed by M. Herring (BirdLife's Australasian Bittern project) in ricefields at Colleambally, in the Riverina of southern inland NSW, in January–February 2014.