

## SHORT NOTE

# Observation of food presentation behaviour between individual shining cuckoos (*Chrysococcyx lucidus*) in New Zealand

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Little is known about courtship behaviour in the shining cuckoo (*Chrysococcyx lucidus*) (also known as *Chalcites lucidus*) and whether males feed females as occurs in a number of other species. Although there have been a number of observations of male *Chrysococcyx* cuckoos feeding suspected conspecific fledglings (Moreau 1944; Friedmann 1968; Iversen & Hill 1983; Lovette *et al.* 2006), more recently it has been suggested that these were misdirected courtship feeding or the observers misidentified adult female cuckoos as fledglings (Lorenzana & Sealy 1998; Davies 2000). If this is the case, these observations may be indicative of courtship behaviours and that courtship feeding occurs more frequently than previous appreciated. Courtship feeding may be especially critical for the shining cuckoo as it migrates to New Zealand during the austral summer to breed, which means they must engage in courtship shortly after arriving to ensure synchronous breeding with their host species (Gill 1982). Courtship feeding may thus be a way to

ensure a rapid onset of breeding condition in female cuckoos.

The shining cuckoo is an obligate specialist brood parasite that only uses the grey warbler (*Gerygone igata*) as a host species on the main islands of New Zealand (Heather & Robertson 1996; Gill 1983b) and the Chatham Island warbler (*Gerygone albofrontata*) on the Chatham Is (Dennison *et al.* 1984). Little has been recorded of the courtship behaviour of the shining cuckoo. Seabrook-Davison *et al.* (2008) described pre-copulatory behaviour and copulation in a pair of shining cuckoos at Coatesville, 28 km north of Auckland, New Zealand. This behaviour was observed only once during 5 minute bird-count surveys at 8 sites over 2 years. The observation suggested that egg-laying at this location may occur earlier than the dates recorded by Gill (1983b) in the South I and gives support to the suggestion that egg-laying by the shining cuckoo may coincide with the first, or only clutch of the grey warbler in the North I (Seabrook-Davison *et al.* 2008).

Here we describe an observation of conspecific interactions amongst a group of shining cuckoos that may indicate courtship feeding. The observation occurred on 5 Nov 2010, at Coatesville, New Zealand (36° 72' S; 174° 65' E), where a group of 4 shining cuckoos were observed calling and flying between a pine (*Pinus radiata*) plantation, a small

Received 9 Nov 2012; accepted 11 Jan 2013

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group of London plane trees (*Platanus x acerifolia*) and a fragment of native forest (mainly manuka, *Leptospermum scoparium*). The birds were very active, and singing the "broken syllable" version of the typical cuckoo song. The songs included the ascending whistle and extra downward notes at the end of the song. When the birds were close together, they vocalised with a soft melodious and repetitious "cooing" call. This proximity call was different from all other calls heard at the time and different from the second part of the typical shining cuckoo call.

During our observations, some birds were seen to present food items (insects held at the end of their beaks) to other cuckoos (Figs. 1). This gift-presenting behaviour was observed for 45 minutes at different parts of the area being observed. Food presentation was observed 7 times and in 4 of these presentations, the food item was not accepted. The majority of the insect prey was collected from an adjacent pine forest with the recipient individuals offered the food after landing in the London plane trees, 50 m from the pine plantation. If an insect was not accepted, it was either eaten or discarded. As the giving and receiving birds continued to move amongst the trees, it was not possible to discern whether the birds were presenting to the same recipient cuckoos or if different individuals were fed. From the behaviour of the birds, it appeared this was not foraging behaviour for individual consumption but for feeding other individuals, although if the prey item was not accepted, it was consumed by the presenting bird. There was no begging behaviour from the receiving birds but throughout the time the birds were observed, there was continuous vocalisation between the 4 birds. The insect was always held at the tip of the beak, and in some cases, presented to more than 1 recipient. When in close proximity to each other, the 4 cuckoos were vocalising but the mix of calling overlapped. All 4 birds had adult plumage, but 2 appeared to lack the vibrant iridescent sheen on their head or back. However, this could have been due to the angle at which they were viewed.

It was unknown for certain whether these were male cuckoos presenting courtship gifts to female cuckoos or if it represented adult cuckoos (of either sex) providing food to conspecific fledglings. The latter possibility seems unlikely given the date of our observations as the first shining cuckoo eggs laid at Kowhai Bush, Kaikoura (Gill, 1983b) were on 14 Oct, with most being laid after 1 Nov. Shining cuckoos are known to arrive in a fairly uniform pattern across the country, only arriving a little earlier in the North I (Cunningham, 1953, 1955). They would have to breed considerably earlier for this to have been an observation of a fledgling, although we cannot rule out this possibility. Parasitic birds that



**Fig. 1.** Two examples of adult shining cuckoos presenting food items to conspecifics, as observed on 5 Nov 2010, at Coatesville, New Zealand. In both photos, food items are visible in the tip of the bill, which was typical during the food presentation behaviour observed.

feed conspecific fledglings have been observed for other brood parasites, such as cowbirds (*Molothrus* spp.; Friedmann 1963) and the great spotted cuckoo (*Clamator glandarius*; Soler & Soler 1999). Cowbirds have also been shown to move in mixed flocks of females and juveniles after fledging (Hauber 2002). Ambrose (1987) observed a fan-tailed cuckoo (*Cacomantis flabelliformis*) fledgling being fed by both its white-browed scrubwren (*Sericornis frontalis*) host and an adult fan-tailed cuckoo (referred by Ambrose (1987) as *Cuculus pyrrhophanus*). Ambrose (1987) was confident that his observation showed that..."adult cuckoos do feed fledglings, perhaps their own offspring." Ambrose (1987) observed the fan-tailed cuckoo, along with the host, continuously feeding the fledgling for 5 days which suggests that the adult was not displaying trivial behaviour or an isolated event of parental response to the begging of a fledgling, as suggested by Lorenzana and Sealy (1998). Instead, our observations are more

consistent with conspecific feeding between adults and the early date of the observations suggest such feeding may form part of courtship in the shining cuckoo.

Apart from the provisioning of offspring, sharing of food items between conspecifics has been observed in a number of taxa, mainly related to courtship behaviour. Courtship feeding has been observed in a number of other brood-parasitic cuckoo species (see Payne (2005) for discussion and a list of species in which this behaviour is known). In some species, such as the diderik cuckoo (*Chrysococcyx caprius*), males are known to have a specific courtship feeding call, which is used to attract females while carrying food (Payne 2005). This may be what was observed here, with the unusual calls given by the shining cuckoos that were carrying food items. It is clear that further research is required to understand the courtship behaviour of shining cuckoo, and its role in their breeding system. Further observations may provide greater insight into the breeding phenology of this cryptic species.

#### ACKNOWLEDGEMENTS

We are grateful to Dr Kevin Parker & reviewers for their comments which improved the content of this paper.

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**Keywords** shining cuckoo; *Chrysococcyx lucidus*; conspecific feeding