

SHORT NOTE

First observation of pre-copulatory behaviour and copulation in shining cuckoos (*Chrysococcyx l. lucidus*) in New Zealand

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New Zealand has 2 species of cuckoo (Family Cuculidae; Payne 2005): the long tailed cuckoo (*Urodynamis taitensis*) and the shining cuckoo (*Chrysococcyx lucidus*). The shining cuckoo breeds throughout New Zealand during the austral spring and summer (Sep to Jan; Gill 1983b), but migrates north in Mar to the Bismarck Archipelago and the Solomon Is (Gill 1983a). A few birds may also over-winter in the north of the North Is (Heather & Robertson, 1999). The shining cuckoos that breed in New Zealand belong to the endemic subspecies *C. l. lucidus* (Payne 2005).

The shining cuckoo is an obligate specialist brood parasite targeting nests of the grey warbler (*Gerygone igata*) on the main islands of New Zealand (Gill 1983b) and the Chatham Is warbler (*Gerygone albofrontata*) on the Chatham Is (Dennison *et al.* 1984). Little is known of shining cuckoo breeding activities in the North Is or the timing of mating. This note describes pre-copulatory behaviour and copulation in a pair of shining cuckoos at Coatesville, 28 km north of Auckland, New Zealand observed during 5 minute bird count surveys at 8 sites over 2 years.

A total of 40 shining cuckoos were observed at 8 sites during 2005 (16 Oct to 8 Dec), with 11 cuckoos occurring at a single site on Glenmore Road. In 2006 (29 Sep to 10 Oct), 7 shining cuckoos were seen with 4 observations at the Glenmore Road site. All sightings of the pre-copulatory and copulatory behaviour of cuckoos involved unbanded birds and occurred at the Glenmore Road site.

On 29 Sep 2006 at 1130 h, a shining cuckoo male (sex deduced from subsequent behaviour) was

observed singing c. 5 m up a gum tree (*Eucalyptus* spp). Within a few minutes a 2nd cuckoo responded by singing from another gum tree in a shelter-belt about 50 m away. The 2nd cuckoo was inferred to be a female due to the mounting position seen later. The pair duetted for c. 4 minutes, then the male flew directly to where the female was singing. The birds were less than 50 cm from each other and continued to sing a "broken syllable" version of typical cuckoo song. This included the descending whistle given at the end of the typical song, but with extra downward notes. As the birds were close together and vocalising in a similar manner, it was not possible to distinguish male from female song. Both cuckoos sang for a further 3 minutes, then the male mounted the female. The male copulated by standing on the female's back and twisting his posterior end under and around to make cloacal contact. The copulation lasted c. 2-4 seconds. Both birds then flew along the shelter-belt and landed 30 m from the site of their 1st copulation where they copulated again and continued to duet. After this 2nd copulation both birds flew off together and were lost from sight. No further shining cuckoos were heard or seen at this site that day during a further 5 hours of observations. To our knowledge this is the 1st description of copulation in the New Zealand form of the shining cuckoo. Two Australian references recorded copulatory behaviour in the Australian shinings bronze cuckoo *Chrysococcyx l. plagosus*. Both Rix (1936) and Serventy (1958) observed courtship feeding prior to copulation in the Australian subspecies, but no courtship feeding occurred in our observation.

The sex of each cuckoo in our observation was assumed by its subsequent mating position.

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However, this assumption may be wrong, as same-sex mounting behaviour has been observed in many species of birds (MacFarlane *et al.* 2007). The singing behaviour of female cuckoos has not yet been described, and it is unclear if female cuckoos sing, so this behaviour could also not be used to determine gender. Our observation of 2 shining cuckoos singing, which later then mated, suggests female shining cuckoos sing at least some of the time, though its function and how it differs from male song needs to be studied.

At present, there are few records on the timing of brood parasitism in the North Is, nor if cuckoos parasitise only 2nd clutches, as they do in the South Is (Gill 1982, 1983b). The spring arrival dates of shining cuckoos is earlier in the North, with arrival dates being later with increasing latitude (Cunningham 1953, 1955). Our observation of mating in late Sept may imply laying of cuckoo eggs earlier than in the South Is. Cuckoo fledglings have also been observed in late Nov in the Hunua Ranges near Auckland (*pers. obs.* Joanne Peace), which would be too early to coincide with expected fledging dates if only 2nd clutches were being parasitised. This suggests that egg-laying occurs earlier than the dates recorded by Gill (1983b) in the South Is, and lend support to the suggestion that egg-laying by the shining cuckoo may coincide with the first clutch of the grey warbler in the North Is. Clearly, further research is required on the timing of the grey warbler's breeding season, arrival dates of shining cuckoos and the timing of egg laying by shining cuckoos in the North Is. Possible latitudinal effects may be an important factor for timing of breeding in this brood-parasite system.

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