

Incubation by female Great Spotted Kiwis

In most species of ratite, including the North Island Brown Kiwi (McLennan 1988) and Little Spotted Kiwi (Jolly, pers. comm.), the male alone incubates the eggs and cares for the offspring. Ostriches were thought to be the only exception, but Eason's (1988) recent observations suggest that females of another ratite, the Great Spotted Kiwi (*Apteryx haastii*), may also help care for eggs and young.

Eason noticed that the female of a captive pair of Great Spotted Kiwis at Mt Bruce usually went into the nest when her mate emerged to feed and stayed there until he returned some four hours later. Eason did not look into the nest for fear of disturbing her and so could not confirm that she actually brooded the egg.

In the last 18 months we have radio-tagged about 20 Great Spotted Kiwis in two areas of Northwest Nelson – at Kahurangi Point, where the birds live in diverse coastal forest, and in the upper Saxon River, where the predominant vegetation is subalpine beech forest and red tussock. In following the activity of several pairs during two breeding seasons, we have established that female Great Spotted Kiwis do help in incubation.

In both study areas, females usually relieve males on the nest in the second hour of darkness and remain there until their mates return, often in the last hour before dawn. On the two occasions when we inspected a nest at night, the female was incubating.

Furthermore, in exceptional circumstances, female Great Spotted Kiwis may incubate unaided by the male, as the following account illustrates. At Kahurangi on 5 October 1988, "male 28" was found on a nest in the side of a small hillock. The entrance was about 30 cm wide and 15 cm high, and the male and a single egg were just beyond this, in an enlarged cavity lined with grass and fern fronds. The entrance was conveniently angled, and so we could see into the nest from about 2 metres without disturbing the incubating bird. Male 28 was on the nest when it was checked again on 7 October. His mate was not radio-tagged, and so we do not know whether she was nearby or took over when he emerged each night.

On 2 November, male 28 was found dead about 30 m from his nest. He was pinned under a branch of a fallen tree and had probably been dead for about three days. We checked the nest and found a female, presumably his mate, sitting on the egg. She was still there on 3 November, and again during the next two inspections on 30 November and 2 December. We watched the nest with night-viewing equipment until 2330 h on 2 December, hoping to examine its contents after the female emerged – but she did not come out.

On 22 December, when it was next inspected, the nest was empty. There were a few shell fragments in the nest lining, some of which had small feathers adhering to them, perhaps from a chick. The nest was checked daily in the following week and several times in early February, but each time it was empty.

We suspect that a chick was produced. The egg could have been laid up to 28 days before we found it, and it would therefore have been incubated for 59 to 87 days when the female was last seen on 2 December. She alone incubated it for at least 30 days, assuming that she was in the nest on all days between our visits. Incubation takes about 70 days in captivity (Eason 1988).

Our results show that female Great Spotted Kiwis do incubate, and indeed may be able to hatch eggs successfully with little or no help from their mates. Even in normal circumstances, when both members of a pair are present, the female spends most of the night incubating the egg.

We do not know why the incubation behaviour of Great Spotted Kiwis should differ so markedly from that of the other kiwi species. It is unusual to find such variation within the same genus.

LITERATURE CITED

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McLENNAN J. A. Breeding of North Island Brown Kiwi, *Apteryx australis mantelli*, in Hawke's Bay, New Zealand. *NZ J. Ecol* 11: 89-97.

JOHN McLENNAN and TONY McCANN, *Ecology Division, DSIR, Private Bag, Havelock North*

Forbes' Parakeet on Chatham Island

The Chatham Island Yellow-crowned Parakeet or Forbes' Parakeet (*Cyanoramphus auriceps forbesi*) is found only on the Chatham Island group. Formerly on Mangere, Little Mangere and Pitt Islands (Oliver 1955), this subspecies is now confined to Mangere and Little Mangere Islands in much reduced numbers, largely as a result of deforestation and associated hybridisation with Chatham Island Red-crowned Parakeets (*C. novaezelandiae chathamensis*) (Taylor 1985). Since the early 1980s there have been several sightings of parakeets with yellow crowns in the southern, forested part of Chatham Island – an area where they had not previously been recorded.

The first of the known sightings was provided by L. Hutchison, who recalled seeing "a bright green bird with a yellow and red head" foraging in a bed of "Chatham Island lilies" while living in Waitangi during 1975 and 1976. This bird was later identified as a Forbes' Parakeet (R. Taylor, pers. comm.). Several years later D. Melville saw a yellow-crowned parakeet in the vicinity of the Tukuatamatea River during December 1982 (Melville 1984). More sightings have followed over the last two years during intensive searches for the breeding burrows of the Chatham Island Taiko (*Pterodroma magentae*) in the Tuku Reserve.

During the 1987 Taiko expedition, a parakeet with a yellow crown was seen on the edge of the *Dracophyllum* forest north of the Tukuatamatea River (NZMS 260 (2) 419446) (B. Simpkin, pers. comm.). Several photographs were taken of this bird, which on the basis of this evidence was tentatively identified as a Forbes' Parakeet.