

BROOD SIZE OF THE NORTH ISLAND KOKAKO ?

During a respite from the 49th ANZAAS Congress in Auckland, I was fortunate to have a brief but very close view of a party of North Island Kokako (*Callaeas cinerea wilsoni*). As Lavers (1978) pointed out, this bird has a contracting but still widespread range mainly in central North Island. The main significance of the present observation was not its location but the composition of the family party, which may throw some light on the very limited knowledge of the breeding biology of the species.

The observation was unusual in that it was made from a moving car, travelling between Hangatiki and Waitomo in the King Country at about 11 a.m. on 25 January 1979. As the car passed through a patch of dense forest, six birds were seen crossing the road in a loose line. The first and last birds were adult Kokako, while the four in the middle were smaller and more uniformly brown. The large blue wattles were conspicuous on the adult birds but appeared to be totally absent on the other four.

The next day, the sighting was discussed with J. R. Hay of the Department of Zoology, University of Auckland, who is working on the Kokako, and several days later, I visited the Auckland War Memorial Museum where three mounted adult Kokako are on display. The identity of the birds was confirmed.

In terms of distribution, the King Country remains one of the strongholds of the Kokako (Checklist 1970; McKenzie 1972; Falla *et al.* 1970; Lavers 1978), and Lavers mentions that "... Kokako are more likely to occur close to canopy gaps or forest margins," a habitat provided by roads where they pass through forest. The interesting feature of the observation was the presence of four subadult birds. Little has been published on the breeding biology of the Kokako. MacDonald (1966), in a summary of reports, mentions only one nesting record, and Falla *et al.* (1970) cite three nesting observations up to 1970. From these, it appears that two or three eggs are laid and that breeding occurs from November to March.

The appearance of four subadults with two adults suggests that a clutch of four may occur or perhaps that some fostering or co-operative nurture system may operate. The latter suggestion is highly speculative, but it may be significant that many records of Kokako mention "groups" of the birds (Macdonald 1966; Lavers 1978). Further, it is only in recent years in Australia that it has been realised how many disparate species (wrens, magpies, kookaburras, etc.) live in larger groups than simple pairs and that this behaviour is quite variable even within species (Rowley 1968, 1974). Normally, however, the additional group members are adults rather than juveniles. It is even possible that the six birds were part of a larger group, most of which were not seen, but the behaviour of the birds, although briefly seen, suggested a tightly organised family party.

Unfortunately, I shall probably never have an opportunity to

see this species again and this note is offered simply as a contribution to what seems a rather limited knowledge of a declining species.

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SHARP-TAILED SANDPIPER DISPLAYS

During a visit to the southern side of the Manawatu River estuary on 20 February 1977, R. H. D. Stidolph, C. E. Scadden and I found a compact flock of 17 Sharp-tailed Sandpipers (*Calidris acuminata*) resting quietly on mud freshly exposed by the falling tide. Suddenly, one of the birds raised and slightly opened its wings, and vertically erected and fully spread its tail, rather like a fantail (*Rhipidura*). At the same time, it raised the feathers of the nape, mantle and scapulars, dramatically increasing its apparent size. It then chased a second bird for about 40 seconds, occasionally jumping into the air and flicking its wings open vigorously. The chased bird ran rodent fashion in and out of the flock without displaying or calling, while the rest of the flock remained quietly resting, apparently unaffected by the two birds' behaviour.

This flock had been at the Manawatu estuary since October 1976. When I visited the estuary three weeks after this observation, the flock had gone, presumably on the way to its Siberian breeding grounds.

Aggressive displays are more likely to occur when waders are feeding than when resting. Because this display occurred when the birds were resting and seemed to be spontaneous, it may have been a courtship display. Backen (1958, *Emu* 58: 267-270) gave a detailed account of Sharp-tailed Sandpiper displays seen in Victoria in January-February 1957. He described three basic displays, which he assumed were courtship displays, and variations and combinations of them. The Manawatu display fits Backen's Type II, the type he saw most often and that once both preceded and followed a copulation attempt.

R. H. D. Stidolph (pers. comm.) saw a slightly different, less elaborate display on 8 November 1950 at Miranda in a group of 12 Sharp-tailed Sandpipers, probably not long back from their breeding grounds. This display fitted Backen's Type I. One bird, adopting a semi-erect posture, with feathers raised and wings drooped, chased another. Since a courtship display is unlikely in November, this and Backen's Type I are probably a basic aggressive display that may be elaborated at courtship times into Backen's Type II, as seen at Manawatu estuary.

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