

CO-OPERATIVE BREEDING IN THE MOUNTAIN THORNBILL

Acanthiza katherina

JAMES NICHOLLS

Department of Zoology and Entomology, University of Queensland, St Lucia, Queensland 4072

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Co-operative breeding is recognized as a widespread behaviour within Australian birds, in particular within the parvorder Corvida, a group of birds which is thought to have originated and diversified in Australia (Cockburn 1996). However, there is a lack of information on breeding behaviour and other behavioural and life history traits of birds from tropical and inland Australia compared with those from southern Australia (Clarke 1997). This lack of data makes it difficult to draw definitive conclusions in some comparative studies of Australian birds. For example, within the thornbills (genus *Acanthiza*) the breeding behaviour of species occurring in south-eastern Australia has been the subject of several colour-banding studies and many anecdotal references, while few observations have been published for those species occurring in more remote localities (see Nicholls *et al.* 2000 for a summary). Hence in their study on the evolution of thornbill breeding behaviour, Nicholls *et al.* (2000) had to make assumptions as to whether or not a number of thornbill species breed co-operatively, which in turn reduced the strength of the conclusions they could draw. To address in a small part this problem of a lack of data, this paper presents an observation of one of the less well known thornbills, the Mountain Thornbill *Acanthiza katherina* confirming the indirect evidence that they breed co-operatively.

I observed a nest of the Mountain Thornbill on 28 November 2001. The nest was built in low shrubs alongside the road running up Mt Lewis in far northern Queensland (16°35'S, 145°17'E) and although the nest contents were not physically checked, loud begging noises indicated it contained more than one large nestling. As with most other Mountain Thornbill nests (Robinson 1972; McKean and Beste 1982), it was a domed nest, made from moss and relatively close to the ground, in this case about one metre above the ground. However, in contrast to the pairs of birds reported by Robinson (1972) and McKean and Beste (1982), I observed evidence of co-operative breeding.

I observed the nest from 7:30 am to 8:20 am from a distance of about 15 metres. On several occasions during this time three different adult individuals brought food to the nest. On these occasions all three birds would arrive at the nest at the same time and would 'line up' to feed the nestlings. The nestlings were fed by the first individual, then about ten seconds later by the second individual, then another ten seconds after that by the third individual. After feeding, each bird would fly from the nest but would remain within a radius of several metres of the nest. Hence there was no doubt that three different individuals were bringing food to the nest. On one occasion it was clear that

there was a fourth bird feeding the nestlings, as four birds carrying food were at the nest site at the same time.

This is the first record of co-operative breeding in the Mountain Thornbill. In their study, Nicholls *et al.* (2000) used the frequency of published observations of flocking behaviour versus records of pairs or single individuals as an index of whether a thornbill species bred co-operatively or in a pair. In the case of the Mountain Thornbill the frequency of flocking behaviour was similar to that of the Yellow Thornbill *A. nana*, a known co-operative breeder; from this Nicholls *et al.* (2000) assumed that Mountain Thornbills also bred co-operatively. The observations reported here confirm that there is some degree of co-operation in this species.

This is of particular significance in the evolution of breeding behaviour in the genus *Acanthiza*. It confirms that within this genus breeding behaviour can evolve from co-operative to pair breeding as well as in the reverse direction. Nicholls *et al.* (2000) showed that co-operative breeding was the ancestral breeding behaviour for thornbills as a whole, but this changed to breeding in pairs at the origin of the Brown Thornbill group (which includes Brown *A. pusilla*, Mountain, Inland *A. apicalis* and Tasmanian *A. ewingii* Thornbills) and then reverted back to co-operative breeding in the most recently evolved species, the Mountain Thornbill.

In summary, this observation of up to four Mountain Thornbills feeding young at the one nest shows that another Australian bird species breeds co-operatively and in particular supports the idea that Mountain Thornbills have re-evolved the original thornbill characteristic of co-operative breeding from an immediate pair breeding ancestor.

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