

Cooperative breeding in Hooded Pitohuis *Pitohui dichrous*

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Pitohuis *Pitohui* sp. are common forest dwelling birds endemic to the New Guinea sub-region (Coates 1990). They gained notoriety in 1992 when three of the six species were found to have toxins present in their skin, feathers and other tissues (Dumbacher et al. 1992; also see Poulsen 1993). This was the first time that such chemical defences, presumably for predator or ectoparasite deterrence, had been reported in birds. The pitohui toxin belongs to the family of steroidal alkaloids called batrachotoxins. Intriguingly, the only other animals known to use these poisons are the neotropical poison-dart frogs of the genus *Phyllobates* and another New Guinea bird, the Blue-capped Ifrita *Ifrita kowaldi* Orthonychidae (Dumbacher 1994). Despite these sensational findings, the basic breeding biology of Pitohuis is still undescribed, undoubtedly due to the difficulty of observing them in the thick undergrowth and canopy of tropical rainforest. When seen they are often in small foraging parties (Coates 1990), but it is not known if these groups are permanent or composed of family members. Nor is it known whether groups breed cooperatively at the nest, although more than two individuals have been seen feeding fledglings in one species, *Pitohui ferrugineus* (Bell 1983).

Knowledge of pitohui breeding biology is potentially important. A reclassification of the Australo-Papuan passerines (Sibley & Ahlquist 1985) has led to renewed attention to the phylogenetic distribution of cooperative breeding in this region. Within the Australo-Papuan passerines, all known cases fall within one clade, the Corvida, in which 30% of species are known to be cooperative (Russell 1989). Cooperative breeding has been recorded in most of the major groups within the Corvida (Cockburn 1996). However, while it predominates in the sister tribes Neosittini (Sitellas) and Mohuini (Whiteheads and allies), cooperative behaviour at the nest has not yet been recorded in the tribe Pachycephalini (pitohuis, whistlers and shrike-thrushes) (Cockburn 1996). Here, we present the first observations of cooperative breeding at the nest in this tribe.

We found a nest of the Hooded Pitohui *Pitohui dichrous* in the Fakfak Mountains of the Bomberai Peninsula, south of the Vogelkop (Bird's Head Peninsula) in western Irian Jaya, Indonesia. The site was found 10 metres off the footpath which leads over the Onin Peninsula to Kokas from Fakfak town, 1 km short of the tiny village of Rangkandak II, at an elevation of 500-600 m (c. 132°20'E, 2°50'S). We watched the nest on two occasions, separated by four days, on the 20 and the 24 June 1995. Based on size, plumage development and behaviour, we estimate that the nestlings were only a few days from fledging on the second occasion. The cup-shaped nest was constructed from the interwoven tendrils of climbing plants, suspended from three thin branches pulled into a triangular framework. It was just over two metres off the ground, and fairly visible once our attention had been drawn to it by an attending adult. The two nestlings were developing directly into the striking adult plumage of deep orange body and black head, wings and tail (also noted by Coates 1990). Two rows of long, white, fluffy feathers extended from the base of the beak over the top of the head to the base of the neck.

On both days that we observed the nest, we saw evidence that the breeding attempt was cooperative. On 20 June, at least four different adults (possibly five) 'mobbed' us as we approached the nest. They circled around us excitedly, and called repeatedly. After photographing the nestlings, we retreated to minimise disturbance. Four days later, we were able to draw nearer to the nest without alerting the adults present. We observed five feeding deliveries, three of which took place in under one minute. Although we were unable to identify the different adults, the arrival and departure directions of the adults coupled with the speed of the deliveries meant that at least three adults were feeding the nestlings. These food items included acorn-shaped red berries and invertebrates. No further deliveries occurred during the next 15 minutes, probably because our presence had been detected.

The appearance and behaviour of the nestlings were also interesting. When approached, the larger and nearer nestling partially rose out of the nest and erected its head feathers in an apparent threat display. Aware of its poisonous reputation, one of us tested its toxicity by touching the nestling's head and placing his finger in his mouth. Contrary to the effects described by Dumbacher et al. (1992), no irritation or numbing of buccal tissue occurred. Either nestlings show less toxicity than adults or Hooded Pitohuis on the Bomberai Peninsula are less toxic than those tested from eastern New Guinea. Dumbacher (1994) reports geographical variation in toxicity of the Hooded Pitohui and suggests that the Variable Pitohui *P. kirhocephalus*, which shows remarkable geographic plumage variation (Beehler 1986, Coates 1990), most closely mimics the Hooded Pitohui where the latter is most toxic. We noted that the Variable Pitohui in the Bomberai Peninsula did not closely resemble the Hooded Pitohui, having a grey head, wings and tail, and a lighter orange body. We find it intriguing that the nestlings were developing immediately into adult plumage, bypassing the juvenile plumage stage exhibited by many birds (Butcher & Rohwer 1989). Assuming the striking colouration of adults acts as a warning to potential predators, then even if nestlings lack toxicity, their adult automimicry should afford them some protection (e.g. Sordhal 1988).

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A Nesting Colony of Yellow-eyed Starlings *Aplonis mystacea*

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The distribution of the Yellow-eyed Starling *Aplonis mystacea* was recently reviewed by Beehler & Bino (1995). The species is poorly known from a few sites in the southern lowlands of New Guinea. To the few previous records from the lowlands of the Fly and Turama River drainages and southern Irian Jaya, Beehler & Bino (1995) extended the known distribution ESE by 330 km, with two sightings (one tentative, one certain)

in the Lakekamu Basin (Central and Gulf Provinces, Papua New Guinea) in 1979 and 1993. The nesting habits are unknown (Coates 1990). It is therefore worth recording that during 17 weeks of fieldwork during 1994-95 in the Lakekamu Basin, I saw Yellow-eyed Starlings frequently and found an active nesting colony. These records are summarised here.

Observations were made at two study sites in the