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## Cinnabar Hawk Owl *Ninox ios* at Lore Lindu National Park, Central Sulawesi, Indonesia, in December 1998

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On 18 December 1998, at about 10h00, Raf Drijvers stumbled across what he originally reported to be a typical adult Ochre-bellied Hawk Owl *Ninox ochracea*, roosting at eye-height above a narrow newly cut indistinct rotan collectors' trail, leading away from the main Palu–Napu road bisecting the Lore Lindu National Park in Central Sulawesi towards nearby Danau (=Lake) Tambing at a chilly 1,700 m above sea level (with altimeter). By the time he had fetched me and we got back to the site, which took about an hour, this bird sadly was no longer present. However, in crashing through the undergrowth in the vicinity I almost immediately flushed a strikingly rufous hawk owl from dense rattan-thickets about half a metre up from the forest floor and less than 15 m away from the original spot. With some effort—having flushed it several times when all it did was fly low through the understorey to hide in dense cover again without the necessary clarifying views, and nearly having lost it for good—this bird quite unexpectedly perched in full view on several occasions, allowing close examination over several minutes down to point-blank range in excellent light conditions.

RD immediately commented that this apparently new bird looked clearly different from the individual he had spotted earlier. Plumage-wise, this second bird was entirely bright rufous, almost reddish, lacking any facial markings. The only obvious features were its relatively small, rounded and earless head, yellowish legs and entirely pale greyish bill, bright yellow irides and pinkish orbital skin, some small and relatively sharply demarcated whitish triangular markings restricted to the scapulars, and the very fluffy appearance of the underparts. Given this last very obvious character we assumed our bird had to be a fully grown juvenile Ochre-bellied Hawk Owl, although we both realised that it differed strikingly from the illustration in Coates and Bishop (1997). Unaware that a third undescribed species of hawk owl occurred on Sulawesi, and both of us having no relevant field experience with *N. ochracea*, this identification was deemed plausible, and hence it was written up as such in a preliminary report (Mauro 1999) received by BirdLife International and other relevant

conservation bodies in early January 2000.

Features not noted by us in the field were the finely barred tail, which in our bird appeared uniform, and the whitish shafts on the underparts. Also we did not find this bird particularly slim or attenuated and long-tailed, probably owing to the fact that it was puffing up its feathers under stress.

It was not until 8 January 2000, when F. G. Rozendaal showed me his slides of the holotype of *N. ios* when it was still alive, that I remembered our sighting at Lore Lindu and I immediately realised that the bird we had seen matched them completely. Confused by the fact that, according to RD, two clearly different-looking birds were present in such close proximity, I admittedly at first was very sceptical about the validity of Cinnabar Hawk-owl. On 3 February the frontispiece accompanying Rasmussen (1999) was forwarded to me and I received the whole article about a week later. I immediately pointed out that if what we had seen indeed was *N. ios*, the plate did not do it entirely justice, particularly by lacking the fluffy quality of the underparts. Furthermore, as clearly illustrated by several photographs subsequently examined, I discovered that Ochre-bellied Hawk Owl can exhibit a pinkish orbital skin as in *N. ios* (*contra* Rasmussen 1999). On 9 February 2000 RD and I compared the unique type of Cinnabar Hawk Owl with several adult *Ninox ochracea* at the National Museum of Natural History (NNM/Naturalis), Leiden, The Netherlands. Again we could not find any features in which the type differed from the bird we observed in the field. Also at this point RD for the first time admitted not really having looked properly at the first bird in his haste to alert me to its presence. Only from 23 February 2000 onwards, when Pamela C. Rasmussen kindly mailed digital images showing a fully grown juvenile Ochre-bellied Hawk Owl, we were 100% confident that at least the second bird we observed so well together, beyond any doubt was a Cinnabar Hawk Owl.

Our sighting represents the first ever field observation of the species *avant la lettre*, also more than 600 km away from the type locality. A further locality, Gunung

Ambang Strict Nature Reserve, fairly close to the type locality, has also recently been found (Lee and Riley in press in BirdLife International 2001).

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# Interactions between the Greater Racket-tailed Drongo *Dicrurus paradiseus* and woodpeckers in a lowland Malaysian rainforest

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In tropical regions numerous bird species have been documented following mixed-species foraging flocks or other vertebrates and capturing invertebrates flushed by the movement of these animals. Such behaviour is thought to benefit the following species by increasing their foraging efficiency (Croxall 1976, Powell 1985, Rodrigues *et al.* 1994).

Drongos (family Dicruridae) are medium-sized, often glossy black, insectivorous birds found in a range of habitats from Africa to Asia, Australia, and the Solomon Islands (Perrins 1990). Of the approximately 24 species of drongo, 17 have been documented associating with animal species ranging from ants to large mammals (Ali and Ripley 1987, Bannerman 1939, Beehler *et al.* 1986, Boonsong and Round 1991, Coates and Bishop 1997, Croxall 1976, Dickinson *et al.* 1991, Ganesh 1992, Greig-Smith 1978, Herremans and Herremans-Tonnoeyr 1997, Hino 1998, Jeyarajasingam and Pearson 1999, Mackinnon and Phillipps 1995, McClure 1967, Veena and Loksha 1993, Willis 1983, Woodcock 1980, Zimmerman *et al.* 1996). For five species, observers specifically noted that these birds followed other animals to prey on arthropods and small vertebrates flushed by their movements. Studies in Africa and Madagascar have shown that rate of prey capture increased when drongos followed other species compared to when foraging alone (Greig-Smith 1978, Herremans and Herremans-Tonnoeyr 1997, Hino 1998, Veena and Loksha 1993).

The Greater Racket-tailed Drongo *Dicrurus paradiseus* is the most common drongo species resident in lowland forests in West Malaysia. It has been reported as an occasional participant in mixed-species flocks, but its role in these flocks and the species with which they commonly associate have not been identified. McClure (1967) classified this species as a passive, or non-

following, flock attendant, which suggests that it does not use other flock attendants as beaters.

While studying the foraging ecology of woodpeckers in an aseasonal lowland dipterocarp rain forest at Pasoh Forest Reserve in West Malaysia (see Kochummen *et al.* 1990 for a description of the reserve and forest type), we noticed a frequent association among various species of woodpeckers and the Greater Racket-tailed Drongo. Subsequent to observing these apparently common associations, we followed every woodpecker or drongo seen or heard during the course of the field season and recorded the presence of other species and noted behaviour. We were thus able to determine the frequency with which Greater Racket-tailed Drongo and woodpeckers associated with one another and if certain species associated more frequently than others do.

Of the 150 times woodpeckers were followed, Greater Racket-tailed Drongos were observed following them 76 times (50.7% of the observations). We followed drongos 16 times; 13 times (81.3%) they were seen associating with other species and 8 times (61.2%) with woodpeckers. The three times that drongos were seen alone they were in groups of 3 or 4, and were not actively foraging. For 20 additional observations it was impossible to distinguish whether the initial cue was from a woodpecker or a Greater Racket-tailed Drongo (for example, seeing a drongo and hearing a woodpecker tapping at the same time), suggesting that they may be associated more than 50% of the time. Some other animals that the Greater Racket-tailed Drongo foraged with less frequently were malkohas *Phaenicophaeus*, arboreal squirrels (Sciuridae), and leafbirds *Chloropsis*.

While associating with woodpeckers, a drongo frequently perched within 5 m of the individual it was following, often below the bird on an open horizontal perch, and would periodically sally out near the