The Mountain Black-eye *Chlorocharis emiliae* (Zosteropidae) as a rhododendron flower visitor on Mt Kinabalu, Sabah, Malaysia

F. D. STEINHEIMER

The Mountain Black-eye *Chlorocharis emiliae* is one of the most common birds in the upper mountain scrub vegetation near the tree-line on Mt Kinabalu between 1,675 and 3,650 m (Davison 1992), where the vegetation consists predominantly of heathers, conifers, rhododendrons, pitcher plants, mosses and lichens (Smythies 1960). However, although the biology of the Mountain Black-eye is quite well known (Harrisson 1956, Mees 1969), there is only a little information regarding its nectar feeding behaviour (Argent 1985).

I visited the upper mountain scrub on Mt Kinabalu for about 8 hours on 16 and 17 February 1997. During this time I saw many Mountain Black-eyes visiting red flowering rhododendrons. My observations on these were made with binoculars (10x50) from distances of 1-15 m during rainy and cloudy weather. I noted features of the corolla morphology and colour of the rhododendrons in the field and, afterwards, determined their species (VanSteenis 1972). Measurements of bills of *Chlorocharis emiliae* were subsequently made on skins in the collections of the Natural History Museum, Tring, U.K.

On Mt Kinabalu the Mountain Black-eyes foraged in pairs or small flocks. I observed them visiting the blossoms of *Rhododendron acuminatum* and *R. buxifolium* (cf. Argent 1985), both of which flower throughout the year. They have pink to deep red and purple corollas with tube lengths of 15-20 mm and diameters of 4 mm at the base, increasing to 10 mm at the apex. The inflorescences are umbels at the ends of small branches with up to 10 flowers together. The flowers are robust and the plants provide leaf and flower stalks in convenient positions for the birds to perch on. The average length of Mountain Black-eyes' premaxillae was found to be 15.69 ± 0.87 mm (n = 32), similar to the corolla tube lengths of the rhododendrons.

The birds were observed to push their heads deep into the corollas of the flowers. Afterwards, some had yellow foreheads (normally deep olive-green) due to pollen, as has been reported for other white-eye species (Moller 1931, Meinertzhagen 1954, Skead 1967, Gill 1971, Roberts 1992, Craig and Hulley 1996). I also found pierced flowers of *R. rugosum*, where it appeared that Mountain Black-eyes may have obtained nectar through the sides of tubes, as reported for several other Zosteropidae (Mees 1957, Skead 1967, Gill 1971, Ueda and Nagano 1991).

It has long been recognized that some Zosteropidae have a tongue morphology particularly adapted for consumption of nectar and pollen (Beddard 1891, Moller 1931), and many species are now well known to feed on nectar (e.g. Morel 1861, Moller 1931, Mees 1969, Gill 1971). Moreau *et al.* (1969) first suggested *Chlorocharis emiliae* as a possible nectar and pollen consumer, possessing a tubular, brush-like tipped tongue, and Argent (1985) published observations of visits by this species to flowering *R. buxifolium*. Its long, slender, slightly curved bill (Stresemann 1931) may be an adaptation for nectar feeding. Rhododendrons are known to be pollinated by birds elsewhere (Subramanya and Radhamani 1993), and the Mountain Black-eye could be an important secondary pollinator of rhododendrons in the upper mountain regions of Mt Kinabalu.

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Frank Steinheimer, Bird Group, The Natural History Museum, Akeman Street, Tring, Herts HP23 6AP, U.K.

An observation of a Banded Broadbill *Eurylaimus javanicus* nest in Pasoh Forest Reserve, Peninsular Malaysia

SUSAN D. MYERS

During a three week visit to Peninsular Malaysia in March 1997 the author stayed at Pasoh Forest Reserve in the state of Negri Sembilan for four days. This reserve is administered by the Forestry Research Institute of Malaysia (FRIM) and is well known amongst birders as an area with particularly high diversity. The reserve covers an area of approximately 24 km^2 and the ecotype is classified as lowland tropical rain forest. This habitat once constituted the main forest formation in Peninsular Malaysia but is now restricted to a handful of remnant areas (Collins *et al.* 1991). The headquarters at Pasoh is located in an approximately 1 hectare clearing.

Most birds seen during a four-day stay were observed from, or within this clearing. This was due partly to the relative ease with which birds could be viewed and to the creation of an artificial 'forest edge' habitat. Of particular note was an observation of a pair of Banded Broadbills *Eurylaimus javanicus* attending a nest situated within the clearing. The nest was located in a very large dipterocarp tree, adjacent to one of the accommodation huts. The tree was approximately 30 m tall with breast height circumference of approximately 3 m. The lower half of the trunk was branchless. On the lowest branch, approximately 15 m above the ground, the broadbill's nest was suspended from a thin lateral branch. The nest was suspended by a fine 'string' and had been constructed from dead leaves, green moss and possibly thin twigs. It appeared to have an overhanging porch obscuring the entrance so that once the adult bird entered the nest it could not be seen at all. The entrance was situated close to the top of the nest. It had a 'tail' consisting of leaves and twigs hanging down from the main body of the nest. It was situated in a very conspicuous place and the birds were also very vocal, enabling easy detection. Between the tree trunk and the nest (approximately 0.5 m from the nest) was a large active beehive, located underneath the branch, which was laterally compressed and approximately 1 m in length. The bees could be seen moving in a wave-like motion over the surface of the hive. Due to the height of the hive from the ground, identification of the bees was not possible, although they were clearly about 2 cm in length.

The female broadbill was observed flying onto the branch a short distance above and away from the hive, calling loudly and then entering the nest. The male was also observed calling near the nest but not entering it. Both these behaviours were noted on three or four occasions, usually at intervals of up to an hour or so apart.

Instances of Black-and-yellow Broadbill *Eurylaimus ochromalus* locating their nests close to beehives have been recorded in Sarawak (Lambert and Woodcock 1996) but no references to this type of behaviour in Banded Broadbill has been reported. Due to the fact that the nest was located in a very exposed, conspicuous location it may be that the beehive provides a degree of protection, as does the actual construction of the nest itself, to adults and young alike. Any predatory mammal or reptile may be deterred by the presence of a large number of potentially aggressive bees. Alternatively, or possibly in conjunction with this, the bees may provide a ready source of food for the broadbills, although they are thought to feed predominantly on orthopterans (Lambert and Woodcock 1996) and the author did not observe any such behaviour.

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Susan D. Myers, 17A Park Street, Hawthorn 3122, Victoria, Australia