

Short Note

Rediscovery of the Enigmatic Mountain Blackeye, *Chlorocharis emiliae* Sharpe, 1888 (Passeriformes: Zosteropidae) from Mount Pueh, Sarawak

MOHAMAD FIZL SIDQ RAMJI^{1*}, PUI YONG MIN², MOHD RIDWAN ABD. RAHMAN³
AND MUSTAFA ABDUL RAHMAN^{1,4}

¹Department of Zoology,

²Institute of Biodiversity and Environmental Conservation,

³Centre for Pre-university Studies,

⁴Research Innovation and Management Centre;

Universiti Malaysia Sarawak 94300, Kota Samarahan, Sarawak, MALAYSIA

* Corresponding author. E-mail: f_sidq@yahoo.com

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During a short field expedition on the Pueh-Berumput mountain range, we collected five specimens of mountain blackeye, *Chlorocharis emiliae* Sharpe, 1888 (Passeriformes: Zosteropidae) on Kanyi summit. These significant collections are the first specimens to be collected from this, henceforth, rediscovered population since 1936. Historically, the ornithological records from Mount Pueh can be traced back since the earliest scientific collections of Eric Mjöberg in 1923. Mjöberg, who was the former curator of the Sarawak Museum during that period, collected several specimens of *C. emiliae* from the Pueh summit at 4000 feet (about 1200 m)¹. In August 1936, Edward Banks collected a few more specimens of *C. emiliae* from the Pueh range². The holotype specimen is presently deposited in the Sarawak Museum in Kuching.

Mount Pueh (or Mount Poi in the older literature) is the highest mountain within the southwestern exterior of Sarawak. Apart from the neighbouring Mount Penrissen, Mount Pueh is the only remote highland discontinuing from the Batu Tibang backbone in central Borneo³. The highland

is located in Lundu within the Bau district, about 100 km from Kuching city (Fig. 1). We accessed the summit from the foothill through Kampung Sebako (N 01° 43.661', E 109° 43.438' E; 41 m asl), a small village of the Dayak Selakau tribe. The ascent took about one and a half days to reach the summit. At 1552 m, the Kanyi summit (N 01° 43.246', E 109° 40.116') is the highest point along the Pueh-Berumput ridge. The vegetation of the area is dominated by short to medium stunted tree canopies (5 to 8 m) and mossy undergrowths.

Chlorocharis emiliae is taxonomically divided into four subspecies; *C. e. emiliae* on Mount Kinabalu, *C. e. trinitae* on Mount Trus Madi, *C. e. fusciceps* on Mount Maga and *C. e. moultoni* on Mount Murud, Mount Mulu, Tama Abo Range and Mount Pueh³. The Pueh population was initially described by Chasen and Kloss in 1927 as *C. e. moultoni*. In their original descriptions, the Pueh birds tend to agree almost entirely with *C. e. emiliae* of Mount Kinabalu except that they are smaller in all morphological dimensions with a broad yellowish face and supercilium. Also, the distinctiveness of this subspecies was more apparent in the duller

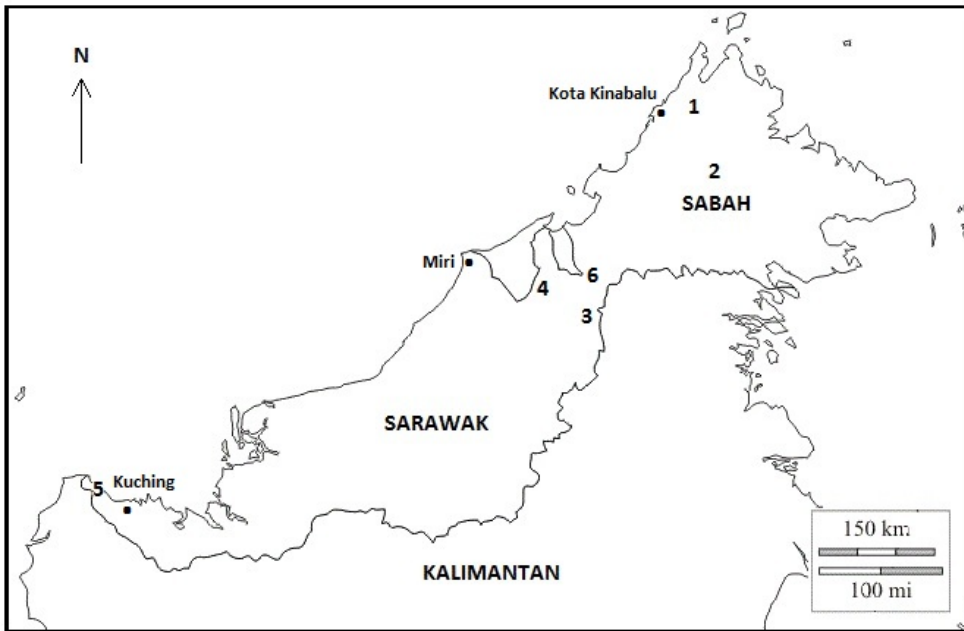


FIGURE 1. Map showing the main distribution sites of the mountain blackeye (*C. emiliae*) in Malaysian Borneo. Highlands are represented as 1 = Mount Kinabalu (*C. e. emiliae*), 2 = Mount Trus Madi (*C. e. trinitiae*), 3, 4 and 5 = Mount Murud, Mount Mulu and Mount Pueh respectively (*C. e. moultoni*), and 6 = Mount Maga (*C. e. fusciceps*).

color and lack of green on the mantle and breast¹.

Despite being fairly distributed throughout the highest summits of Sarawak and Sabah, the *C. emiliae* form from Mount Pueh is clearly understudied and less documented in comparison to the other populations⁴. Due to the relatively wide stretch of lowlands, this relatively unknown population is geographically isolated from the other main populations in the northern highland chain of Borneo. Previous scientific expeditions from 2002 to 2008 failed to collect any *C. emiliae* specimens, although sight observation was reported within the Pueh-Berumpit ridge⁵. Furthermore, given the inconsistency of wear and discoloration among the old specimens⁶, it is imperative to collect fresh material for a detailed and accurate

description of their plumage complexities and external characters. Accordingly, we conducted another expedition to Mount Pueh from the 26th to the 30th November 2011 in search of *C. emiliae* and other montane birds.

Description.— Quantitative descriptions on the plumage coloration are provided using the Munsell Book of Colour (Glossy finish collection; Gretag Macbeth LLC). Formal colour notation is described in Hue Value/Chroma (e.g. 7.5Y 7/10). The following plumage description was observed and scored from the dry skin of paratype one (Catalog no. MZU/Ad/1). Paratype one is a female collected on the 28th November 2011 at the summit camp site. The general plumage resembled those of typical *C. e. moultoni* populations (Murud and Mulu). In the head region, the

crown appeared dark/saturated olive-green (7.5Y 3/4) with a lighter green on the forehead (7.5Y 4/6) and chin. The bright yellowish supercilium is broad and well defined (7.5Y 7/10), being distinctive on the Pueh specimen compared to the thin and greener eyebrow of the Trus Madi (nominal *C. e. trinitae*) and Kinabalu (nominal *C. e. emiliae*) birds respectively. This light/intense yellowish supercilium line is extended to the auricular patch and ear coverts (7.5Y 7/10). In the upperparts, the mantle is the same color as the crown (7.5Y 3/4) with a lighter olive-green on the rump (7.5Y 4/6), whereas the underparts are mainly moderate to very intense blends of yellow-green. The belly is comparatively brighter and more intense (7.5Y 6/10) than the typical *C. e. emiliae*. Here, the Kinabalu birds display more greenish (less bright) contour feathers (7.5Y 5/8, 6/8). The breast area is less intense with plain olive greens (7.5Y 5/8), whereas the vent is equally pigmented as the belly (7.5Y 6/10). Critical to this, the key feature which

isolates the Pueh birds from the rest is the contrasting bright yellowish head the color which stretches over almost the whole face edging to the nape and body (Fig. 2). Elsewhere, the upper and lower mandible is dark orange (not a blackish upper mandible like the rest of the *C. emiliae* populations), nostrils are black, the iris is brown and the tarsi are yellow-brown.

Measurements.— Key morphological characters were measured using a Mitutoyo® electronic digital caliper (Japan) and a 30 cm stiff metal ruler, and are given based on the average values (mm) for all five paratypes. Paratypes two, three, four and five were collected on the 29th November 2011 at the same place (Catalog no. MZU/A/303, 306, 307 and 308). Key morphological characters are as follows; bill length (from nostril to tip) 11.01 mm, bill depth 3.99 mm, bill width 4.19 mm, head bill 31.86, wing length 64 mm, wing span 189.8 mm, tail length 49.2 mm, total length 123.8 mm and tarsus 19.02 mm. In highlight

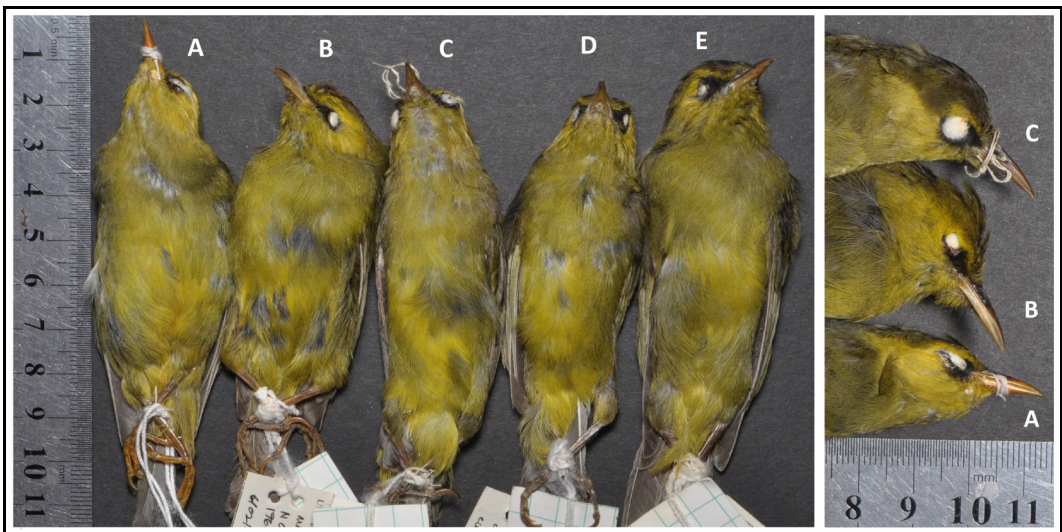


FIGURE 2. Mountain blackeye (*C. emiliae*) specimens viewed from the ventral (left) and lateral (right) side. Note specimens labeled A, B and C are *C. e. moultomi* from Mount Pueh, Mulu and Murud respectively; D = *C. e. trinitae* from Mount Trus Madi; and E = *C. e. emiliae* from Mount Kinabalu.

of the diagnostic external characters⁷, the average and bill length range of the Pueh birds closely matched to those of the nominal *C. e. moultoni* populations, which are those from Murud and Mulu (Table 1). The only notable distinction is probably the slightly shorter tarsi (17.4–20.1 mm) in comparison to the other populations (average = 22–23 mm).

The *C. emiliae* form from Mount Pueh is probably the most unique population among their conspecifics across the northern and central mountains of Borneo. While the species is commonly found above 2000 m, this is not the case for the much lower altitude on Mount Pueh. However, we never spotted the bird at 1400 m or below, perhaps

suggesting that the boreal habits of this species is influenced by taller trees of at least 8 to 10 m. The abrupt rising of canopy lines encouraged the bird to roam downwards and forage for insects among the upper branches and tree foliages⁸. This probably explains the difficulties of trapping it on the ground at lower montane forest as opposed to the upper summit vegetation of Mount Pueh (only parallel above 2000 m on higher mountains).

Recent molecular work has corroborated the genetic boundary of *C. emiliae* populations between the northern (Sabah) and southern (Sarawak) populations^{4,9}. The occurrence of gene flow was detected between the Kinabalu-Trus Madi (nominal

TABLE 1. Data are shown as the mean \pm standard deviation (mm), with the range in parenthesis, derived from the indicated number (n) of specimens.

Characters	Kinabalu (n = 10)	Trus Madi (n = 10)	Murud (n = 10)	Mulu (n = 10)	Pueh (n = 5)	Average
Bill length	14.08 \pm 1.79 (11.65–16.62)	15.18 \pm 0.66 (14.13–16.06)	11.43 \pm 1.23 (10.36–14.38)	11.67 \pm 0.53 (11.09–12.56)	11.01 \pm 0.26 (10.70–11.36)	12.86 \pm 1.96 (10.36–16.62)
Bill depth	3.94 \pm 0.52 (3.15–4.87)	4.27 \pm 0.26 (3.91–4.72)	3.71 \pm 0.44 (3.19–4.60)	3.61 \pm 0.23 (3.23–3.93)	3.99 \pm 0.23 (3.61–4.23)	3.89 \pm 0.43 (3.15–4.87)
Bill width	3.83 \pm 0.43 (3.27–4.86)	4.57 \pm 0.21 (4.28–5.03)	4.61 \pm 1.63 (3.66–9.15)	4.05 \pm 0.27 (3.68–4.58)	4.19 \pm 0.19 (4.05–4.51)	4.26 \pm 0.84 (3.27–9.15)
Head bill	35.03 \pm 1.55 (32.62–37.95)	33.99 \pm 0.65 (33.04–34.87)	32.12 \pm 0.77 (31.01–33.33)	32.69 \pm 0.63 (31.56–33.57)	31.86 \pm 0.48 (31.38–32.60)	33.28 \pm 1.49 (31.01–37.95)
Wing length	67.50 \pm 3.72 (60–72)	63.00 \pm 3.92 (57–68)	63.10 \pm 5.32 (50–70)	62.30 \pm 2.16 (59–65)	64.00 \pm 0.71 (63–65)	63.98 \pm 4.08 (50–72)
Wing span	196.70 \pm 8.99 (190–212)	189.10 \pm 5.28 (182–198)	186.80 \pm 5.61 (176–195)	187.10 \pm 7.03 (179–196)	189.80 \pm 5.67 (185–196)	189.91 \pm 7.51 (176–212)
Tail length	55.90 \pm 5.07 (47–64)	57.00 \pm 3.65 (52–64)	51.40 \pm 1.96 (48–55)	47.50 \pm 2.8 (44–52)	49.20 \pm 1.48 (47–51)	52.23 \pm 5.00 (44–64)
Total length	135.50 \pm 3.75 (130–140)	133.60 \pm 7.82 (120–148)	120.30 \pm 6.52 (110–131)	125.40 \pm 7.26 (117–140)	123.80 \pm 1.92 (121–126)	128.16 \pm 8.49 (110–148)
Tarsus	23.51 \pm 2.42 (20.14–26.85)	20.32 \pm 0.84 (19.22–22.02)	22.00 \pm 1.09 (19.96–23.72)	22.74 \pm 1.31 (20.6–24.64)	19.02 \pm 1.14 (17.40–20.14)	21.80 \pm 2.07 (17.40–26.85)

C. e. emiliae and *C. e. trinitae*) populations suggesting that both were genetically-linked in the same manner as the Murud-Mulu (nominal *C. e. moultoni*) populations. Hence, the validity of the classical taxonomic separation of the nominal subspecies *C. e. trinitae* from *C. e. emiliae* by external characters is challenged by the genetic evidence. These perhaps mirror an excellent geographical speciation with gene flow model which potentially indicate *C. e. trinitae* as an intermediate variation between subspecies *C. e. emiliae* and *C. e. moultoni*⁴.

At this point, the addition of Pueh samples would solve some crucial arguments on the phylogeography and population dispersal of *C. emiliae*. Several questions have long been addressed by previous authors concerning the existence of a peculiar upper montane species on the much isolated and lower elevation of Mount Pueh^{8,10}. In this case, only the *C. emiliae* and Bornean whistler (*Pachycephala hypoxantha*) are present on Mount Pueh, which otherwise lacks almost all of the Bornean higher montane species¹¹. All lower highlands of less than 5000 ft. (about 1500 m) have no records of such species, particularly the adjacent Mount Penrissen (1350 m). Elsewhere, *C. emiliae* has also been sighted near the summit of the neighboring Mount Nyiut in West Kalimantan, although no specimens have ever been collected¹².

On the Kanyi summit, we caught three other submontane species, which were the grey-throated babbler (*Stachyris nigriceps*), ashy bulbul (*Hemixos flava*) and mountain imperial pigeon (*Ducula badia*). The collared scops owl (*Otus bakkamoena*), which is considered as a common lowland resident,³ was also recorded at the summit area. In light of this finding, it is of significant interest to seek a more

comprehensive understanding on the complex speciation and evolution of *C. emiliae*, and especially the sudden dispersal of *C. e. moultoni* on Mount Pueh and the elusive *C. e. fusciceps* on Mount Maga.

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