




The first record of *Bulbophyllum* sect. *Monomeria* (Orchidaceae) from Indonesia

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Abstract

Bulbophyllum crabro (E.C.Parish & Rchb.f.) J.J.Verm., Schuit. & de Vogel is recorded from Sumatra, which is the first record of this species from Indonesia. This is also the first record of *Bulbophyllum* section *Monomeria* (Lindl.) J.J.Verm., Schuit. & de Vogel outside continental Asia. A detailed description, a map, discussion, and colour photographs are provided.

Introduction

The northern part of the Gayo Plateau, northern Sumatra, is botanically one of the most under-sampled areas on the island. Eight species and one variety of orchid published since the year 2000 are from this area. All are, as far as now known, endemic to the northern part of the Gayo Plateau. These are *Bulbophyllum acehense* Metusala (Metusala 2020), *B. antoi* Cavestro (Cavestro 2020a), *B. wibowoajii* Jenny & R.Amsler (Jenny & Amsler 2020a, 2020b), *Dendrobium bandii* Cavestro (Cavestro 2020b), *D. gayoense* Handoyo, Cootes & Yudistira (Handoyo et al. 2020), *D. kruise* subsp. *alboflavum* Yudistira, Romiyadi & Cootes (Yudistira et al. 2020), *Paphiopedilum bungebelangi* Metusala, *P. lunatum* Metusala (Metusala 2017), and *P. rohmanii* Cavestro & Gruss (Cavestro & Gruss 2020).

One remarkable new record from this area concerns a distinctive species of *Bulbophyllum* Thouars, a genus that consists of more than 2000 species (Vermeulen et al. 2014, Vermeulen et al. 2018). The species is *Bulbophyllum crabro* (C.S.P.Parish & Rchb.f.) J.J.Verm., Schuit. & de Vogel, which was previously known from mainland Asia, from Nepal and North-East India to Vietnam, and south to southern Thailand (Seidenfaden 1986) and Peninsular Malaysia (Abdullah 2007). It is a member of section *Monomeria* (Lindl.) J.J.Verm., Schuit. & de Vogel (Vermeulen et al. 2014). This new record also represents the first country record for Indonesia of a member of sect. *Monomeria*. A detailed description of *B. crabro* is provided below, to allow comparison between Sumatran material and that from continental Asia, together with some notes on sect. *Monomeria*.

Taxonomic Treatment

Bulbophyllum crabro (C.S.P.Parish & Rchb.f.) J.J.Verm., Schuit. & de Vogel, *Phytotaxa* 166: 106 (2014). Fig. 1.

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Fig. 1. Morphology of *Bulbophyllum crabro* from the northern part of the Gayo Plateau. A: living plant. B: inflorescence. C: flower. D: flower, lateral view. E: Flower, front view. F: sepals. G: petals. H: column and labellum, lateral view (anther cap and pollinia missing). I: labellum and column, seen from above (anther cap and pollinia missing). J: column, showing stigma and anther cap (ac). Scales: A = 2 cm; B = 1 cm; C, D, F = 5 mm; E = 4 mm; G, H = 1 mm; I, J: 2 mm. Photographs by Wendy A. Mustaqim.

Basionym: *Monomeria crabro* C.S.P.Parish & Rchb.f., *Trans. Linn. Soc. London* 30: 143 (1874). Type: BURMA [Myanmar], near Taok, February 1871, Parish 312 (lectotype, designated by Clayton (2017): W-RCHB; isolectotype: K [K000891011]).

Heterotypic synonyms: *Monomeria barbata* Lindl., *Gen. Sp. Orchid. Pl.*: 61 (1830). *Epicranthes barbata* (Lindl.) Rchb.f. in W.G. Walpers, *Ann. Bot. Syst.* 6: 265 (1861). Type: NEPAL, Toka, October 1821, Wallich 1978 (lectotype, designated by Shankar (2021): K [K000974273]; isolectotype BM [BM000525277], G [G00434759], K-LINDL [K000974243], K-WALL [K001114839], W-RCHB).

Bulbophyllum monomeria J.J.Verm., *Gen. Orchid.* 6: 33 (2014), *nom. inval.*

Bulbophyllum barbatum auct. non Barb. Rodr., *Gen. Sp. Orchid.* 2: 119 (1882).

Bulbophyllum barbatum auct. non P.Royen, *Alpine Fl. New Guinea* 2: 211 (1979), *nom. illeg.*

Creeping rhizomatous epiphytic herb. *Rhizome* c. 5–7 mm diam., roots hairy 1–1.5 mm diam, mainly arising near the pseudobulb base, also some from the free part of the rhizome. *Pseudobulbs* 1.0–2.8 cm distant, ovoid, 3.3–3.6 × 2.4–2.7 cm, 1-leaved, green, eventually turning silvery grey and long persisting, longitudinally wrinkled when dry. *Leaves* petiolate, glabrous; plain green above, whitish below; *petiole* terete, 1.8–4.8 cm long; lamina oblong, 9.3–22 × 1.7–3.3 cm; apex slightly decurved, acute, shallowly retuse. *Inflorescence* from the base of the pseudobulb, a lax raceme, c. 34 cm long, 7-flowered, apical part with a few abortive flowers; peduncle 21.5 cm long, with 7 peduncle scales, including two marcescent basal ones, the largest 1.7 cm long, tubular in basal 9 mm; rachis 14.5 cm long, slightly pruinose,

glabrous. *Floral bracts* c. 8.5–13 × 4.5–6 mm; apex acute, incurved and sheathing the pedicels, glabrous. *Pedicel* with *ovary* 19.5–23 mm long, slightly pruinose mainly on the ovary; ovary c. 3.5–4.5 mm long, ribbed. *Dorsal sepal* slightly hooded, ovate-triangular, glabrous, veins c. 5, apex acuminate, glabrous, outside slightly pruinose, 10.5–11 × 5.7–6 mm, base broadly attached. *Lateral sepals* slightly falcate, attached to the apical part of the column foot, c. 5.5 mm from the base of the column; 14–16 × 7.5–9 mm; outside glabrous, apex shortly acuminate, recurved, inner surface papillose except the apical part and around the margins. *Petals* strongly oblique, decurrent on the column-foot, ovate, 2–2.25 mm long, c. 6.5 mm wide at the base, margins fimbriate except for the decurrent part, with some of the projections branching, apex obtuse, shortly apiculate, surface glabrous; 1-veined. *Labellum* 3-lobed, glabrous, 8.0–8.5 × 4.2–4.5 mm; side-lobes basal, slender, hook-like, c. 3 mm long, acuminate, slightly curved outwards; mid-lobe ligulate-oblong, apical part reflexed from just below the middle, with entire margins, apex rounded, shallowly retuse, basal callus of two sharp, raised keels with a nectar-bearing groove in between and terminating about halfway along the reflexed apical part. *Column* 4.5–4.8 mm long (including the steldia), steldia triangular, 1 mm long, acute; upper side entire, lower side with a broad and rounded thick wing. *Anther* hooded, c. 1.2 × 1.5 mm, glabrous. *Pollinia* not seen. *Stigma* about 5-angular, 2 × 2.5 mm. *Fruit* not seen.

Phenology: Flowering October–February in continental Asia; in Sumatra flowering observed in July; fruiting time unknown.

Distribution: Nepal, North-East India, Myanmar, China, Vietnam, Thailand, Peninsular Malaysia, Indonesia (Sumatra). The distribution in Sumatra is shown in Fig. 2.

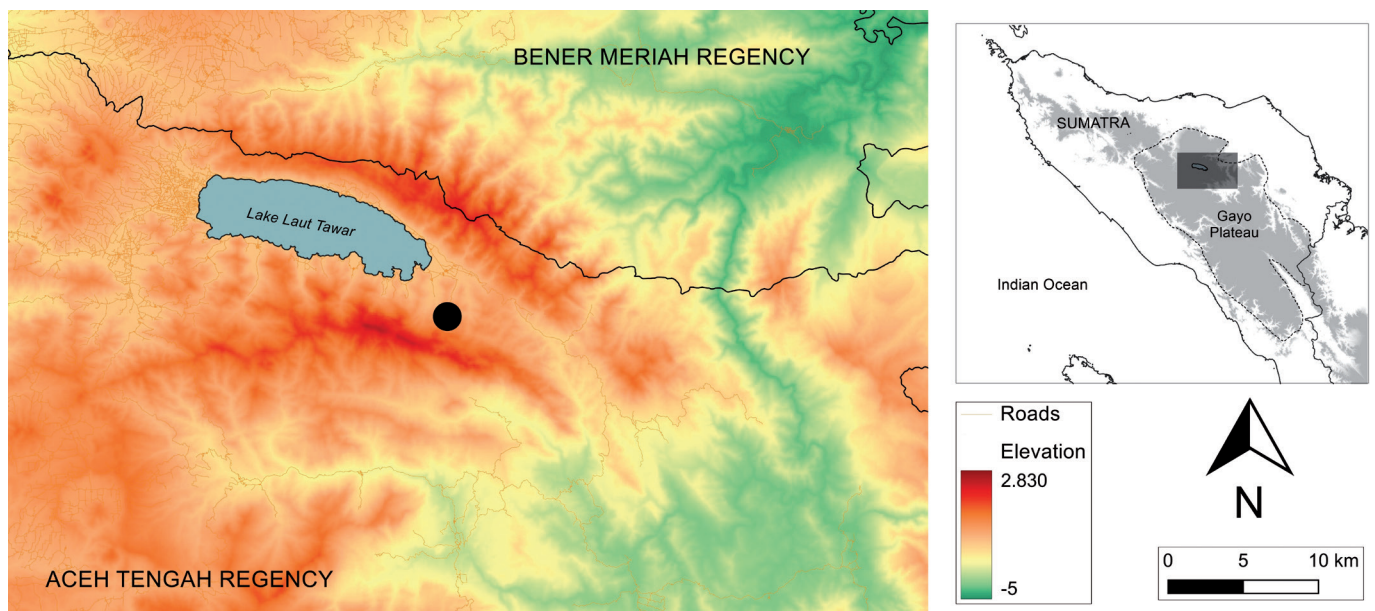


Fig. 2. Geographic distribution of *Bulbophyllum crabro* in the northern part of the Gayo Plateau, Sumatra, Indonesia (●). Map prepared using QGIS (QGIS Development Team 2023).

Habitat and ecology: This species can be epiphytic or lithophytic (Chen & Vermeulen 2009, Shankar 2021). The specimen from the northern Gayo Plateau was collected from plants creeping on

the trunks of trees growing on limestone rock at an elevation of around 1720 m asl. It is the only known population of the species in Sumatra, with less than ten plants seen.

Notes: *Bulbophyllum crabro* was first described as *Monomeria crabro* from Myanmar in 1873 by Parish and Reichenbach f. (Parish's original watercolour painting is shown in Clayton 2017). It had long been considered a synonym of *Monomeria barbata* Lindl. (1830) but the specific epithet had to be resurrected when the species was transferred to *Bulbophyllum*, as the name *B. barbatum* was already in use. It should be noted that Shankar (2021) superfluously lectotyped *B. crabro*, as this had already been done by Clayton (2017).

The genus *Monomeria* Lindl. (Lindley 1830) was initially considered distinct from *Bulbophyllum* because it was believed that it lacked petals; this was later found to be incorrect (Reichenbach f. 1874) but the genus was maintained because of the presence of a stipe carrying the pollinia. However, this character state occurs elsewhere in *Bulbophyllum* (e.g., in *B. cornutum* (Blume) Rchb.f.), and molecular studies have confirmed that *Monomeria* is nested in *Bulbophyllum* (Li et al. 2016). The name *Monomeria* refers to the single globose body formed by the four pollinia.

According to Vermeulen (2014), *B.* sect. *Monomeria* is characterised by having a creeping rhizome; 1-leaved pseudobulbs longitudinally wrinkled with age; an elongate, racemose inflorescence, with the basal node of the pedicel at the base of the floral bract; flowers with a long column-foot, to which the sepals are attached in the apical half; 1-veined, ciliate [to erose-fimbriate] petals; a mobile and auriculate labellum; stelidia with winged upper margin; pollinia attached to a stipe. Two other species are currently included in sect. *Monomeria*: *B. dichromum* Rolfe from Vietnam and *B. fengianum* (Ormerod) J.J.Verm., Schuit. & de Vogel from China. From the former, *B. crabro* differs in having petals broader than long (vs. petals longer than broad) and spotted sepals (vs. unspotted or striped sepals); from *B. fengianum*, *B. crabro* differs in having twisted sepals, so that the abaxial surface is turned uppermost (vs. untwisted sepals).

It should be noted that five *Bulbophyllum* species that have been included in the genus *Monomeria* are no longer considered to belong to sect. *Monomeria*, viz.: *B. digitatum* J.J.Sm. (sect. *Gongorodes*); *B. gymnopus* Hook.f. (sect. *Altisceptrum*), *B. longipes* Rchb.f. (sect. *Henosis*), *B. kingii* Hook.f. (sect. *Acrochaene*), and *B. rimanii* (Rchb.f.) J.J.Verm., Schuit. & de Vogel (sect. *Ione*).

Outside Sumatra, *B. crabro* has a wide distribution in tropical continental Asia, including Peninsular Malaysia. There are other orchids showing this distribution pattern, for example, *Cyrtosia lindleyana* Hook.f. & Thomson (Comber 2001).

The record of *B. crabro* from the northern Gayo Plateau highlights an important point in the phytogeography of this mountain complex. Located in the northern part of Sumatra, the flora of this region shows notable similarities to that of mainland SE Asia. Many continental taxa have populations there. Some non-orchid examples of species from the northern Gayo Plateau having mainland SE Asia or beyond as their center of distribution include *Pinus merkusii* Jungh. & de Vriese (Pinaceae; de Laubenfels 1988a, Mustaqim 2020), *Rhodoleia championii* Hook. (Hamamelidaceae; Vink 1957), *Acer laurinum* Hassk. (Sapindaceae; Adema et al. 1994), *Dacrydium medium* de Laub.

(Podocarpaceae; De Laubenfels 1988b), and many others (De Wilde and Duyfjes 2001).

Specimen examined. INDONESIA. Aceh Province, Aceh Tengah Regency, Bintang Subdistrict, near Wihlah Setie Village (4°33'09.8"N, 97°00'18.4"E), 1720 m a.s.l., WA Mustaqim et al. 2753, 23 July 2023 (LGS).

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