

A new species of *Bulbophyllum* (Orchidaceae: *Bulbophyllinae*) section *Macrocaulia* from Sumatra, Indonesia

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ABSTRACT. *Bulbophyllum bonjolianum* Yudistira, Candra & Mustaqim, a member of section *Macrocaulia*, is described here based on a specimen collected from the mountains of West Sumatra. It is similar to *B. tristriatum* Carr. and *B. pyridion* J.J.Verm. but differs in the morphology of the dorsal sepal, petal and labellum. A key to *B. bonjolianum* and morphologically similar species is presented.

Keywords. Endemic, epiphyte, Malesia, orchids, taxonomy

Introduction

Bulbophyllum Thouars is a large orchid genus with more than 2,000 species (Vermeulen et al., 2015), and classified into 101 sections (Pridgeon et al., 2014). The genus has a pantropical distribution, with the main centre of diversity on the island of New Guinea, followed by Borneo and Madagascar (Vermeulen, 2014; Vermeulen et al., 2015). Recent data showed that New Guinea has at least 658 species (Cámara-Leret et al., 2020), Borneo has 292 species (Vermeulen et al., 2015; Yudistira et al., 2024), and Madagascar has 200 species (Droissart et al., 2023). Sumatra, the third largest island in insular Southeast Asia, has 163 species (POWO, 2024; Mustaqim et al., 2024).

Bulbophyllum section *Macrocaulia* has approximately 73 provisionally accepted species centred in the Indomalayan region, with remarkable diversity in insular Southeast Asia. This section is characterised by the pseudobulb proximally fused to the rhizome and comparatively large to the size of plants, the creeping rhizome, a 1-flowered inflorescence, flowers with the basal node of pedicels well above (1/3 diam. of pedicels or more) the attachment of floral bracts, petal margins entire to denticulate, and, if present, appendages have the same thickness or ornamentation, the labellum without basal transverse ridges adaxially, pollinia 2, or when 4 the inner pollinia only up to half of the length (or shorter) of the outer pollinia (Vermeulen, 2014).

Sumatra is one of the world's centres of plant diversity (Barthlott et al., 2005), with a total number of around 8,400 species (Middleton et al., 2019). Orchidaceae is the largest plant family with over 1000 species found on the island. In 2001, the total number of orchids on the island was recorded as 1,118 species (Comber, 2001), and since then, a further 61 new species have been described from the island (POWO, 2024).

As part of research on the diversity of section *Macrocaulia*, the authors have collected and examined many recently collected specimens from several areas of Indonesia, including Sumatra. Many intriguing findings were unearthed, including a specimen collected from the central part of Sumatra deposited in ANDA and its duplicate in UIDEP (abbreviations follow Thiers, continuously updated). The specimen has flowers with a clavate mid-lobe of the labellum, a character not yet recorded for Sumatra, which led to further investigation. After studying the relevant literature (Blume, 1825; Smith, 1905, 1907; Comber, 1990, 2001; Seidenfaden & Wood, 1992; Vermeulen, 2014; Vermeulen & Lamb, 1988, 2008; Vermeulen & O'Byrne, 2008, 2011; Vermeulen et al., 2015), photographs (Costea et al., 2024), and with comparison to type specimens accessed from JSTOR Global Plants (<http://plants.jstor.org>), it was apparent the specimen represents a species new to science, with some similarities to *B. tristriatum* Carr and *B. pyridion* J.J.Verm. (Vermeulen et al., 2015). The species is described and illustrated here.

The new species

Bulbophyllum bonjolanum Yudistira, Candra & Mustaqim, **sp. nov.**

Bulbophyllum bonjolanum is morphologically similar to *B. tristriatum* Carr. and *B. pyridion* J.J.Verm., but differs in the dorsal sepals abruptly tapering from the middle upwards (vs gradually narrowing), pentagonal petal (vs elliptic-(ob)-ovate in *B. tristriatum* and elliptic in *B. pyridion*), and longer labellum (6.8–7 mm vs 3.5–5 mm in *B. tristriatum* and c. 3.2 mm long in *B. pyridion*) with the proximal adaxial surface coarsely papillose (vs smooth). The species is also similar to the Peninsular Malaysian species *B. hodgsonii* M.R.Hend., but the new species differs in its dorsal sepals abruptly tapering from the middle upwards (vs gradually narrowing), lateral sepals with 3 veins (vs 5), and the coarsely papillose adaxial surface of the labellum in the lower proximal part (vs smooth). – TYPE: Indonesia, West Sumatra Province [Provinsi Sumatera Barat], Solok Regency, Mount Talang, Lubuk Selasih, 1070 m, 3 July 2023, *Baron BARON-001ANDA* (holotype: ANDA (spirit); isotype: UIDEP (spirit)). (Figs 1, 2)

Small, creeping epiphyte herbs. **Roots** below the pseudobulb, 0.5–0.6 mm diam., white. **Rhizome** creeping, 0.5–1 mm diam., section between pseudobulbs 0.5–0.8 mm with thin clustering papery sheets, c. 2 mm long, caducous. **Pseudobulb** green, ellipsoid to ovoid, basal half fused to the rhizome, 4–5 × 2.0–2.5 mm. **Leaf**: petiole 0.5–1.0 mm long, lamina elliptic to lanceolate, 5–10 × 3–5 mm, index ratio l/w 1.6–2, acute, green,

glabrous. **Inflorescence** arising from the base of pseudobulb, 1-flowered, 60–65 mm long; peduncle erect to patent, terete, 48–50 mm long, c. 1 mm wide, bracts 2, the longest 2–2.5 mm long; floral bract tubular, 1–1.5 mm long, acute. Flowers not open widely, white orange. **Pedicel** and **ovary** terete, altogether 14–15 mm long; slightly corrugate, 4-angled, basal nodes 1–1.2 mm long. **Dorsal sepals** erect, $9.5\text{--}10 \times 1\text{--}3$ mm, index ratio 0.5–3, ovate in the lower $2/5\text{--}1/2$, 0.3–0.5 mm wide, dorsally with 3 prominent veins, upward linear, 0.8–1 mm wide, apex acute, margin ciliate. **Lateral sepals** ovate-elliptic, asymmetric, basally connate at the lower side, $14\text{--}15 \times 3\text{--}4.5$ mm, index ratio 3.3–4.6, acuminate, dorsally with 3 prominent orange veins, ciliate. **Petals** pentagonal, $2\text{--}2.8 \times 1\text{--}1.5$ mm, index ratio 1.8–2, acute, entire, base broadly attached, translucent, 1-veined, veins orange. **Labellum** ovate at the base and with clavate mid-lobe, $6.8\text{--}7 \times 1.8\text{--}2$ mm, index c. 3.5, with ovate basal part $2.5\text{--}3 \times 1.8\text{--}2$ mm, grading into linear, clavate mid-lobe, 0.8–1 mm wide, obtuse, the lower $2/3$ with orange-red adaxial and pinkish abaxial surfaces, the apical thickened part $1/3$ of the clavate part, margins entire, orange; basal part adaxially concave near the base, with a small cavity just above the ligament, and with two short ridges bordering this median strip from the lower $1/4$ base to the middle, the adaxial surfaces coarsely papillose from base to mid-part, foveolate in apical part, abaxially with a circular median ridge near the base; mid-lobes smooth abaxially. **Column** including stelidia c. 2 mm long, stigma reniform with a triangular tooth at its base, column foot c. 1 mm long. **Stelidia** subulate, 1–1.3 mm long, apex curved downward. **Anther** cucullate, c. 0.5×0.5 mm, abaxially with a widely rounded crest, surface papillose, front margin not drawn out. **Pollinia** not seen.

Distribution. Endemic to West Sumatra, only known from the type locality.

Habitat and ecology. Growing as an epiphyte on a disturbed lower montane rainforest, at an elevation of 1000–1200 m.

Phenology. Flowering in June to August, fruiting unknown.

Etymology. The species is named in honour of Tuanku Imam Bonjol, a national hero of Indonesia from West Sumatra Province.

Notes. The new species does not key out well in the available literature. For example, *Bulbophyllum bonjolianum* keys out with four species native to Sumatra and surrounding regions, with the most similar species being *B. tristriatum* and *B. pyridion* from Borneo according to the keys in Vermeulen et al. (2015), *B. stormii* J.J.Sm. s.l. and *B. hodgsonii* for Peninsular Malaysia (Seidenfaden & Wood, 1992), and *B. stormii* s.l. and *B. fulgens* J.J.Verm. for Sumatra (Comber, 2001). Note, the Sumatra and Peninsular Malaysia *B. stormii* s.l. as circumscribed by Seidenfaden & Wood (1992) and Comber (2001) included the now-accepted *B. tristriatum*, a species from Peninsular Malaysia and Borneo (Vermeulen et al., 2015).

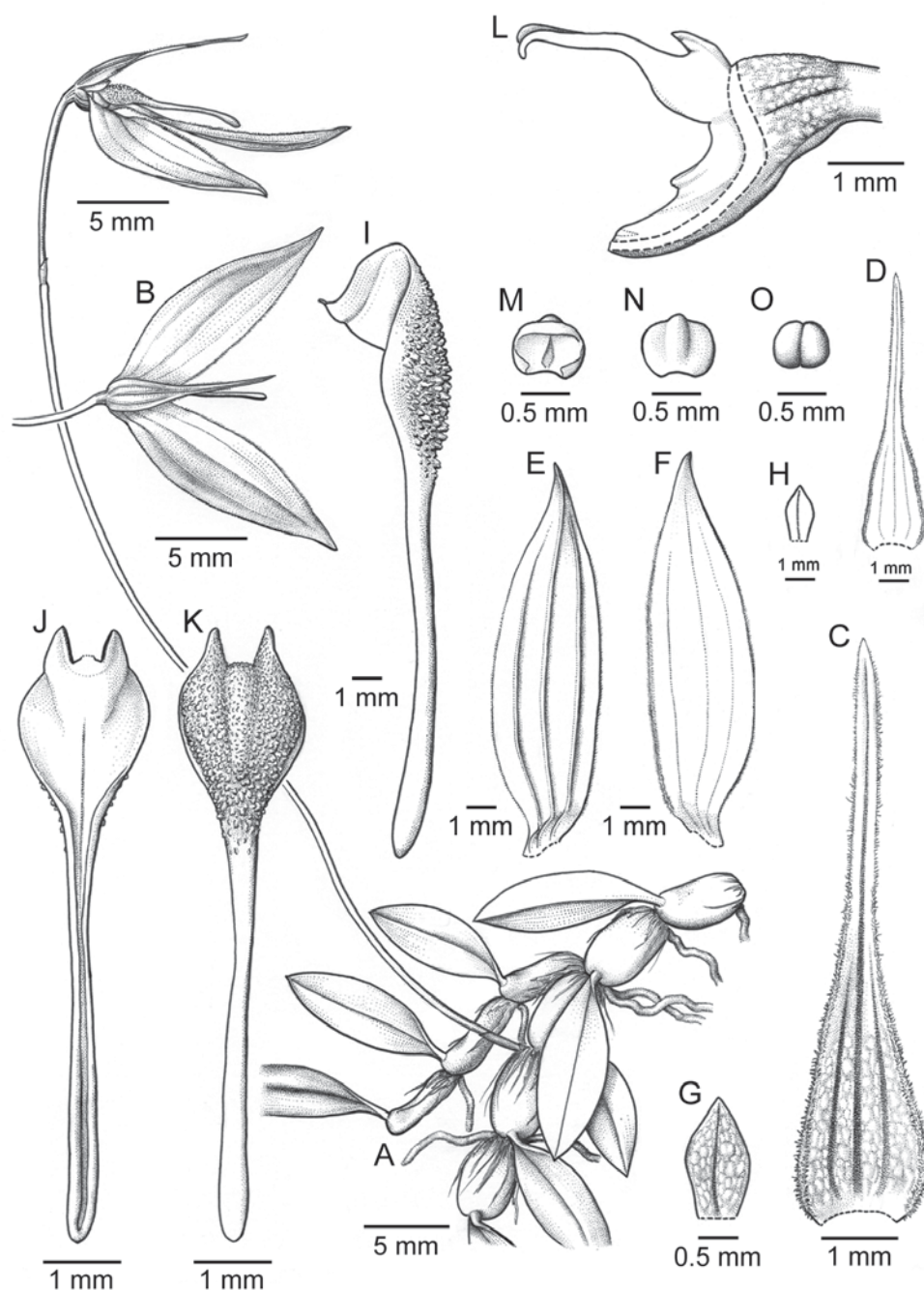


Fig. 1. *Bulbophyllum bonjolianum* Yulistira, Candra & Mustaqim. **A.** Plant habit with inflorescence. **B.** Flower top view. **C.** Median sepal, abaxial view. **D.** Median sepal, adaxial view. **E.** Lateral sepal, abaxial view. **F.** Lateral sepal, adaxial view. **G.** Petal, abaxial view. **H.** Petal, adaxial view. **I.** Labellum, lateral view. **J, K.** Labellum, abaxial and adaxial surface. **L.** Column stolidium. **M.** Anther cap, adaxial view. **N.** Anther cap, abaxial view. **O.** Pollinarium. Drawing by Yuanito Eliazar.

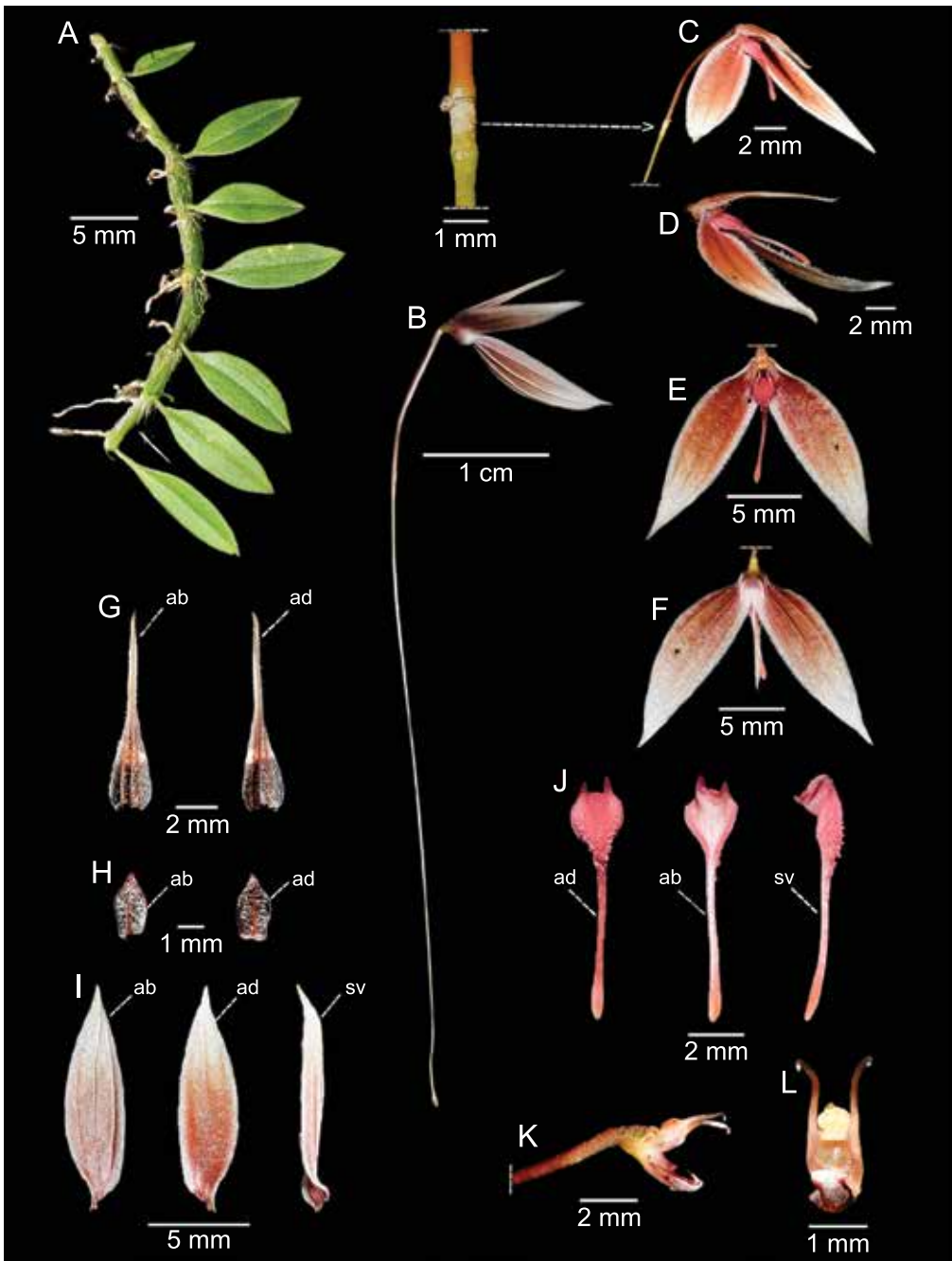


Fig. 2. *Bulbophyllum bonjolianum* Yudistira, Candra & Mustaqim. **A.** Plant habit. **B.** Inflorescence. **C, D.** Flower, lateral view, with close-up view showing basal node of the pedicel. **E.** Flower, front view without median sepal. **F.** Flower, view from above. **G.** Median sepal, abaxial and adaxial views. **H.** Petal, abaxial and adaxial views. **I.** Lateral sepal, abaxial, adaxial and side views. **J.** Labellum, adaxial, abaxial and side views. **K.** Column with stelidia, side view. **L.** Column stelidia, front view. ab = abaxial, ad = adaxial, sv = side view. (Photos: Y.R. Yudistira)

Compared to *Bulbophyllum tristriatum*, the new species differs in the dorsal sepals abruptly tapering from the middle upwards (vs gradually narrowing), pentagonal petal (vs elliptic-(ob)-ovate in *B. tristriatum*), and longer labellum (6.8–7 mm vs 3.5–5 mm in *B. tristriatum*). *Bulbophyllum tristriatum* is only known from Borneo and Peninsular Malaysia and has a lower elevation range from 500 to 800 m above sea level (Carr, 1930; Vermeulen et al., 2015). In Comber's (2001) taxonomic account for Sumatra, *B. tristriatum* was treated as part of *B. stormii*; subsequently, however, *B. tristriatum* is now treated as an accepted species (e.g., Vermeulen et al., 2015). Therefore, *B. tristriatum* has never been recorded for Sumatra. Next, compared to *B. pyridion*, the new species differs by dorsal sepal abruptly tapering from the middle upwards (vs gradually narrowing in *B. pyridion*), pentagonal petal (vs elliptic), and longer labellum (6.8–7 mm vs c. 3.2 mm). *Bulbophyllum pyridion* is a montane species endemic to Sabah from an elevation of around 1500 m above sea level (Vermeulen et al., 2015). Another species that has similar labellum is *B. hodgsonii*, but the new species differs from *B. hodgsonii* by the coarsely papillose (vs smooth) labellum surfaces and dorsal sepals with lower part ovate and linear from 2/5–1/2 of the length upwards (vs gradually tapering from the base to apex, not forming linear distal part). *Bulbophyllum hodgsonii* is a narrow endemic species known only from Cameron Highlands (Seidenfaden & Wood, 1992), which is at an elevation of around 1300 m, just above the currently recorded elevation of *B. bonjolianum*.

In Sumatra, the morphological features of the new species are quite distinct from any other previously recorded species. Using the key in Comber (2001), the species best keys out with *B. stormii* and *B. fulgens*. From both, the new species differs by dorsal sepals abruptly tapering from the middle upwards (vs gradually narrowing) and the labellum long drawn out, forming a clavate mid-lobe, 6.8–7 mm in total (vs not drawn out, 3.8 mm long in *B. stormii*, and 2.9–3.9 mm long in *B. fulgens*). Compared to *B. stormii* and *B. fulgens*, the new species differs in having dorsal sepals abruptly narrow at least from the middle (vs gradually narrowing) and 3-veined (vs 5-veined in *B. stormii* and 5–7-veined in *B. fulgens*). Initially, *B. stormii* was thought to occur in Sumatra, Peninsular Malaysia, and Borneo (Comber, 2001), but the latest revision indicates that all Bornean material belongs to other species, including *B. tristriatum* (Vermeulen et al., 2015).

Key to *Bulbophyllum bonjolianum* and morphologically similar species

- 1a. Dorsal sepals 5-veined 2
- 1b. Dorsal sepals 3-veined 3
- 2a. Ovary coarse, aciculate; petals spatulate, apical part papillose *B. stormii*
- 2b. Ovary smooth; petals ovate, glabrous *B. fulgens*
- 3a. Labellum surfaces, at least partially, papillose or verrucose *B. bonjolianum*
- 3b. Labellum surfaces smooth 4

- 4a. Dorsal sepals 20 mm or longer *B. tristriatum*
 4b. Dorsal sepals up to 12 mm long 5
- 5a. Lateral sepals 3–4-veined; labellum tip obtuse *B. pyridion*
 5b. Lateral sepals 5-veined; labellum tip cordate *B. hodgsonii*

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