



A New Name for an Overlooked Species of *Eulophia* (Orchidaceae) from Wallacea

DESTARIO METUSALA

Purwodadi Botanic Garden - Research Center for Plant Conservation and Botanic Gardens, Indonesian Institute of Sciences (LIPI),
Jl. Raya Surabaya-Malang km.65, Pasuruan, East Java, Indonesia; Email: metusala.destario@gmail.com

Abstract

Eulophia bicolor described by Blume is an illegitimate name for a species that has generally been considered synonymous with *E. nuda*. The former should be recognized as a distinct species, as it differs in having different spur characteristics, a narrower column, and an anther cap with an elongated protuberance. It is here given a new name, *E. lagaligo*.

Keywords: Sulawesi, Lesser Sunda Islands, Indonesia

Introduction

Eulophia Brown (1821: 573) (subfamily Epidendroideae: tribe Cymbidieae) is a conserved genus with *E. guineensis* Lindley (1822: 686) as the conserved type. All of the circa 216 currently accepted species are terrestrials, including a few mycoheterotrophs (Govaerts *et al.* 2019). The genus is characterized by having either subterranean tuberous rhizomes or epigeal pseudobulbs and flowers with free sepals and petals. The labellum is free or fused with the base of the column-foot, more or less trilobed and usually spurred at base. The two pollinia attached to an oblong-elliptic viscidium (Pridgeon *et al.* 2009; Martos *et al.* 2014). It is distributed from Africa which is its centre of diversity (Pridgeon *et al.* 2009), through Madagascar, central and tropical Asia, to the south-west Pacific and northern Australia. The species occur in a broad range of habitats, from semi-arid steppe, coastal vegetation, swamps and grassland, to tropical forest (O'Byrne 1994; La Croiz & Cribb 1998).

Only nine species of *Eulophia* have been recorded from the Indonesian archipelago. Six are known from Sumatra (*E. andamanensis* Reichenbach (1872: 276); *E. bicallosa* (D.Don) Hunt & Summerhayes (1966: 60); *E. graminea* Lindley (1833: 182); *E. nuda* Lindley (1833: 180); *E. pulchra* (Thouars) Lindley (1833: 182); *E. zollingeri* (Rchb.f) Smith (1905: 228)), five from Indonesian Borneo (Kalimantan) (*E. exaltata* Reichenbach (1857: 38); *E. graminea*; *E. nuda*; *E. pulchra*; *E. zollingeri*), seven from Java (*E. bicallosa*; *E. exaltata*; *E. graminea*; *E. javanica* Smith (1921: 260); *E. nuda*; *E. pulchra*; *E. zollingeri*), four from Sulawesi (*E. exaltata*; *E. nuda*; *E. pulchra*; *E. zollingeri*), four from the Lesser Sunda islands (*E. exaltata*; *E. nuda*; *E. pulchra*; *E. venosa* (F.Muell.) Rchb.f. ex Bentham (1873: 300)), four from the Moluccas (*E. nuda*; *E. pulchra*; *E. venosa*; *E. zollingeri*), and four from Indonesian New Guinea (*E. bicallosa*; *E. nuda*; *E. pulchra*; *E. zollingeri*). Among them, *Eulophia nuda* is the most widespread species there, occurring in all the main islands. There are several published names based on specimens from Indonesia that have been reduced to the synonymy of *E. nuda*; one of these is *E. bicolor* Blume (1859: 151).

Blume described *Eulophia bicolor* in 1859 based on a specimen from Timor Island in the Lesser Sunda archipelago. About 63 years later, Smith published a detailed description of a new variety of *E. bicolor* based on specimens from Sulawesi, *E. bicolor* var. *celebica* Smith (1922: 71). Although Smith didn't designate a holotype, it appears that the description was based on a single living specimen cultivated by J. Oostenbroek in Makasar, South Sulawesi. However, he also mentioned another specimen of this new variety from Gunung Pasangmalambe, South Sulawesi, collected by L. Van Vuuren and Rachmat in 1913. This new variety was said to differ from the typical variety in several minor respects, including the obtuse petals, the lip epichile being as broad as the hypochile, the colour of the lip, and the triangular pollinia.

Unfortunately, *E. bicolor* Blume is an illegitimate name as it had been used earlier for a plant from western India by N.A. Dalzell in 1851 (now also considered a synonym of *E. nuda*). Therefore, *E. bicolor* Blume and *E. bicolor* var. *celebica* Smith cannot be used, apart from the fact that they have generally been considered to be synonyms of *E. nuda* (Govaerts *et al.* 2019).

During a botanical expedition by staff from Purwodadi Botanic Garden—LIPI in 2008 at Cani Sirenreng, Bone, South Sulawesi, living plants were collected that were initially identified as *E. spectabilis* Suresh in Nicolson *et al.* (1988: 300) (Metusala 2009), a synonym of *E. nuda*. I now consider that this was a misidentification. These plants agree in morphology with the descriptions and illustrations of *E. bicolor* Blume and *E. bicolor* var. *celebica* Smith. Since I consider these taxa as distinct from *E. nuda*, and because *E. bicolor* Blume (non Dalzell) is an illegitimate name, a new name is required. A full description is also provided below. The difference between *E. lagaligo* with *E. celebica* Blume (1859: 182) (syn. *E. nuda*) is also briefly discussed.

Taxonomic Treatment

Eulophia lagaligo Metusala, *nom. nov.* (Figs. 1,2)

Replaced name: *Eulophia bicolor* Blume (1859: 151), *nom. illeg.* (non Dalzell, 1851).

Type:—INDONESIA. Timor, *Zippelius s.n.* (holotype: L!—photo seen, barcode L0061229).

Heterotypic synonym: *Eulophia bicolor* Blume var. *celebica* Smith (1922: 71). (Syntype: L!, barcode L0061231).

Diagnosis:—*Eulophia lagaligo* is morphologically close to *Eulophia nuda*, but differs in having a downwards-pointing spur formed by the lip and the column-foot (versus a backwards-pointing spur formed by the column-foot only, Fig. 4), a narrower column (2–2.5 versus 4–5 mm wide), and an anther cap with an elongated, horn-like protuberance (versus an anther cap with two short protuberances, Fig. 5).

Erect terrestrial herb. **Roots** several from the base of pseudobulb, velamenous. **Pseudobulb** subterranean, ovoid to subglobose, usually 4–6-noded, 2.5–3.5 cm in diam, 3 or 4-leaved, enclosed by several sheaths. **Leaves** present at anthesis, lamina lanceolate to elliptic, 36–49 cm long x 7.5–11 cm wide, plicate, veins parallel and prominent abaxially, light green, leaf apex acuminate; petiole-like leaf bases overlapping and forming a pseudostem, 15–17 cm long x 1–1.3 cm in diam at base, cream-white to greenish-white. **Inflorescences** arise from basal part of pseudobulb, erect, 5–14-flowered; peduncle up to 75 cm long x 0.4–0.5 cm in diam. at base, cylindrical, green; rachis 15–35 cm long; floral bracts narrowly triangular to linear, 0.7–1.5 cm long, membranous, persistent, acute. **Pedicel with ovary** 1.7–2.1 cm long, slender, green, resupinate. **Flowers** suberect, 2.2–2.8 cm across, not widely opened; sepals green with light purplish streaks near base; petals light green with darker green reticulate nerves; lip green with pinkish/red/purple raised nerves; spur yellowish white, sometimes with purplish streak; column green with purplish streaks at base; anther-cap purplish white. **Dorsal sepal** narrowly oblong-elliptic to linear-elliptic, 1.7–2 cm long x 0.3–0.4 cm wide, apex acute to shortly acuminate. **Lateral sepals** adnate to column-foot, obliquely narrowly oblong to linear-elliptic, 1.9–2.2 cm long x 0.4 cm wide, margins entire, apex acute to shortly acuminate. **Petals** obliquely oblong-elliptic, 1.6–1.9 cm long x 0.6–0.8 cm wide, margins entire to somewhat irregularly crenate near the apex, apex obtuse to acute, often reflexed at apex. **Labellum** indistinctly 3-lobed when flattened, subpandurate, 1.8–2.0 cm long x 1.2–1.3 cm wide across hypochile; **hypochile** 0.9–1.1 cm long x 0.8–1.3 cm wide, sub-rectangular to obovate, minutely pilose, apex rounded; **epichile** 0.7–0.9 cm long x 1.0–1.4 cm wide, sub-rectangular to reniform, minutely pilose, margins irregular or crenulate, undulate, apex rounded or slightly retuse; **keels** as 5 main ridges extending from the lip base towards the epichile where they branch and become slightly obscure, the outer ridges also branched into many lateral ridges on the sides of hypochile. **Spur** conical, 0.6–0.8 cm long x 0.4–0.6 cm wide, obtuse, laterally flattened, extending downward and seemingly as a continuation of the column-foot. **Column** slender, rather curved, 0.9–1 cm long x 0.2–0.25 cm wide, narrowly winged below, column-foot 0.6 cm long; **stigma** ovate to elliptic, 1.5–2.0 mm x 1.2–2.0 mm; **anther-cap** ovate, with an elongated retuse protuberance, 2.5–3.0 mm long x 2.0 mm wide; **pollinia** 2, subglobose to triangular in outline, with cleft, 1.0 mm x 1.0 mm. Described from spirit material, fresh flowers, and living plants (RIO 43, living collection in Purwodadi Botanic Garden, accession number: P2008090129—Sulawesi: South Sulawesi, Bone, Cani Sirenreng).

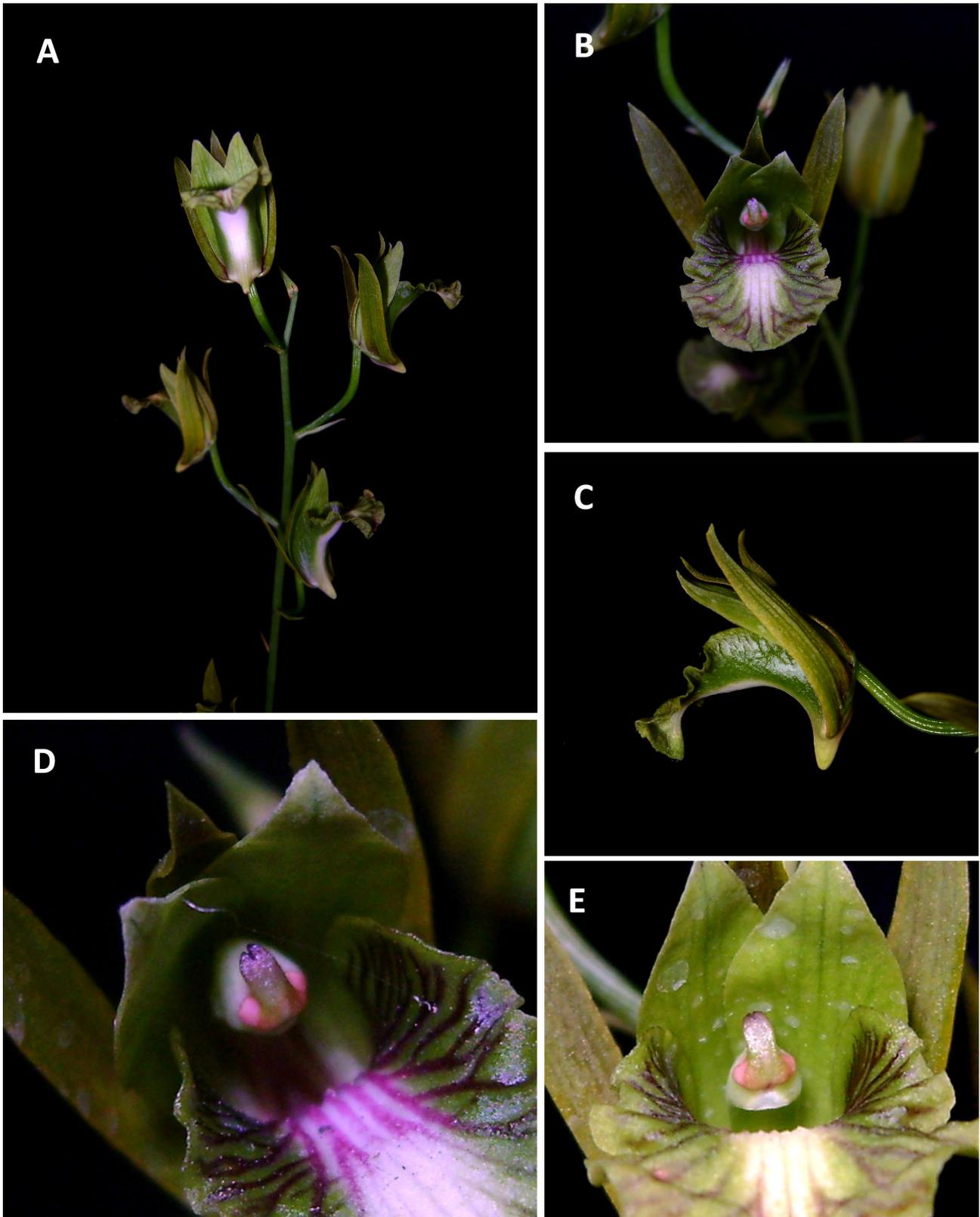


FIGURE 1. *Eulophia lagaligo*. A, inflorescence. B—C, flower (B, front view; C, side view). D—E, anther cap with an elongated protuberance. Photos by Destario Metusala.

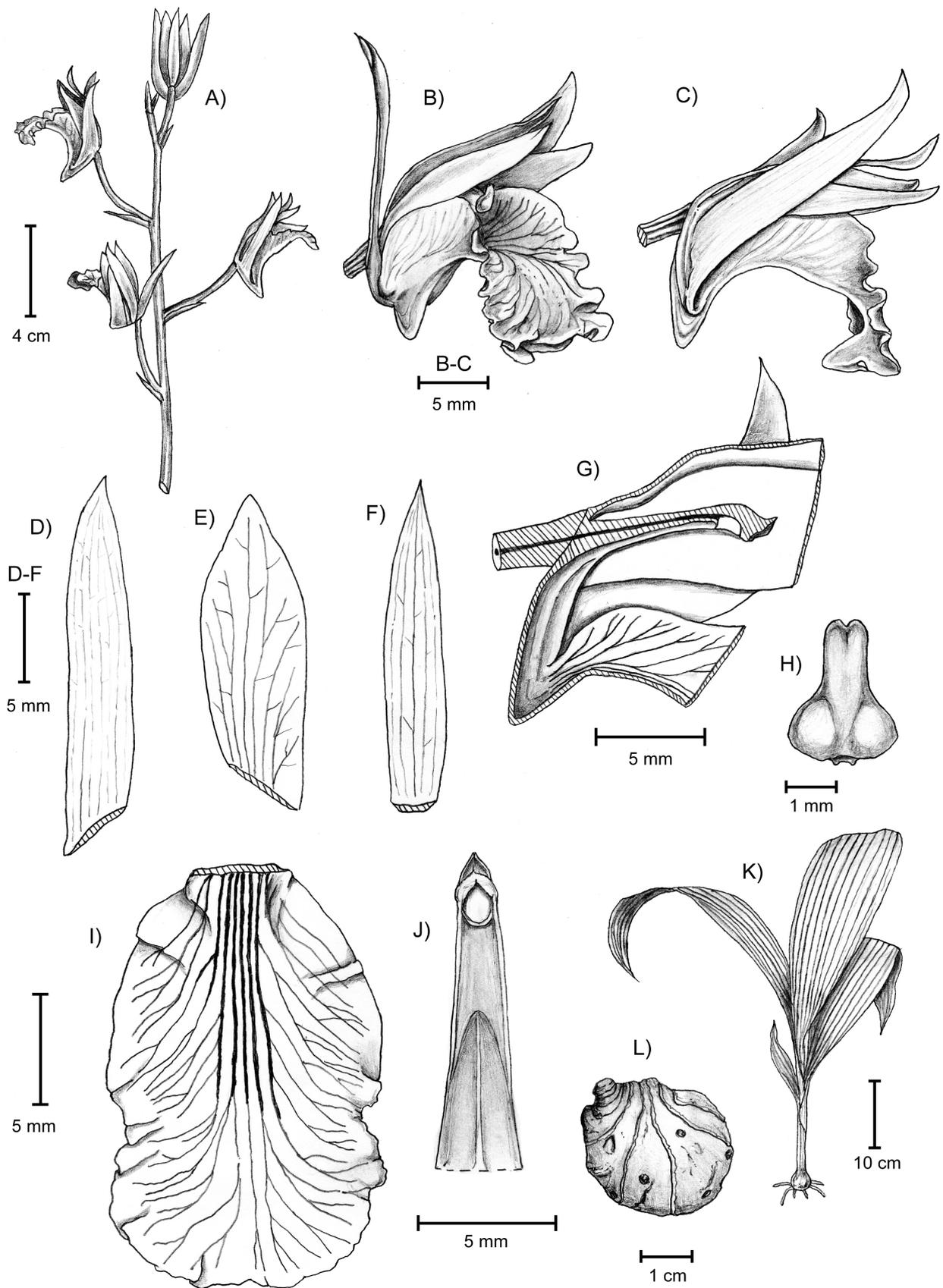


FIGURE 2. *Eulophia lagaligo*. A, inflorescence. B—C, flower (B, oblique view; C, side view). D—F, flattened sepals and petal (D, lateral sepal; E, petal; F, dorsal sepal). G, section through lip and column without anther-cap. H, anther-cap. I, flattened lip. J, column and column-foot without anther-cap (ventral view). K, plant. L, pseudobulb. Drawn from RIO 43 by Destario Metusala.

Distribution:—The distribution of *Eulophia lagaligo* so far appears to be restricted to two islands in Wallacea. During the expedition in 2008, living plants were found in relatively open habitat in Cani Sirenreng, South Sulawesi at 100–600 m. Previous records of this taxon are from Gunung Pasangmalambe, South Sulawesi (Smith 1922) and Timor Island, Lesser Sunda islands (Blume 1859).

Phenology:—Flowering was recorded in September and December in cultivation at Purwodadi Botanic Garden—East Java, 300 m.

Etymology:—The specific epithet refers to *La Galigo*, a 14th century poetic text in the ancient language of the Bugis people from South Sulawesi, which has been recognized by UNESCO as Memory of the World documentary heritage, and is one of the most voluminous literary work in the world.

Discussion:—Living plants collected in 2008 from Cani Sirenreng, South Sulawesi, have been cultivated at Purwodadi Botanic Garden and have flowered every year. Closer observation of their flowers shows that they match Blume’s illustration of *E. bicolor* (Fig. 3) and Smith’s description and illustration of *E. bicolor* var. *celebica*. Blume’s and Smith’s illustrations show two obvious important characters: a spur that is formed by the lip base and the column-foot, and an anther-cap that has a prominent elongated protuberance with slightly retuse apex. These characters clearly distinguish *E. lagaligo* from the superficially similar *E. nuda* (Figs. 4, 5). A Morphological comparison between *E. lagaligo* and *E. nuda* is shown in Table 1. Furthermore, the shape of anther-cap probably deserves more attention in taxonomic studies of *Eulophia*, since it can be a good diagnostic character at the species level.

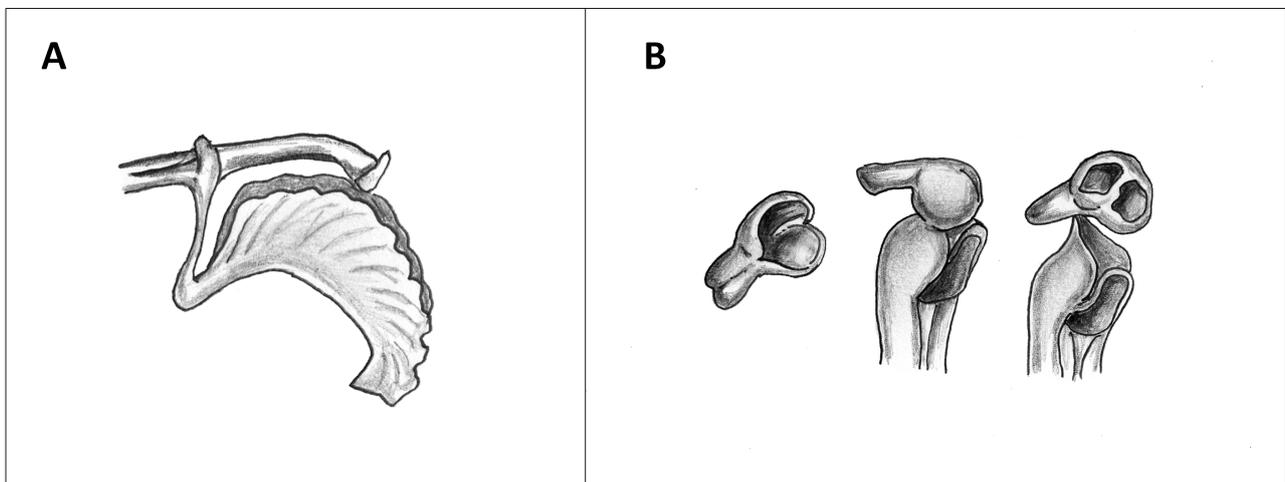


FIGURE 3. *Eulophia bicolor* Blume. Redrawn from Blume’s illustration (Blume 1859). **A**, Spur that is formed by the lip base and the column-foot. **B**, Anther-cap that has an elongated protuberance with slightly retuse apex. Drawn by Destario Metusala.

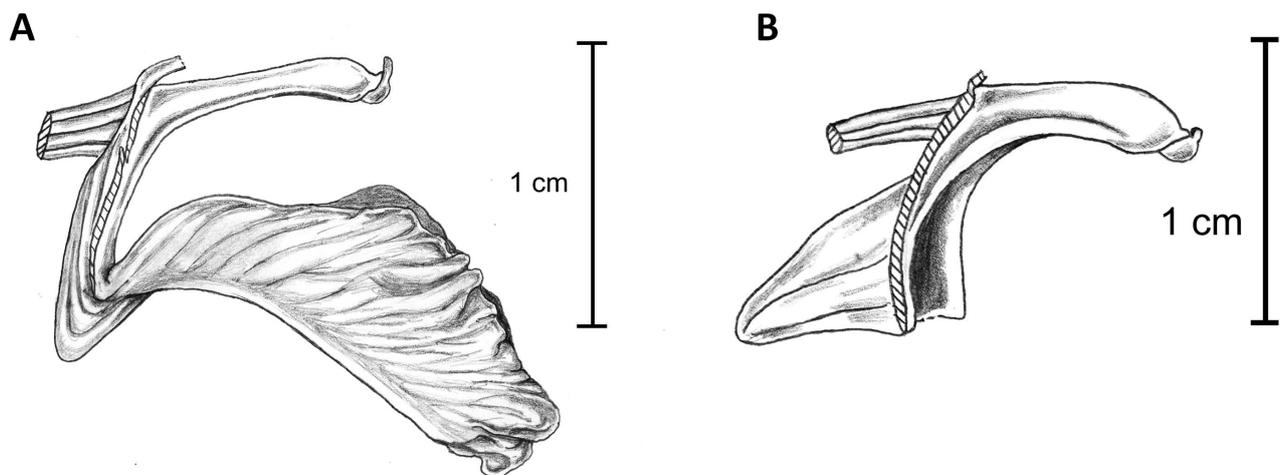


FIGURE 4. **A—B**, flower with lateral sepals and petals removed, showing column and spur from side view (**A**, *Eulophia lagaligo*; **B**, *E. nuda*). *Eulophia nuda* was redrawn from Chan Chew Lun’s illustration of *Eulophia spectabilis* (= *E. nuda*) in *Orchids of Borneo* (Chan *et al.* 1994). Drawn by Destario Metusala.

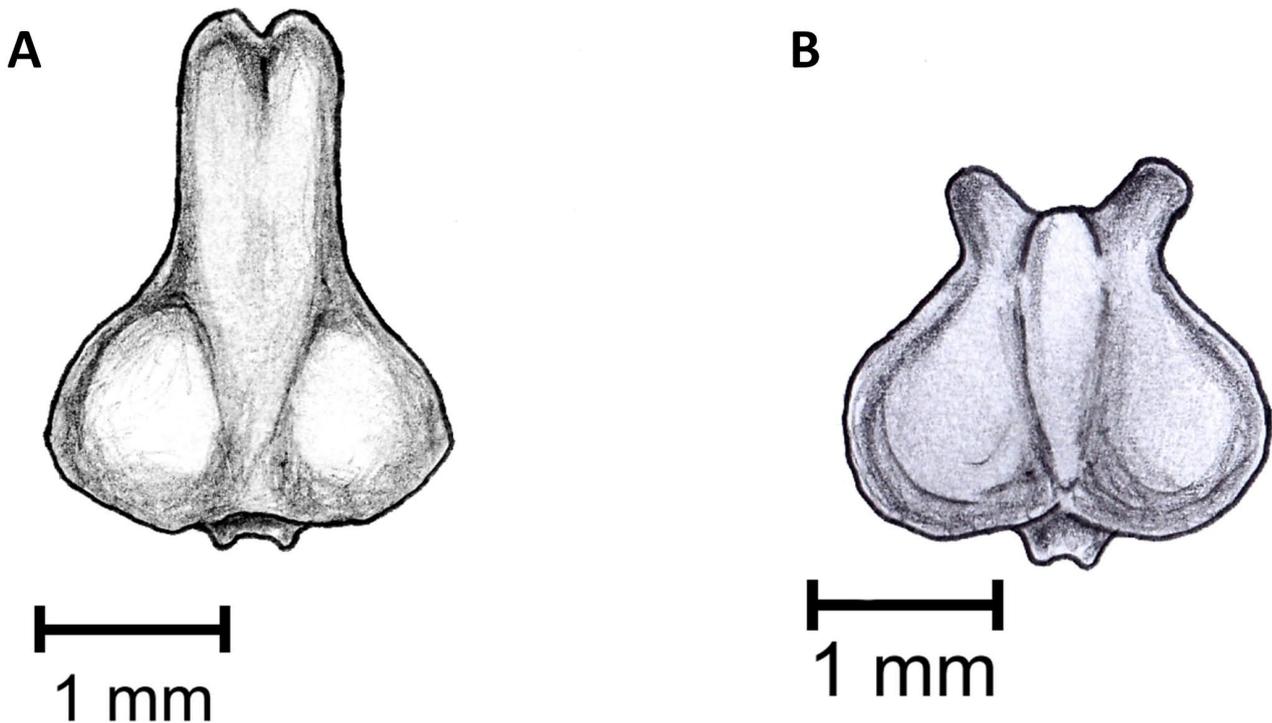


FIGURE 5. A—B, anther cap (A, *Eulophia lagaligo*; B, *E. nuda*). Drawn by Destario Metusala.

TABLE 1. Morphological comparison between *Eulophia lagaligo* and *E. nuda*.

Characters	<i>Eulophia lagaligo</i>	<i>Eulophia nuda</i>
Spur	Base of lip is part in forming a spur, pointing downward	Spur is not part of the lip, but is a conical outgrowth of the column-foot that extends horizontally backward
Column	About 2–2.5 mm wide	About 4–5 mm wide
Anther-cap	Has an elongated horn-like protuberance with slightly retuse apex	Has two short protuberances

Eulophia lagaligo is rather variable in Sulawesi with respect to the shape of the petal apex (obtuse to acute), width of the epichile relative to the hypochile (epichile usually as wide as the hypochile, but sometimes slightly narrower or even wider than the hypochile), lip colour (keel and nerve colour varies from pinkish and red to purple), and shape of the pollinia (subglobose to triangular). Therefore, the diagnostic characters of *E. bicolor* var. *celebica* do not hold and it should not be recognized as taxonomically distinct.

In the same publication as *E. bicolor*, Blume also describe a new species named *E. celebica* based on a specimen collected by E.A. Forsten in Manado, North Sulawesi, Indonesia. This species has also been reduced to the synonymy of *E. nuda* (Govaerts *et al.* 2019). Close examination of the protologue and an image of the holotype show that *E. celebica* can indeed be referred to *E. nuda* rather than to *E. lagaligo*, especially based on the spur (Fig. 6) and anther-cap morphology. A minor difference between *E. celebica* and *E. nuda* may be that *E. celebica* has broader, lanceolate floral bracts whereas *E. nuda* has narrowly linear to linear-lanceolate floral bracts.



FIGURE 6. *Eulophia celebica* Blume (syn. *E. nuda*). Inflorescence, showing the spur that is an outgrowth of the column-foot and is not part of the lip; and also broader lanceolate floral bracts. Drawn by Destario Metusala after the type kept in Leiden (L!, barcode L0063905).

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