



## *Thottea beungongtanoeh* (Aristolochiaceae), a new species from Aceh, northern Sumatra

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**ABSTRACT:** A species new to science, *Thottea beungongtanoeh* Mustaqim (Aristolochiaceae), is described based on a specimen collected from a lowland mixed dipterocarp forest in the eastern part of Aceh Province, the northernmost province in Sumatra. This species differs from all previously described species in having 33-lobed style, the highest count for the genus. Morphological description, distribution, phenology, comparison with the similar species, and the photographs of the living plants are provided.

**KEY WORDS:** Acehnese Language, cauliflory Indonesia, the lowland mixed dipterocarp forest, *Thottea grandiflora*, West Malesia.

### INTRODUCTION

*Thottea* Rottb. (1783) (Aristolochiaceae) is an Indo-Malayan genus with 45 species known to science (Hou, 1984; Yao, 2013; Mustaqim and Putra, 2020; Le *et al.*, 2021; POWO, 2022). One of its centres of distribution is in Sumatra represented by 10 species (Hou, 1984; Mustaqim and Putra, 2020). On this island, the taxonomic study of the genus is not yet complete. A few species are poorly known due to its limited number of specimens like *T. beccarii* Ding Hou (1981) and *T. tapanuliensis* Mustaqim (Mustaqim and Putra, 2020) or described based on incomplete materials like *T. straatmanii* Ding Hou (1984).

During recent botanical surveys in the lowland mixed dipterocarp forests in eastern Aceh Province in 2022, one specimen of *Thottea* was collected from the forest floor of undulating terrain. It is unique among *Thottea* in having the 33-lobed style. Literature reviews (Hou, 1981, 1984; Phuphathanaphong, 1985; Kumar *et al.*, 2000; Huang *et al.*, 2003; Murugan, 2011; Yao, 2013, 2015; Sunil and Kumar, 2014; Mustaqim and Putra, 2020; Le *et al.*, 2021) and examination of the types of other species as well as other specimens in various herbaria either directly or as images from ANDA, BO, FIPIA, and L (abbreviation follow Thiers, 2022), we concluded that the specimen belongs to a species new to science, and here we described it below. This finding increases the number of *Thottea* in Sumatra to 11.

### MATERIAL AND METHODS

The plant specimen examined in this study was collected during fieldwork trips in June 2022. The flowering materials were preserved in spirit while the other parts were dried for herbarium specimens. The description was prepared using the plant glossaries in Beentje (2016) and Hou (1984). An assessment of

conservation status was performed using IUCN (2012) and IUCN Standards and Petitions Subcommittee (2022). Distribution map was created with SimpleMapp (Shorthouse, 2010).

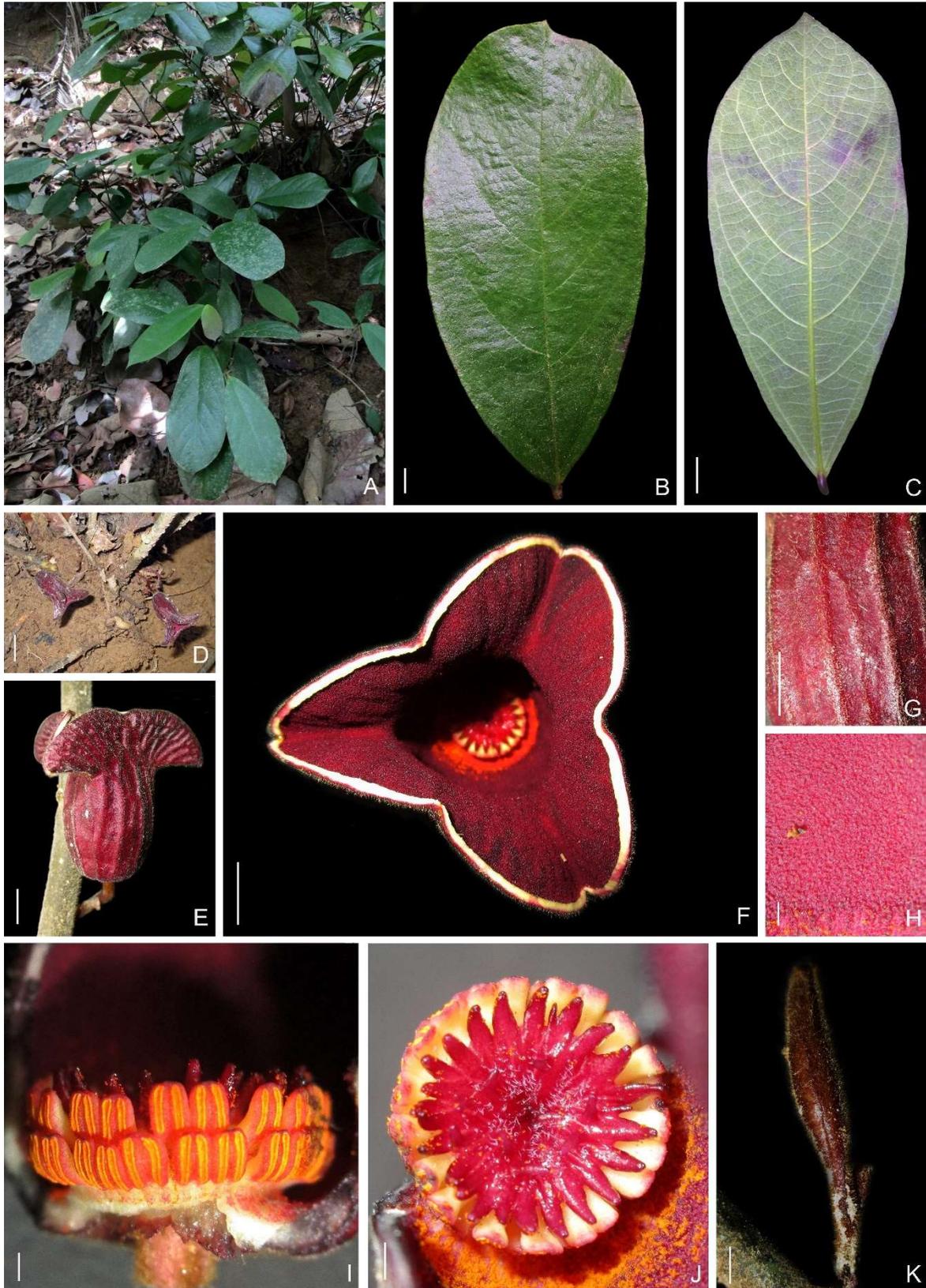
### TAXONOMIC TREATMENT

*Thottea beungongtanoeh* Mustaqim, *sp. nov.* **Fig. 1.**

**Type:** INDONESIA. Aceh Province, Aceh Timur Regency, Bireum Bayeun Subdistrict, Alue Nyamuk Village, 4°31'18.9"N 97°51'07.5"E, 80 m asl, 22 June 2022, Mustaqim & Arico RSG8 (Holotype: ANDA).

**Diagnosis:** *Thottea beungongtanoeh* can be recognized from other species in the genus by the 33-lobed style. It is similar to *T. grandiflora* Rottb., besides having more numerous style lobes (33 vs 20), this species differs in having inflorescence close to ground level (vs not from the ground level) and tubular perianth tube (vs campanulate).

Perennial **subshrubs**, to c. 1.5 m tall. Stem ascending to erect, with horizontal apex, scarcely branched, terete, pubescent; node swollen, constricted above nodes. **Leaves** alternate, distichous; lamina chartaceous; obovate, the lower 1–2 usually elliptic or narrowly elliptic and distinctly smaller, 15.2–21.5 × 6.3–10.6 cm, base cuneate, apex shortly acuminate, margin entire, adaxially green, scabrous, abaxially pale green, patent-pubescent, midvein slightly prominent adaxially, distinctly raised abaxially, lateral veins 7–9 on each side of the midrib; petioles 4–6 mm long, densely covered with patent hairs. **Inflorescences** 1–2 arising from near the base of the stem, close or at the same with ground level, solitary to 3-flowered; peduncle c. 2 cm long, patent-pubescent, rachis c. 1.5 cm long, patently pubescent; bracts beef red, elliptic, 5–7 × 3–3.5 mm, apex obtuse, adaxially patently pubescent, abaxially glabrous, persistent after anthesis. **Pedicels and ovary** c. 1.7 cm long, longitudinally ribbed, patently pubescent. **Perianth** burgundy, tube ellipsoid,



**Fig. 1.** *Thottea beungongtanoeh* Mustaqim. **A.** Living plant. **B.** Leaf, adaxial side. **C.** Leaf, abaxial side. **D.** Inflorescences. **E.** Flower, lateral view. **F.** Flower, top view. **G.** Perianth, outer surface. **H.** Perianth, inner surface. **I.** Stamens. **J.** Style and stigma. **K.** Immature capsule. Scale bars: B–C, F = 1 cm, D–E = 1 cm, G = 5 mm, H–J = 1 mm, K = 5 mm. Photographed by Wendy A. Mustaqim



Fig. 2. Geographical distribution of *Thottea beungontanoeh* Mustaqim (●).

2.5–2.7 × 1.5 cm, base shallowly cordate; verrucose and glabrous inside; longitudinal veins and veinlets prominent outside, patently pubescent; perianth lobes shallow, broadly half-circular, 0.6–0.8 × 3.8–4.2 cm, apex emarginate, verrucose and glabrous inside, outer surfaces with prominent veins and veinlets, patently pubescent. **Stamens** 46 in two rows, the lower whorl 27, the upper whorl 19, filaments creamy white, c. 1 mm long, glabrous, connective creamy white, apex rounded, tip reddish, anthers extrorse, yellow, narrowly oblong, lower whorls c. 2 mm long, upper whorls 1.8 mm long. **Style** column cylindric, c. 2.5 mm long, glabrous except the pubescent apex, lobes 33, 8 facing upward, the rest radiate, positioned c. 0.75 mm higher than stamens. **Capsules** (immature) fusiform, longitudinally ribbed, reddish brown, covered in coarse hairs.

**Phenology:** Flowering and fruiting in June.

**Distribution and Ecology:** Indonesia, endemic to northern Sumatra (Aceh Province), only known from the type locality (Fig. 2). Found in the lowland mixed dipterocarp forests on undulating terrain at the elevation around 60–80 m asl, on clay mixed with humus soils.

**Etymology:** The specific epithet is derived from the Acehnese Language, *beungong tanoeh*, which means ‘flower of the ground’, indicating the position of the flowers.

**Preliminary conservation status assessment:** Critically Endangered. Only known from the type locality, all individuals (around 15) were found in lowland and unprotected forests threatened by conversion into agricultural fields and plantations. Although forests

around the type locality, with very similar landscape and vegetation, is poorly explored, we considered that the species should be placed as being threatened. Following IUCN (2012) and IUCN Standards and Petitions Committee (2022), this species is best tentatively assigned as Critically Endangered as having AOO <10 km<sup>2</sup>, known only from one location, and available habitat is declining and mature individuals less than 50 (CR B2ab(iii), D).

**Notes:** The number of stamens and style lobes of this species is among the highest within the genus. The number of stamens, i.e. 46, so far only known from *T. grandiflora* Rott. (1783), a species known from Myanmar to Peninsular Malaysia and Singapore, characterized by having larger campanulate flowers (Hou, 1984). Furthermore, the number of style lobes with 33 is by far the most numerous in the genus. The highest number of style lobes in this genus had been known to be 20 in *T. grandiflora* and *T. macrophylla* Becc. (Hou, 1984; Huang *et al.*, 2003; Yao *et al.*, 2015).

To facilitate identification, an amendment to the couplet from the recently published key for the species of *Thottea* in Sumatra (Mustaqim and Putra, 2020) is provided here:

- 4a. Perianth obscurely lobed or lobed to less than 1/3 halfway down . 4'  
 4b. Perianth distinctly lobed, divided halfway or deeper ..... 5  
 4'a. Style lobes 33; perianth distinctly lobed ..... *T. beungontanoeh*  
 4'b. Style lobes c. 10; perianth obscurely lobed ..... *T. beccarii*

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