

# A new species of *Brachystelma* (Apocynaceae: Asclepiadoideae) from Karnataka, India

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**Abstract:** A new species of *Brachystelma* R.Br., *B. tumakurense* (Apocynaceae: Asclepiadoideae – Ceropegieae), is described and illustrated from Tumakuru district of Karnataka, India. It resembles *B. bourneae* Gamble, *B. maculatum* Hook.f. and *B. rangacharii* Gamble, but differs in corolla colour, corona structure and closing of the staminal corona over the gynostegium.

**Keywords:** *Brachystelma tumakurense*, Conservation, Synanthous species, Taxonomy.

## Introduction

*Brachystelma* R.Br., the second largest genus in the tribe *Ceropegieae* with over 116 species is distributed in the Old-World tropics (Mabberley, 2017). They are slender stemmed with a brilliant display of colours in their flowers, especially in their corolla and coronal structures. Bruyns *et al.* (2017) argued for the merger of genus *Brachystelma* with *Ceropegia* L. based on molecular phylogenetic studies. Surveswaran *et al.* (2021) preferred to retain it as a separate entity from that of *Ceropegia* as both the genera exhibit distinctive floral morphologies. Pullaiah *et al.* (2019) have accounted for 33 species in *Brachystelma* in India, while a total of 38 taxa including six varieties were enumerated in a recent work (Prasad & Venu, 2020). They are mainly distributed in Peninsular India in dry hill ranges. A few of them have been represented by their types

alone (Kambale *et al.*, 2014; Venu & Prasad, 2015; Prasad & Venu, 2020). There are seven species from Karnataka, *B. ciliatum* Arekal & T.M.Ramakrishna, *B. edulis* Collett & Hemsl., *B. elenaduense* Sathyan., *B. kolarensis* Arekal & T.M.Ramakrishna, *B. maculatum* Hook.f., *B. shrirangii* Kambale, Gholave & Sardesai and *B. volubile* Hook.f. All of them exhibit erect stems and are non-climbing in nature.

During explorations in Devarayanadurga (Tumakuru district, Karnataka) material of *Brachystelma* was collected. It was found in flowering while bearing leaves (a synanthous species) and primarily comparable with *B. bourneae* Gamble, *B. maculatum* Hook.f. and *B. rangacharii* Gamble, but is distinctive in certain features and hence described here as a new species.

***Brachystelma tumakurense*** Gundappa, Sringesw., Vishwan. & Venu, **sp. nov.** **Figs. 1 & 2**

Similar to *B. bourneae*, *B. maculatum* and *B. rangacharii* in having oblong or fusiform tuber, erect stem, linear leaves, condensed cymes with 3–6 flowers, but differs by greenish corolla lobes with maroon spots and maroon staminal corona which closes over the gynostegium *vs.* white corolla lobes with dark green spots and inflexed purple staminal corona in *B. bourneae*, lemon yellow corolla lobes with black spots and dark brown staminal corona adpressed to the back of the anthers in *B. maculatum* and pale white corolla lobes with white villous within and undulating staminal corona in *B. rangacharii*.

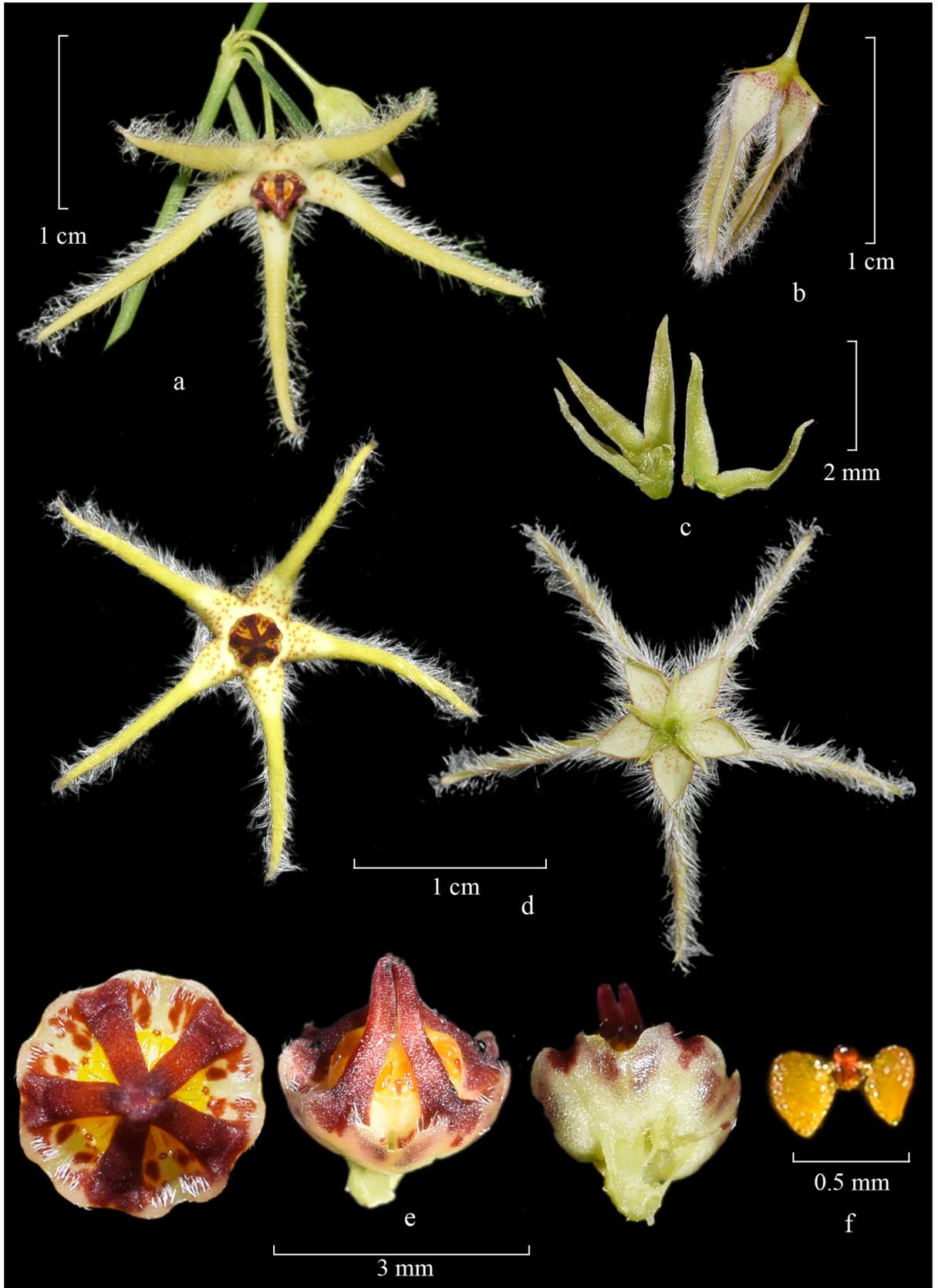


**Fig. 1.** *Brachystelma tumakurensis* Gundappa, Sringsw., Vishwan. & Venu sp. nov. **a.** Habit; **b.** Tuber; **c.** Part of flowering stem; **d.** Map showing collection locality (map from Survey of India; photos by A.N. Sringswara).

*Type:* INDIA, **Karnataka**, Tumakuru district, Devarayanadurga, near Namada chilume, 700 m, 30.07.2017, *B.V. Gundappa & V. Bhaskar* 2546 (holo UASB!; iso BSI!).

Perennial tuberous herb, to 1 m high. Tuber oblong or fusiform, *c.* 7 cm long. Stem erect but weakly bent, usually un-branched, rarely branches from nodes below browsed ends, terete, faintly furrowed and ridged, glabrous/minutely puberulous; internodes 6–7 cm long. Leaves opposite, narrow,

linear, 13–14 × 0.1–0.15 cm, unicostate, distantly setulose, glabrescent or minutely puberulous, recurved all along and appear cylindrical; petiole *c.* 3 mm long. Flowers 3–6, axillary, in umbellate cymes, campanulate, drooping, almost in each node from middle of the stem and upwards; peduncle 3–5 mm long, glabrous; bracts and bracteoles subulate, glabrous, 3–4 mm long. Mature flower buds 5–6 mm long, attenuate towards tip. Pedicels filiform, thread-like, 5–6 mm long, pale brown.



**Fig. 2.** *Brachystelma tumakurense* Gundappa, Sringsw., Vishwan. & Venu. **a.** Inflorescence part of shoot; **b.** Mature bud; **c.** Calyx; **d.** Flower – upper and lower view; **e.** Corona in different views; **f.** Pollinarium (from *B.V. Gundappa & V. Bhaskar* 2546; photos by A.N. Sringswara).

Calyx 5-lobed, lobes linear-lanceolate or subulate, 2.5–3 × 0.3 mm, greenish below, maroon above. Corolla 9–11 mm long, 1.5–2 cm across (when open); corolla tube hardly visible, < 1 mm long, greenish with maroon spots outside; lobes broad at base, speckled with maroon spots, linear, 9–10 × 0.8–0.9 mm, light green devoid of spots, densely white villous above all along the margins, free, excurved even at bud stage. Corona cupular; interstaminal corona lobes 5, pale yellow with maroon patches, inner margins hairy, each lobe bilobed (10-lobuled); lobules orbicular, 0.45–0.5 mm long, obtuse; staminal corona lobes 5, broadly linear, 1.35–1.5 × 0.45–0.5 mm, maroon, glabrous, joining loosely and conically at apex and above gynostegium. Gynostegium pentagonal, c. 1.37 mm across. Pollinaria ovoid, 0.5 × 0.45 mm, yellow, basally attached by shallow hyaline caudicles. Ovary c. 2 mm long; style short. Follicles paired, frequently one of them suppressed, cylindrical, c. 6 cm long, tapering towards the apex, divergent at maturity.

*Flowering & fruiting:* Flowering from June to July and fruiting from August to September.

*Habitat:* About 16–18 individuals in one population were found growing amongst grasses, mainly *Cymbopogon* spp., in a southern moist mixed forest. The plants were distinctly visible since grasses had not attained their usual height owing to low rainfall in the year 2017. In fact, a few plants were found lacking the upper portions most likely due to browsing by wild animals. Usually, the browsed plants branch out from the node below and flower.

*Distribution:* Known only from the type locality, Devarayanadurga, Tumakuru district, Karnataka, India.

*Etymology:* The species is named after the Tumakuru district in Karnataka from where its type material was collected.

*Specimen examined:* INDIA, **Karnataka**, Tumakuru district, Devarayanadurga, near Namada chilume,

700 m, 02.07.2019, B.V. Gundappa, A.N. Sringeswara & Sahana BG 1432 (UASB).

*Notes:* The authors excluded species with erect habit that have patent flowers for comparison such as *B. pullaiahii* B.R.P.Rao, K.Prasad, Sadas., S.K.Basha, M.V.S.Babu & Prasanna and *B. penchalakonense* Rasingam, Chorghe, Meve, Sankara Rao & Prasanna since these differ in corona colour and lobation. The new species resembles in habit closest *B. rangacharii*, *B. bourneae* and *B. maculatum*, specifically in having erect stems, narrow linear leaves and axillary condensed cymes with 3–6 flowers and with fully patent and villous margined corolla lobes. However, these species differ in the colour of corolla and corona structure. Though some similarities exist between *B. nallamalayanum* K.Prasad & B.R.P.Rao, and the new species in having terete, weak, erect stems often bent due to the weight of leaves and flowers, but differs from the former that has pinkish hairy corolla lobes and a black corona with triangular lobules. Principally, none of these species are identical to the new material described here in staminal corona, which closes in over the gynostegium and quite above.

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