

## EXTENDED DISTRIBUTION OF *CODONOPSIS TUBULOSA* (CAMPANULACEAE) IN INDIA

A. A. MAO AND H.A. BARBHUTYA

*Botanical Survey of India, Eastern Regional Centre, Shillong-793003*  
*Meghalaya, India*

The genus *Codonopsis* Wall. comprises about 55 species mainly distributed in Himalayas, Central, East and South Asia. (Hong & al., 2011; Dash & Mao, 2011). In India the genus is represented by 14 species (3 endemic) mainly confined to northern and north-eastern part of India (Haridasan & Mukherjee, 1996; Dash & Mao, 2011), out of which North-eastern India alone contributes 9 species.

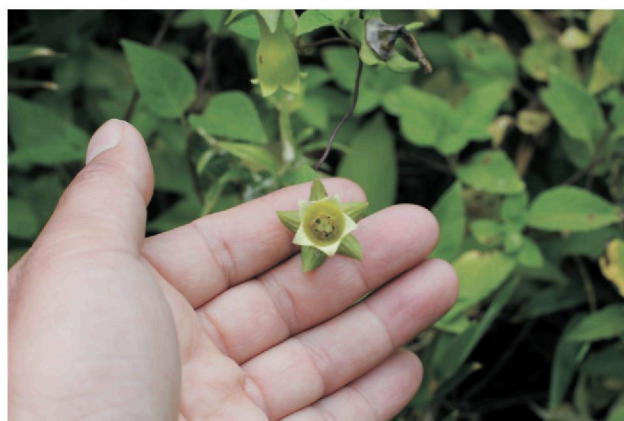
*Codonopsis tubulosa* was described for the first time by Komarov (1908) on the basis of collection made by Augustine Henry from Yunnan, China. The species was so far known from Guizhou, Sichuan and Yunnan of China and some parts of northern Myanmar (Hong & al., 2011). Recently, while undertaking a field exploration in Dzukou Valley, at the border of Manipur and Nagaland in September 2013, the first author spotted a malodorous twining herb with greenish-yellow flowers. Subsequent study of the specimens and consultation of literature (Clarke, 1881; Shen & Hong, 1983; Haridasan & Mukherjee, 1996; Clemant, 2001; Hong & al., 2011; Dash & Mao, 2011) revealed the identity of the plant as *Codonopsis tubulosa* which form its first authentic report from India and also shows an extended distribution of ca. 100 km westward from its type locality. A description of the species along with photographs, line drawings and distribution map are provided here.

***Codonopsis tubulosa* Kom., Trudy Imp. S.-Peterburgsk. Bot. Sada 29(1): 112. 1908; D. Hong & al., Fl. China 19: 518. 2011. *Codonopsis pilosa* Chipp, J. Linn. Soc., Bot. 38(267): 388. 1908. *Codonopsis accrescenticalyx* H. Lév. Cat. Pl. Yun-Nan 25. 1915. (Plate - 1-2, Figs. 1)**

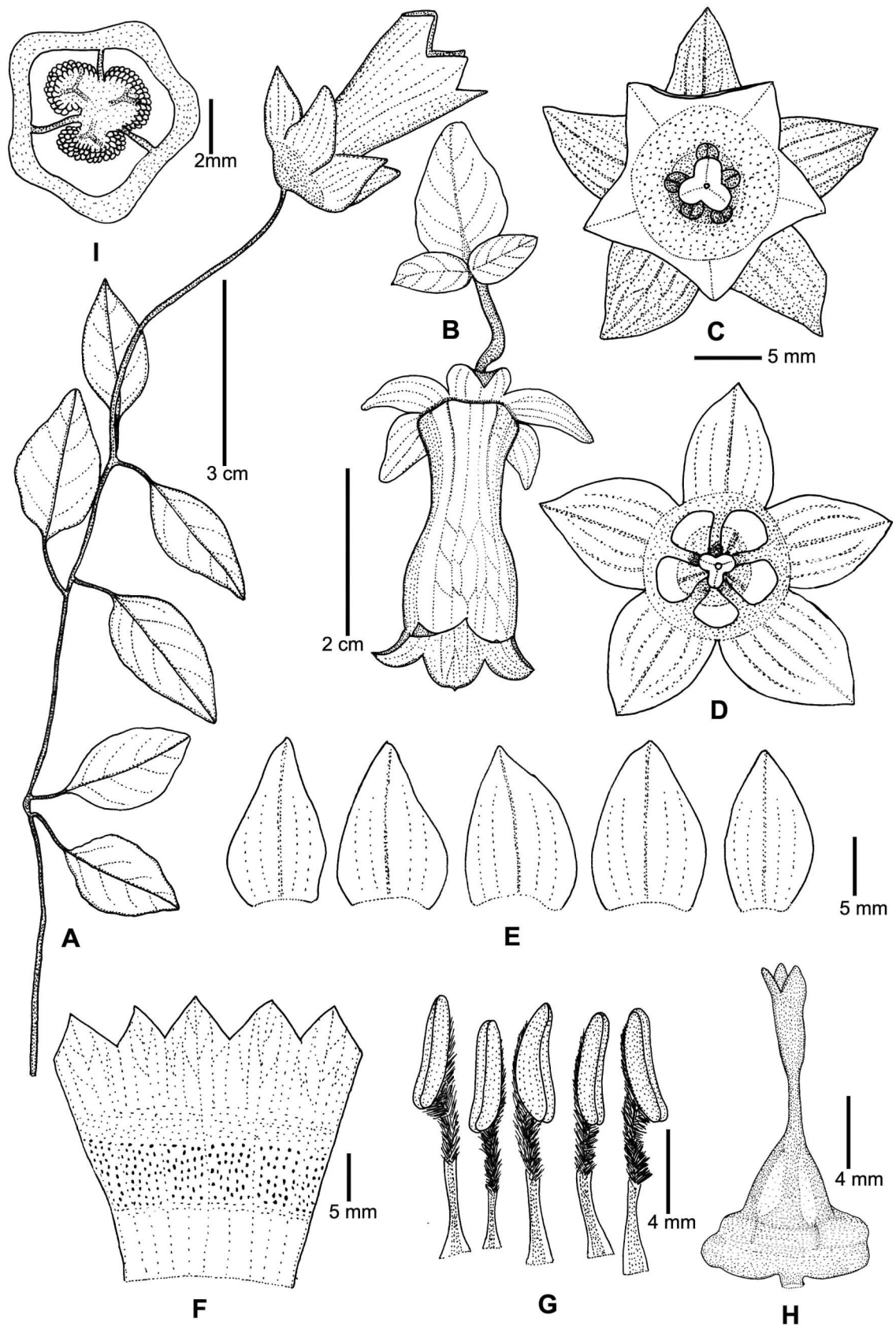
Herbaceous twinner; stem 3–4 m long, 2–2.5 mm in diam., branches glabrous or subglabrous, usually terminates with a flower. Leaves opposite sub-opposite towards the apex, ovate or ovate-lanceolate, 1.5–3.5 × 0.6–1.5 cm, base cuneate or rounded, margin sub-entire or shallowly crenate, apex sub-acute or obtuse petiole 2–13 mm long, sub-glabrous; glabrous or sparsely hairy above, hispidulous beneath. Flower solitary, terminal; pedicels 2–12 cm, minutely puberulous. Calyx tube adnate to ovary, hemispheric, subglabrous, lobes broadly ovate 1.5–2 × 0.7–1 cm, glabrous beneath, ciliate at the margins, sparsely puberulous on outer. Corolla greenish-yellow, tubular, 3–3.5 × 0.8–1.2 cm, glabrous, punctate at the inner side; lobes deltoid, 5–6 mm long, recurved, acute at apex. Stamens 5; filaments 0.6–1 cm long, dilated at base *c.* 1.5 mm wide, densely ciliate at the upper half, anthers oblong, 5–5.5 × 1.2–1.5 mm. Ovary 1.8–2.0 cm long; style 7–8 mm long, sparsely ciliate, dilated at



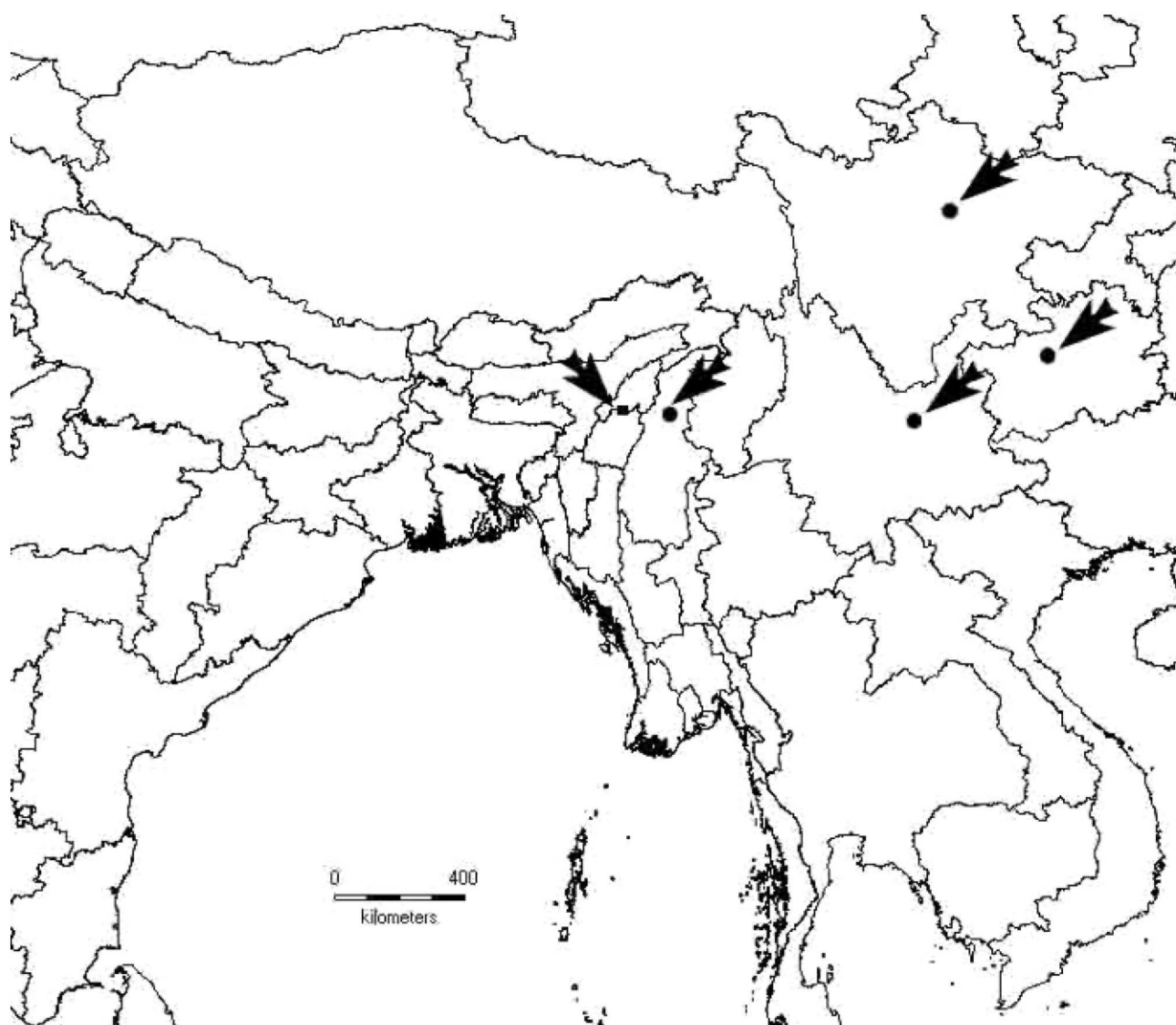
**Plate 1:** *Codonopsis tubulosa* Kom. Habit



**Plate 2:** *Codonopsis tubulosa* Kom. Anterior view of flower



**Fig. 1:** *Codonopsis tubulosa* Kom. **A.** Habit; **B.** Side view of flower; **C.** Anterior view of flower; **D.** Calyx with androecium and gynoecium; **E.** Sepals; **F.** Opened corolla tube; **G.** Stamens; **H.** Gynoecium.



Distribution map of *Codonopsis tubulosa* Kom. Square (□) indicates the present collection site, whereas circle (●) indicates the sites from where it was reported to occur earlier.

base, c. 4.5 mm wide, 5-ridged; stigma 5–6 mm long, sparsely-ciliate, 3-lobed; lobes ovate c. 1.5 mm long. ovary-disc pentagonal, 3-chambered, 6–8 mm in diam., placentation axile;

*Fl. & Fr.*: July-October.

*Specimen examined*: Manipur-Nagaland border, Dzukou Valley at an elevation of 2200-2600m, 3<sup>rd</sup> Sep. 2013, A.A. Mao 110431 (ASSAM).

*Distribution*: India (Manipur-Nagaland present record), China, Myanmar.

*Notes*: *C. tubulosa* shows similarity with *C. deltoidea* Chipp in sharing twining stem, leafy throughout, having alternate or opposite leaves, tubular corolla, ovoid fruit with elongated dehiscent apex and presence of reticulate seeds. However, both the species are distinct; former can be separated from the latter in having shallowly incised subentire leaves with cuneate to rounded base. Whereas, in the latter leaves are deeply incised, serrate and leaf base cordate to broadly cuneate (Hong & al., 2011).

#### ACKNOWLEDGMENTS

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