



NOTE

Discovery of *Cyrtosia nana* (Orchidaceae) in India

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(Manuscript received 25 October 2012; accepted 11 July 2013)

ABSTRACT: *Cyrtosia nana* (Rolfe ex Downie) Garay, a rare mycotrophic orchid is recorded from Manipur State for the first time in India. Detailed taxonomic description, photographs and relevant notes are provided.

KEY WORDS: *Cyrtosia nana*, India, Orchidaceae.

INTRODUCTION

Cyrtosia Blume (Orchidaceae) is a small genus of mycotrophic orchids represented by 10 species distributed in China, Japan, Taiwan, Thailand and Vietnam (Averyanov, 2011). It flourishes well in deep interior shaded forest rich in dead organic matter at an elevation between 700–1500 m. Like most of the mycotrophic orchids, they are small in size with restricted population, lack chlorophyll and entirely depend upon mycorrhizal fungus in their roots for supply of nourishment and germination of seeds (Das and Khumbongmayum, 2006). The genus is closely related to *Galeola* Lour. and different taxonomic treatments are suggested by many authors. Seidenfaden and Wood (1992) treated the genus as a member of subtribe Vanillinae based on its fleshy and indehiscent fruit, while Dressler (1993) placed it in subtribe Galeolinae due to its saprophytic habit and absence of hairy appendages on lips. Averyanov (2011) described six species of *Cyrtosia* in “Orchids of Vietnam” under the tribe Vanilleae, viz., *C. integra* (Rolfe ex Downie) Garay, *C. nana* Rolfe ex Downie, *C. javanica* Blume, *C. faberi* (Rolfe) Aver., *C. lindleyana* Hook. f. Thomson and *C. falconeri* (Hook.f.) Aver. However, Chen and Cribb (2009 a, b) treated the latter two species (*C. lindleyana* and *C. falconeri*) as *Galeola lindleyana* (Hook. f. & Thomson) Rchb. f. and *Galeola falconeri* Hook. f., which is again approved and authenticated by The Plant List (2010). Despite the differences, morphological and molecular evidences supported that *Cyrtosia* and *Galeola* are two separate entities (Cameron and Chase, 2000).

During a recent visit to Wainem Forest, Senapati District, Manipur State (India), we came across an interesting specimen growing along the slope of Wainem Hill. The orientation of several bright red

berries along delicate stem in a very unique way attracted our attention. On critical examination, the specimen was identified as a mycotrophic orchid—*Cyrtosia nana* (Rolfe ex Downie) Garay, a species not known earlier within the Indian flora. Hence, it is recorded here for the first time from India. Detailed description, photographs and key relevant identifying notes between *Cyrtosia* Blume and *Galeola* Lour. as well as the differences between *C. nana* and *C. javanica* are also incorporated.

TAXONOMIC TREATMENTS

Cyrtosia nana (Rolfe ex Downie) Garay, Bot. Mus. Leafl. 30:233. 1986. Fig. 1

Terrestrial leafless herbs, mycotrophic, achlorophyllous. Rhizome fleshy, woody at maturity and slender. Roots tuber-like, arranged as fascicles, clavate, 5–11 cm long, 0.5–2 cm in diameter, 20–30 in number, older tuber reddish, younger pale yellowish, secretes transparent exudates on injury. Stem upto 20 cm tall, erect, fleshy, simple or branch, pinkish to yellowish, lanceolate scales at nodes, internodes between 2–3 cm at base, 1–1.5 cm at apex. Inflorescence raceme or panicle, terminal or lateral, several or many flowered, 9–15 cm long. Floral bracts persistent, 0.2 × 0.3 cm, margin entire, apex acuminate. Pedicel 0.4–0.7 cm in length, flower pale yellow, sub-campanulate, semi-closed and hardly opening. Sepals 3, dorsal and lateral sepals equal in size, 1.5 × 0.5 cm, elliptic, mealy puberulent on abaxial side, concave, entire margin, apex acute. Petals 3, much smaller than sepals, 1.2 × 0.3 cm, lip with orange red stripes, cup-shaped, concave, unlobed, spurless, slightly pungent, embracing column at base, apex margin undulate, white ciliate sparsely distributed at apex, disk with longitudinal ridge.

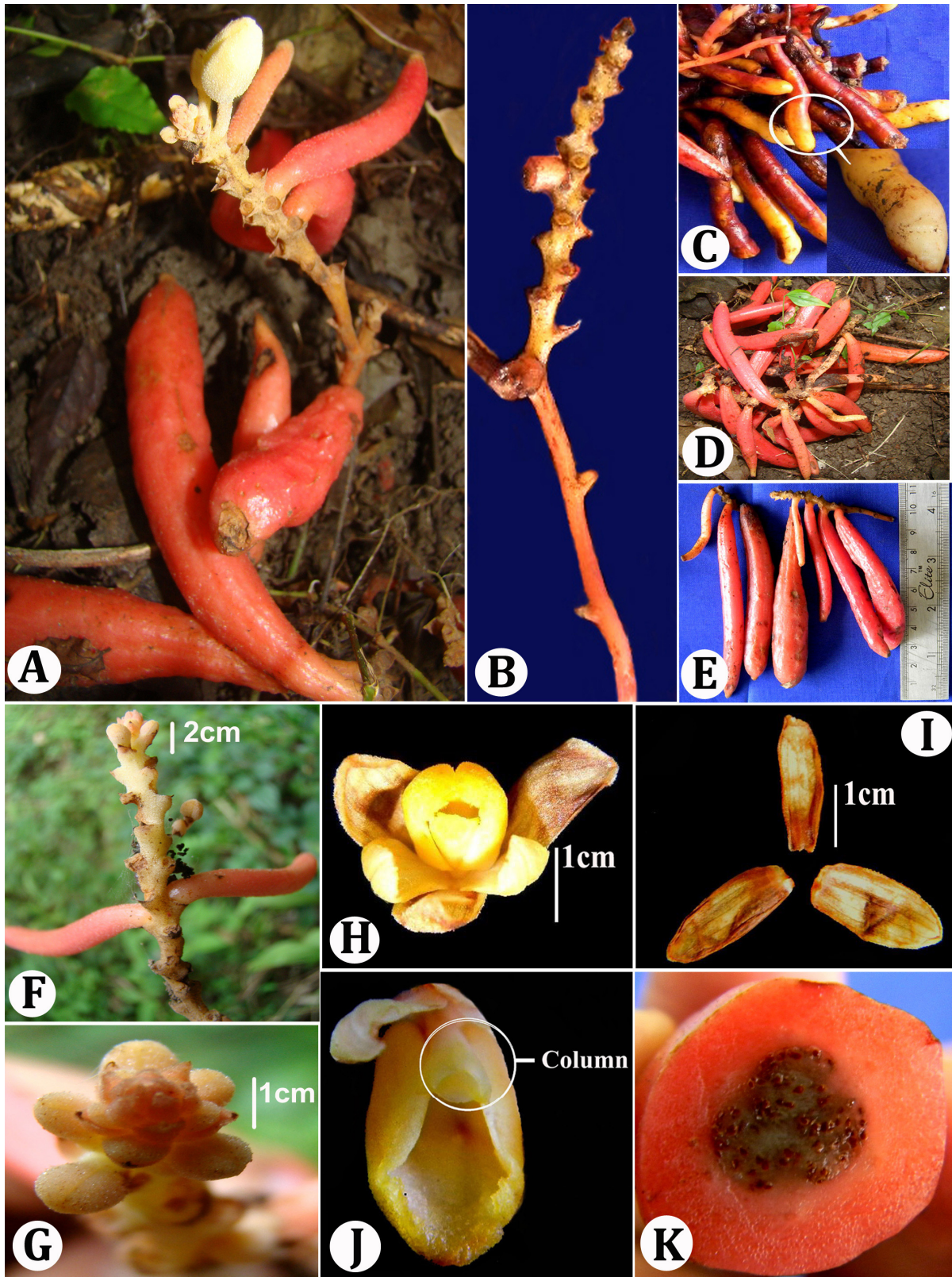


Fig.1. *Cyrtosia nana*: A: Habit. B: Stem with persistent bracts. C: Clavate tuber-like roots. D: Berries. E: Different sizes of berries. F: Development of young fruits. G: Flowering buds. H: Flower. I: Sepals. J: Labellum with column. K: Section of fruit with embedded seeds.

**Table 1. Key differentiating characters between *Cyrtosia* Blume and *Galeola* Lour.**

Characters	<i>Galeola</i> Lour.	<i>Cyrtosia</i> Blume
Stem	Erect or scrambling vines	Erect
Nodes	Presence of aerial roots	No aerial roots
Flower	Fully open	Not fully open, sepals and petals connivent
Fruit	Dry capsule, dehiscent	Fleshy berry, indehiscence
Seed	Prominent broad wing	Narrow or no wing
Distribution	Mainly tropical Asia, South China, Japan, New Guinea, Madagascar	Tropical Asia to East Asia

Column, 0.6–0.7 cm, footless, curved, tapering at base, conspicuous wing absent, anther terminal, pollinia 2, without caudicle or viscidium, granular mealy. Fruit berry, reddish-pink, fleshy, oblong elliptic, cylindrical, indehiscent, largest one with 1.8 cm in diameter, odour unpleasant. Seeds with stout testa, average size, 40 × 35 µm, numerous, conspicuous wing absent, embryo undifferentiated.

Flowering: April–July. Fruiting: May–September.

Habitat: Tropical to sub-tropical forest soil rich in humus.

Conservation status according to IUCN criteria: VU (Averyanov and Averyanova, 2005; Averyanov, 2011).

Specimen examined: **INDIA** : Manipur, Wainem Reserve Forest Area, Senapati District, 24°41'42.3"N, 93°45'28.3"E, 1204 m, 21.09.2012, *P. K. Singh* 000816 (Man. Univ. Mus. Plants).

Relevant notes: *Cyrtosia* Blume and *Galeola* Lour., resembles in having yellow or reddish brown tinged flowers, tuberous rhizome, persistent floral bracts and presence of scales at nodes. However, it can be easily differentiated based on nature of stem, sepal-petal orientation, fruits and seeds (Table 1). *C. javanica* which is closely related to *C. nana* has been recorded from Arunachal Pradesh, India (Jalal and Jayanthi, 2013 ; Rao, 2010). The differentiating characters between the two species are: in *C. javanica*, the inflorescence is terminal and the apex of the column is winged (Chen and Cribb, 2009b) whereas in *C. nana*, the inflorescence is either terminal or lateral, lip is with orange-red longitudinal strips and there is no conspicuous wing at the apex of the column (Chen and Cribb, 2009a).

ACKNOWLEDGEMENTS

The authors are thankful to the Principal Chief Conservation of Forest (PCCF), Forest Department, Government of Manipur State (India) for giving permission to enter the Wainem Reserve Forest, Senapati District (Manipur) and their cooperation during the entire survey. A note of gratitude is due to Dr. Rajib Gogoi, Botanical Survey of India (Arunachal Pradesh Regional Centre), India for his valuable

suggestions. Authors are also indebted to the Head, Department of Life Sciences, Manipur University, Canchipur, Manipur, India for laboratory facilities.

LITERATURE CITED

- Averyanov, L. and A. Averyanova. 2005. Rare species of orchids (Orchidaceae) in the flora of Vietnam. *Turczaninowia* **8**: 39–97.
- Averyanov, L. V. 2011. The orchids of Vietnam. Illustrated survey. Part 3. Subfamily Epidendroideae (primitive tribes – Neottieae, Vanilleae, Gastrodieae, Nervilieae). *Turczaninowia*, 14, 2. P. 15–100. http://ssbg.asu.ru/turcz/turcz_14_2_15-100.pdf
- Cameron, K. M. and M. W. Chase. 2000. Nuclear 18S rDNA sequences of Orchidaceae confirm the subfamilial status and circumscription of Vanilloideae. In: Wilson, K. L. and Morrison, D.A. (eds.) *Monocots, Systematics and Evolution*. CSIRO, Collingwood, Victoria, Australia. 457–464.
- Chen, S.-Q. and P. J. Cribb. 2009 a. *Cyrtosia* Blume. *Flora of China*. **25**: pp. 168–169. Science Press (Beijing) & Missouri Botanical Garden (St. Louis) (China & USA).
- Chen, S.-Q. and P. J. Cribb. 2009 b. *Galeola* Lour. *Flora of China*. **25**: 169–170. Science Press (Beijing) & Missouri Botanical Garden (St. Louis) (China & USA).
- Das, A. K. and A. D. Khumbongmayum. 2006. *Galeola falconeri* Hook. f., an endangered giant saprophytic orchid. *Curr. Sci.* **91**: 871–873.
- Dressler, R. L. 1993. *Phylogeny and Classification of the Orchid Family*. Dioscorides Press, Portland. 1–314.
- Jalal, J. S. and J. Jayanthi. 2013. Current status and distribution of mycoheterotrophic Orchids of India. *Richardiana*. 137–155.
- Rao, A. N. 2010. Orchid Flora of Arunachal Pradesh – an update. *Bulletin of Arunachal Forest Research* **26** (182) : 82–155.
- Seidenfaden, G. and J. J. Wood. 1992. *The Orchids of Peninsular Malaysia and Singapore*. Fredensborg Olsen & Olsen. 1–779.
- The Plant List. 2010. Version 1. Published on the Website: <http://www.theplantlist.org/> [accessed 01 January 2010].



印度發現之矮小肉果蘭（蘭科）

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(收稿日期：2012年10月25日；接受日期：2013年7月11日)

摘要：矮小肉果蘭是一種稀有的腐生蘭類，本文首次報導了矮小肉果蘭在印度的新紀錄分布，發現地點在曼尼普爾邦。本文提供了該種的分類描述、手繪圖、照片和相關紀要以幫助辨別此種。

關鍵詞：矮小肉果蘭、印度、蘭科。