

# NOTES ON THE DISTRIBUTION AND RED LIST ASSESSMENT OF *BULBOPHYLLUM PICTURATUM* (LODD.) RCHB.F. (ORCHIDACEAE-EPIDENDROIDEAE-MALAXIDEAE-DENDROBIINAE), A LESSER KNOWN SPECIES FROM INDIA

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## Abstract

The distribution of *Bulbophyllum picturatum* (Lodd.) Rchb.f. at Manipur has been authenticated with fresh collections from Tamenglong district. The species has been assessed as endangered in Indian perspective following the IUCN guidelines. The threats were identified and conservation measures were proposed for the same.

## Introduction

THE GENUS *Bulbophyllum* Thouars (Orchidaceae-Epidendroideae-Malaxideae-Dendrobiinae) with 2182 species worldwide (POWO, 2024), predominantly inhabits tropical regions, with 135 species documented from India (Singh *et al.*, 2019). *Bulbophyllum picturatum* (Lodd.) Rchb.f., a little-known species under the Section *Cirrhopetalum* Lindl. is characterized by its unique vegetative and floral morphology, where the dorsal sepals have long thread-like, clavate, deciduous setae at apex; lateral sepals are twisted, with upper margin coherent for most portion barring a basal free portion and the anther cap is toothed. The original locality for this species is believed as uncertain as there is no information available on its type specimen apart from its mention as Loddigesmss. Subsequent workers recorded it from Myanmar, Thailand, India (Lushai Hills, Mizoram) and Vietnam (Seidenfaden, 1973). In India, the species has been recorded from Assam, Manipur, Meghalaya, and Mizoram. Its earlier records from Assam by Gogoi (2017) and from Manipur by Singh *et al.* (2019) are not supported with any voucher specimen. There was no recent collection of this species from India apart from Parry 197 (K) from Lushai Hills in Mizoram. Panday *et al.* (2013) have recently rediscovered the species from Phawngpui National Park, Mizoram. Although, the species has been mentioned as distributed in Manipur by Singh *et al.* (2019), it was not included in major literature pertaining to the Orchid Flora of Manipur (Kumar and Kumar, 2005; Mao and Deori, 2018; Rao and Kumar, 2018).

In connection with the taxonomic studies on the genus *Bulbophyllum* under the National Mission on Himalayan

Studies (NMHS) funded project, the authors have conducted a field survey at Tamenglong district of Manipur during February 2021. Plants of *Bulbophyllum picturatum* were observed in flowering condition, growing epiphytic on tree trunks in sub-tropical evergreen forest. A few specimens were collected for detailed morphological characterization and preparation of voucher specimens. This is the first authentic report of *Bulbophyllum picturatum* from Manipur. As the species was poorly known from India with inadequate representative specimens, present collection from Manipur is significant not only for its authentic report from this state, but also for the comprehensive understanding of its morphology which is supplemented with colour photographs of its habitat, vegetative, and floral parts. The threat factors associated with this species and its habitat were evaluated. By applying the IUCN guidelines (IUCN, 2012a, 2012b, 2019), the species has been assessed as endangered in Indian perspective. Habitat monitoring, *ex situ* and *in situ* conservation and cultivation through conventional and artificial propagation has been recommended for this species. A detailed description and photographs of this species have been provided along with brief information on its phenology, habitat, distribution, and Red list assessment for its easy identification and prioritize conservation.

## Taxonomic Description

*Bulbophyllum picturatum* (Lodd.) Rchb.f. in Walpers, Ann. Bot. Syst. 6: 262. 1861; Rchb.f., Trans. Linn. Soc. London 30: 138. 1874; Seidenf., Dansk Bot. Arkiv. 21(1): 123. f.61. 1973; Seidenf., Dansk Bot. Arkiv. 33(3): 167, f.114. 1979; Chen & Vermeulen in Wu *et al.*, Fl.

China 25: 430. 2009; Panday et al., Keanean J. Sci. 2: 53, f. 1-2. 2013; K. Gogoi, Wild Orch. Assam, Pic. Guide: 78. 2017; Sushil Kr. Singh et al., Orch. India Pic. Guide: 105. 2019. *Cirrhopetalum picturatum* Lodd., Edward's Bot. Reg. 26: Misc. 49. 1840; Lindl., Bot. Reg. subT.49. 1843; Hook.f., Fl. Brit. India 5: 774. 1890; C.E.C. Fisch., Rec. Bot. Surv. India 12(2): 136. 1938.

### Type

E Indies, *G. Loddiges* s.n. Herb. Lindl. (K000342326!); Lectotype inadvertently designated by Seidenfaden (Dansk Bot. Arkiv. 21(1): 123. f.61. 1973).

### Description (Fig. 1)

*Plant* epiphytic, 12-16 cm. *Roots* clustered at the base of pseudobulbs. *Rhizome* woody, stout, cylindrical, sheathed. *Pseudobulbs* 3.0-5.0 × 1.5-2.0 cm, ovoid to conical, curved, sheaths withering at maturity, 3-4 cm apart on rhizome. *Leaf* 11.0-16.0 × 2.1-2.5 cm, solitary, oblong-lanceolate, acute, petiolate; *petiole* 2-3 mm long. *Inflorescence* from the base of pseudobulbs; *peduncle* 7-12 cm long, with 2-3 sheaths; sheaths tubular, entire, acute; *rachis* umbellate with 4-5 flowers; *floral bracts* 5.0-6.0 × 1.6-2.0 mm, pale brown, lanceolate, undulate at margin, 3 veined. *Flowers* 3.0-3.5 cm across, resupinate; *sepals* yellowish with purple towards base, *dorsal sepal* with dense purple blotches at base; *petals* and *labellum* purple; *pedicel* plus *ovary* 2-3 cm long. *Dorsal sepal* 4.0-5.0 × 2.0-2.2 mm, ovate, entire, acuminate, with 2-3 mm long, clavate setae at apex, 5 veined. *Lateral sepal* 22-25 × 2.5-3.0 mm, lanceolate, entire, acute, twisted, upper margin coherent for most part barring the free basal portion, sub-acute, 5 veined. *Petals* 3.0-4.5 × 2 mm, ovate, irregularly serrate, acuminate, with deciduous cilia towards apical margin, 3 veined. *Labellum* 5-6 × 2.0-2.1 mm, oblong, entire, obtuse, auriculate at base; auricles erect; middle lobe grooved, deflexed, not close to the column, base weakly attached with column-foot. *Column* 3-4 mm long, with broad, obtuse wings; *foot* 4-5 mm long, curved; *stelia* 2, small, ½ the length of column. *Anther cap* yellowish purple, toothed in front; *pollinia* 4, devoid of caudicle, stipe, and viscidium. *Fruits* not seen.

### Flowering

February-May

### Distribution

India (Assam, Manipur, Mizoram, Meghalaya), China, Myanmar, Thailand, Vietnam, Indo-China.

### Specimens Examined

India: Manipur: Tamenglong, 13.2.2021, Shreyasi Nayak & Rijupalika Roy 40256 (BHC). Mizoram: Phawnguni National Park area, Vawmbuk, 22°36' 17.0"N & 93°04' 42.7"E, 1282m, 28.11.2012, Samiran Panday 129316 (ASSAM).

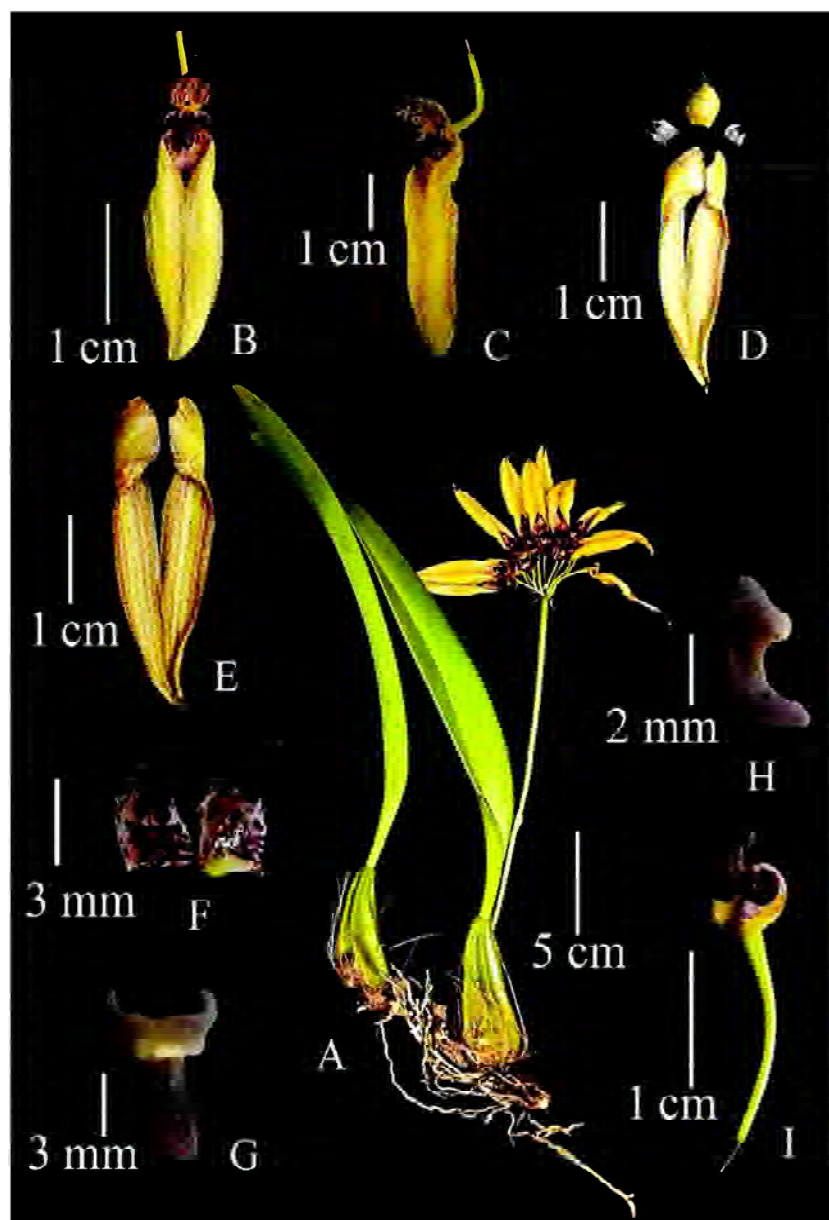


Fig. 1. *Bulbophyllum picturatum*: A, Habit; B, Flower (side view); C, Flower (side view); D, Floral parts; E, Lateral sepals; F, Petals; G, Labellum (ventral view); H, Labellum (side view); I, Column with labellum.



Fig. 2. The specimen on the right side, labelled 'n. Reg. 1840. Misc. 106' [designated as [2] in the Digital Herbarium Sheet], recognized as the type specimen for *Cirrhopetalum picturatum* by Seidenfaden (1973).

## Notes

The type specimen at K contains samples from four gatherings of *Bulbophyllum picturatum* which were collected from different localities on different dates. Of the four samples, the one labelled with 2 in Fig. 2 is the actual type specimen evidently annotated by George Loddiges in 1840. The other three samples marked as 1, 3, and 4 in Fig. 2 have been collected by different workers after the original publication of the species and thus, they are not the part of the type or original materials. However, all these specimens are mounted in to one herbarium sheet and the entire sheet is assigned with single herbarium barcode K000342326. Seidenfaden (1973) had indicated the Loddige specimen as the type, thus, inadvertently lectotypified it for *Bulbophyllum picturatum* as per Turand

et al. (2018).

## Threat Status in India

*Bulbophyllum picturatum* is distributed in Asian tropical regions of China, India, Myanmar, Thailand, Indo-China, and Vietnam. From India, this species is authentically known from Manipur and Mizoram (Fig. 3). Its report from Assam by Gogoi (2017) is doubtful as it is not supported by a voucher specimen. From Mizoram, it was known by a historic collection by Parry until it was rediscovered by Panday et al. (2013) from Phwangpui National Park. From Manipur, this species was recorded only once (in the present study) and the population size was very small with scarce distribution. Although not endemic to India, *Bulbophyllum picturatum* exhibits a limited population within the country. Considering all the actual and potential locations for occurrence in India, the Extent of Occurrence (EOO) was estimated as 12,983 km<sup>2</sup> and Area of Occupancy (AOO) as 20 km<sup>2</sup>. The number of locations in India is four (one in Manipur, two in Mizoram and one doubtful location at Assam) which is within the threshold of Endangered under the Criterion B of IUCN. The habitat is subjected to threats due to developmental activities and tourism. Being epiphytic in nature, the survival of the species is dependent on that of the host species. The total number of individuals in India can be estimated as less than 2500 under Criterion C. Based on the above data, the threat status has been assessed in Indian perspective as Endangered [B2ab(iii); C2a(i)]. Despite distributed



Fig. 3. Distribution map of *Bulbophyllum picturatum* [Using GeoCAT Platform].

in the other countries with some potential gene flow amongst the cross-border sub-populations, because of the fragmented distribution, the original assessment has not been downlisted as per the guidelines for regional assessments. The present assessment highlights the critical need for targeted conservation measures, especially in mitigating threats to its habitats in NorthEastern states, so as to ensure the sustained existence of *Bulbophyllum picturatum* in the NorthEastern region of India.

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