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Diplocentrum papillosum (Orchidaceae), a new species from south Western Ghats, India

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Mathew Jose Mathew³, Salim Mohammed Pichan⁴**

ABSTRACT

A new species, *Diplocentrum papillosum* J.Mathew, A.K.Pradeep & M.J.Mathew is described in relation to morpho-taxonomical studies of peninsular Indian endemic orchids. This paper presents the new species' distribution, images, and its distinctive morphological traits. Images, distinguishing characters and key to the known species of *Diplocentrum*, viz., *D. congestum*, *D. longifolium* and *D. recurvum* are also provided for facilitating their identification in the field.

Keywords: Aeridinae, *Diplocentrum*, endemic, South Western Ghats

1. INTRODUCTION

The genus *Diplocentrum* Lindl. coming under Family: Orchidaceae; Tribe: Vandaeae; SubTribe: Aeridinae is considered as an Indo- Sri Lankan endemic element (POWO, 2025). The name comes from the Greek words "diploos," which means "double," and "kentron," which means "spur," referring to the two spurs on the labellum (Pridgeon et al., 2014). This genus can easily be recognized by epiphytic herbaceous habit with terete roots; stem patent to erect, rooting at the base; conduplicate, articulate, distichous, linear to subterete, coriaceous leaves with bilobed apex; lateral, racemose or paniculate, erect or pendent, many-flowered inflorescence; resupinate flowers, greenish or pinkish with pink to purple labellum; petals shorter than sepals; labellum rigidly attached, with two short spurs at base; four pollinia compressed in two unequal pairs, and obovoid capsule.

Recently, Mathew et al. (2025) have reinstated *Diplocentrum longifolium* Wight, based on the in-depth floristic analysis. Thus the genus has three species, viz., *D. congestum* Wight, *D. longifolium* Wight, and *D. recurvum* Lindl.

Botanical exploration in the forests of Marayoor, Kerala, during 2024–2025, has yielded some interesting specimens belonging to the genus *Diplocentrum*. The gathered specimens do not correspond to the previously described species, according to a critical review of the literature and herbarium specimens. The detailed study on the material has resulted in the recognition of a novel species that is described here as *Diplocentrum papillosum*.



Figure 1. **A.** *Diplocentrum congestum* Wight., **B.** *D. longifolium* Wight. **C.** *D. recurvum* Lindl. (Closeup of the flowers insite) (photograph by J. Mathew)

2. MATERIAL AND METHODS

Conventional tools and techniques in plant taxonomy are employed for the collection and pressing procedures. Critical analysis of the literature (Lindley, 1832; Wight, 1852; Hooker, 1888-1890; Fischer, 1928; Abraham and Vatsala, 1981; Joseph, 1987; Mathew, 1991; Misra, 2007; Mahendranath et al., 2015; GBIF, 2025; POWO, 2025; Mathew et al., 2025), as well as from the scrutiny of vouchers deposited in K!, CAL!, MH!, TBGT! and KUBH! and information from online databases (<https://plants.jstor.org>; <https://www.ipni.org>; <https://www.tropicos.org>; <https://www.biodiversitylibrary.org> and <https://www.wcsp.science.kew.org>) were carried out. The data presented were obtained through the study of live specimens in the wild, available herbarium materials and an in-depth literature survey. The collected specimens were conserved in Joannah's Orchidarium, Idukki District, Kerala and the voucher specimen JM 4061 is deposited in KUBH! (Kerala University Herbarium, Thiruvananthapuram) and MH!.

3. RESULTS

Taxonomy

Diplocentrum papillosum J.Mathew, A.K.Pradeep & M.J.Mathew sp. nov. (Figs. 2 – 3).

Diagnosis

Diplocentrum papillosum is distinct from all other species of *Diplocentrum* by the papillose flower. It differs from morphologically similar species *D. recurvum* Lindl. (Fig. 4) by simple racemose inflorescence (vs. panicle), oblong lateral petals (vs. lanceolate), and the stipe is longer than pollinium (vs. shorter than pollinium).

Type

INDIA. Southern Western Ghats, Kerala, Idukki district, Marayoor Hills, Vannanthurai forest 1081 m, 23 April 2025, JM 4061 (holotype KUBH!; isotype MH!).

Description

Epiphytic and lithophytic herbs; Roots unbranched, smooth, glabrous and terete; Stems rooted at the base. Leaves few, 05-09 cm x 0.3-0.5 cm, open, linear having unequal bilobed apex; Inflorescence axillary racemes, longer than leaves, 16-35 flowers; Flowers small, papillose throughout, white with pink patches, with two spurs at the base of the lip; Sepals dorsal and lateral, dorsal sepals are elliptic, bimucronate at the apex, tri-veined, lateral sepals are broadly obovate, acute & tri-veined and larger than petals, 4-4.5 x 2 mm; Petals oblong, 3 x 1.5 mm, 3-veined; lip tapering, 6 x 3 mm, ovate to lanceolate, Lip 5-veined, entire, larger than sepals, obtuse, oblong to lanceolate, with two collateral cylindrical spurs, spurs base round in shape, 0.8 – 1 mm long; disc forks at the apex, have a fleshy ridge. Pollinium 4 in 2 unequal masses, elliptic shaped, stipe larger than pollinium. Capsule obovoid.

Flowering and fruiting:

April - July

Additional Materials Examined:

JM 4728, JM 4729 (SDCH: SD College Herbarium, Alappuzha, India), 24 April 2025, Marayoor Forests, Vannanthurai Hills, Kerala, India.

Distribution, habitat and conservation status:

At the type locality, about 10 individuals were seen growing on the branches of *Terminalia paniculata* Roth. Associated species included *Peperomia tetraphylla* Hook. & Arn., *Oberonia proudlockii* King & Pantling, with moss flora. A comprehensive survey is needed to assess its population size, area of occupancy, and extent of occurrence. As a result, its provisional conservation status based on IUCN (2025) is assessed as Data Deficient (DD). The species is thought to be threatened only by high temperatures brought on by climate change.

Etymology

The specific epithet 'papillosum' refers to the papillose character of the flower, which is unique to the species among the *Diplocentrum* species.

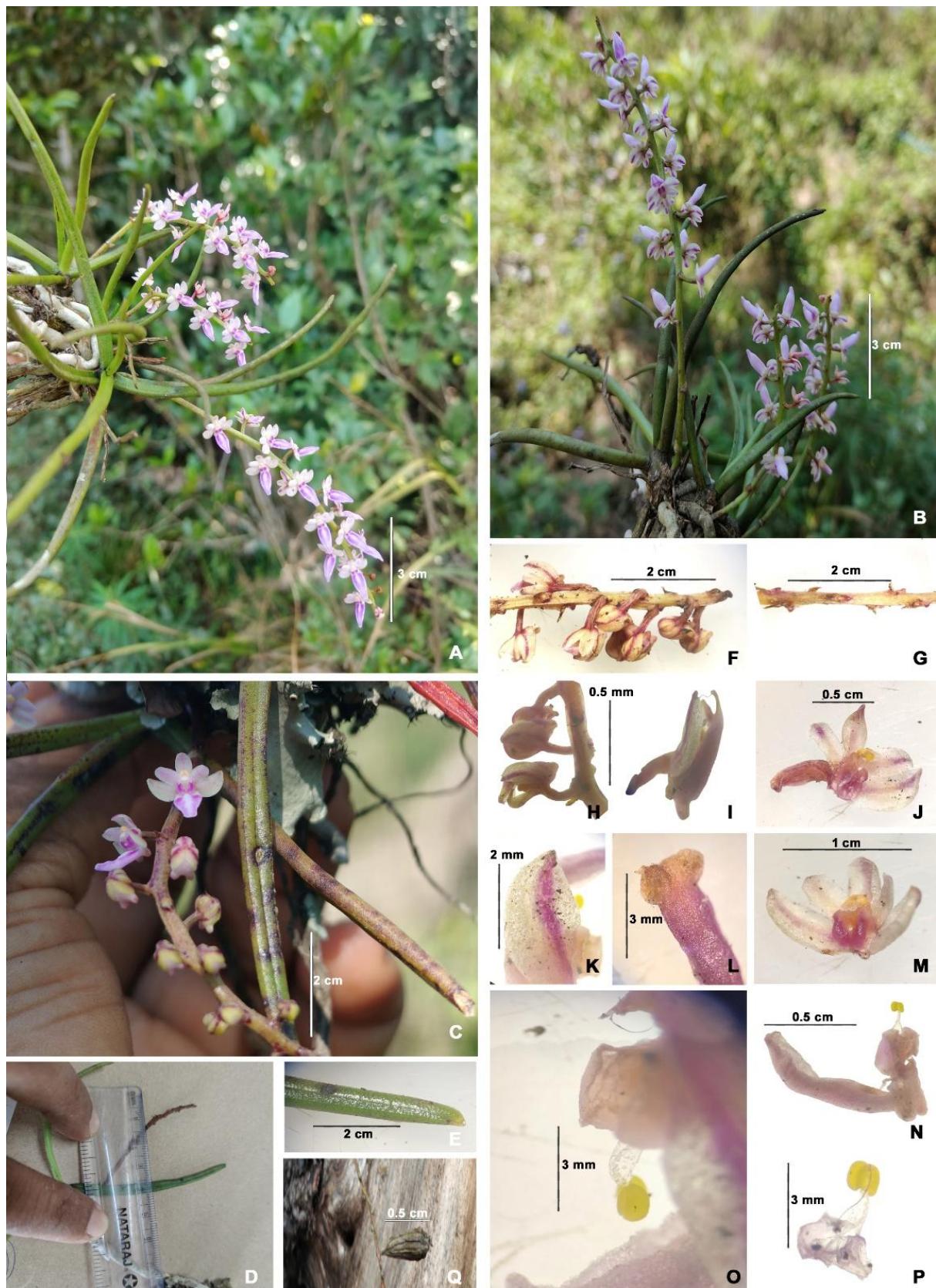


Figure 2. *Diplocentrum papillosum* J.Mathew, A–C. Flowering plant, D. Leaves, E. Leaf tip, F. Flower buds in inflorescence, G. Bract, H–I. Flower bud, J. Flower, K. Lateral sepal, L. Spurs, M. Flower opened, lip detached, N. Lip with pollinium, O–P. Pollinium with stipe, Q. Capsule (photograph by J. Mathew).

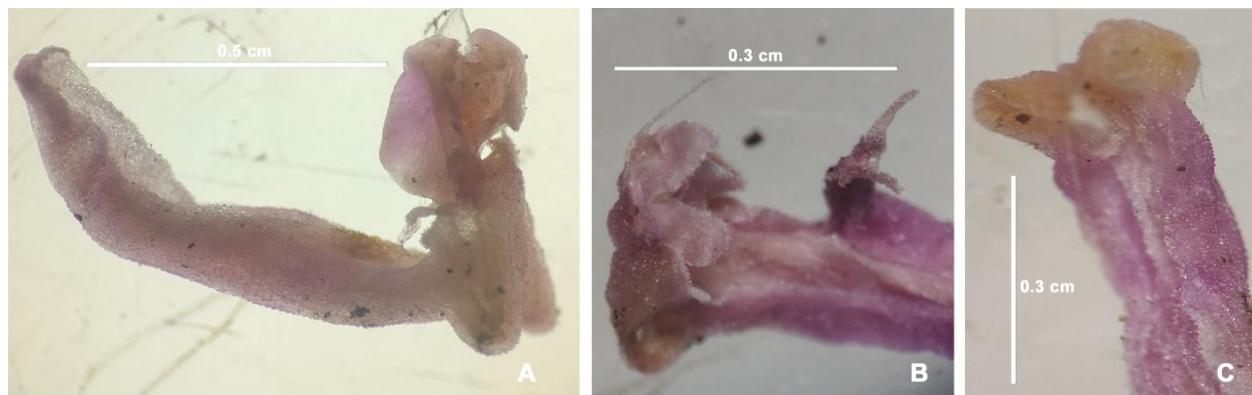


Figure 3. *Diplocentrum papillosum* J.Mathew, A.K.Pradeep & M.J.Mathew sp. nov.: Papillose character of the floral parts. A. Lip with spur, B – C. Side view of lip and spur (photograph by J. Mathew)



Figure 4. *Diplocentrum recurvum* Lindl. Reworked illustration based on *Icones plantarum Indiae Orientalis* (or figures of Indian plants) (Vol.5; 1852. 1680). See panicle inflorescence and lanceolate lateral petals.

Table 1: Comparative morphology of the species in genus *Diplocentrum*

Characters		<i>D. congestum</i>	<i>D. longifolium</i>	<i>D. recurvum</i>	<i>D. papillosum</i>
Leaf	Character	Open, coriaceous	Open, coriaceous	Folded, glossy	Open, coriaceous
	Size	7-10 cm x 0.8-1.2 cm	12-14 cm x 0.9-1.4 cm	14-20 x 0.4-0.7 cm	05-09 x 0.3-0.5 cm
Inflorescence	Branching	Limited to 1-2	Limited to 1-2	Profusely branched panicle	Unbranched racemose
Flower	Nature	Glabrous	Glabrous	Glabrous	Papillose
	Colour	Pinkish to greenish with purple to pink labellum	Pink with brown patches	White, light pink in the margins and lip, pink patches prominent in the abaxial sides	White, light pink in the margins and lip, pink patches prominent in the abaxial sides
	Lateral petals	Lanceolate	Oblong	Lanceolate	Oblong
Spur	Shape	Conical, outward	Obconical with acuminate apex, incurved, 1.2 – 2 mm long	Cylindrical with round apex, straight to outward, 0.5 – 0.7 mm long	Cylindrical with round apex, straight to outward, 0.5 – 0.6 mm long
Pollinium	Stipe	Longer than pollinia	Longer than pollinia	Shorter than pollinia	Longer than pollinia
	Character	Widen at middle	Widen at middle	Not widen at middle	Widen at middle
	Shape	Ovate	Reniform	Reniform	Elliptic

4. DISCUSSION

This is a comprehensive taxonomic study on peninsular Indian genus *Diplocentrum*. The number of species within this genus has been reassessed and set at four. Taxonomic key to the genus and their comparative morphology (Table 1) are provided for easy identification.

Taxonomic key to the species of the genus *Diplocentrum* [modified from Mathew et al., 2025]

1. Flowers papillose..... *D. papillosum*
1. Flowers glabrous..... 2
2. Inflorescence is a profusely branched panicle *D. recurvum*
2. Inflorescence is branched sparingly 3
3. Spur obconical, pointing inward..... *D. longifolium*
3. Spur conical, pointing outward..... *D. congestum*

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Conflict of Interest

The authors declare that they have no conflicts of interests, competing financial interests or personal relationships that could have influenced the work reported in this paper.

Informed consent

Not applicable.

Ethical approval & declaration

In this article, as per the plant regulations followed in the Department of Botany, Sanatana Dharma College, Alappuzha 688003, Kerala, India; the authors observed a new species *Diplocentrum papillosum* (Orchidaceae), from south Western Ghats, India. The ethical guidelines for plants & plant materials are followed in the study for species observation, identification & experimentation.

Data and materials availability

All data associated with this study will be available based on the reasonable request to corresponding author.

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