



Fundación
Miguel Lillo
Tucumán
Argentina

doi

Revisiting the taxonomy of the genus *Diplozentrum* (Orchidaceae) with the proposal for reinstatement of *D. longifolium*

Revisión taxonómica del género *Diplozentrum* (Orchidaceae) con la propuesta de restitución de *D. longifolium*

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Abstract

Morphotaxonomical studies have been conducted on the orchid genus *Diplozentrum* (Orchidaceae; Tribe: Vandeeae; SubTribe: Aeridinae) endemic to peninsular India. A critical examination of type specimens and other materials of the genus, along with the specimens collected from Idukki and Wayanad districts of Kerala and Shevaroy Hills of Tamil Nadu, showed that *Diplozentrum longifolium* should be considered as a valid species. Thus, we therefore reinstate the independent status of *D. longifolium*. Furthermore, a lectotype is designated for *D. congestum*. To facilitate its identification in the field, we provide colour photographs, taxonomical keys, and notes on the distribution of the three species of the genus.

Keywords: Aeridinae; endemism; Orchidaceae; South Western Ghats; taxonomy.

► Ref. bibliográfica: Mathew, M. J.; Mathew, J.; Muhammed, S. P. 2025. Revisiting the taxonomy of the genus *Diplozentrum* (Orchidaceae) with the proposal for reinstatement of *D. longifolium*. *Lilloa* 62 (2): 531-542. doi: <https://doi.org/10.30550/j.lil/2147>

► Recibido: 18 de marzo 2025 – Aceptado: 7 de agosto 2025 – Publicado: 13 de octubre 2025.

► URL de la revista: <http://lilloa.lillo.org.ar>

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Resumen

Se han realizado estudios morfotaxonómicos sobre el género de orquídeas endémico de la India peninsular, *Diplozentrum* (Orchidaceae; Tribu: Vandaeae; Subtribu: Aeridinae). Un examen crítico de sus tipos y otros materiales del género, junto con los especímenes recolectados en los distritos de Idukki y Wayanad de Kerala, y en las colinas de Shevaroy de Tamil Nadu, mostraron justificadamente que *Diplozentrum longifolium* debe ser considerada como especie válida. Por lo tanto, restituimos el estatus de *D. longifolium*. Además, se designa un lectotipo para *D. congestum*. Para facilitar la identificación en el campo, proporcionamos fotografías en color, claves taxonómicas y notas sobre la distribución de tres especies del género.

Palabras clave: Aeridinae; endemismo; Ghats occidentales del Sur; Orchidaceae, taxonomía.

INTRODUCTION

The genus *Diplozentrum* Wight is distributed in South India and Sri Lanka. Currently the genus has two accepted species, *D. recurvum* Lindl. and *D. congestum* Wight (POWO, 2025; GBIF, 2025; Kumar & Manilal, 1992). The name originated from the Greek words ‘diploos’ means double, and ‘kentron’, means spur, referring to the two spurs on the labellum (Pridgeon et al., 2014). This genus can be easily recognized by its characters such as 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, many opening simultaneously, quaquaversal, greenish or pinkish with pink to purple labellum; entire, free, obtuse sepals; petals shorter than sepals; labellum rigidly attached, with two short spurs at base; four pollinia compressed in two unequal pairs, and obovoid capsule.

Botanical exploration in the forests of Kerala and Tamil Nadu, during 2020-2024, has yielded various specimens belongs to the genus *Diplozentrum*. In our taxonomic revision of the genus, we found that *D. congestum* (Fig. 1); *D. longifolium* (Fig. 2) and *D. recurvum* (Fig. 3) are distinct from each other and *D. longifolium* should be reinstated as an independent species.



Fig. 1. *Diplozentrum congestum*. A) Flowering plant. B) Leaves and roots. C-E) Inflorescence. F). Close up of flowers.

Fig. 1. *Diplozentrum congestum*. A) Planta en flor. B) Hojas y raíces. C-E) Inflorescencia. F). Primer plano de las flores.

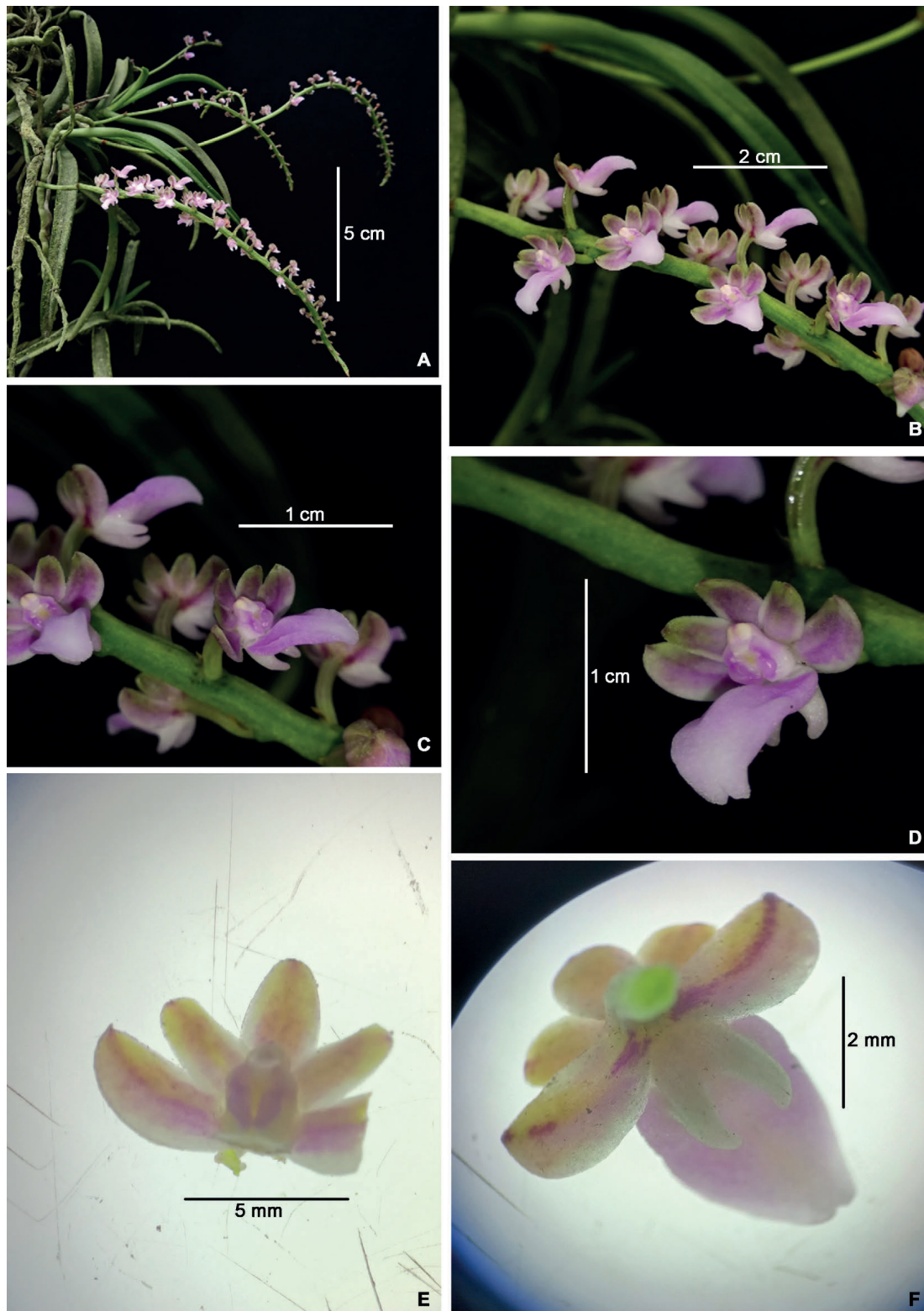


Fig. 2. *Diplocentrum longifolium*. A) Flowering plant. B-C) Inflorescence. D-E) Close-up of a flower. F). Flower image from the abaxial side (see the spur character).

Fig. 2. *Diplocentrum longifolium*. A) Planta en flor. B-D) Inflorescencia. E-F) Primer plano de una flor. G) Imagen de la flor desde el lado abaxial (véase el carácter del espolón).



Fig. 3. *Diplocentrum recurvum*. A) Flowering plant. B-D) Inflorescence. E-F) Close-up of a flower. G) Flower image from the abaxial side (see the spur character).

Fig. 3. *Diplocentrum recurvum*. A) Planta en flor. B-D) Inflorescencia. E-F) Primer plano de una flor. G) Imagen de la flor desde el lado abaxial (véase el carácter del espolón).

MATERIALS AND METHODS

Conventional tools and techniques in plant taxonomy is employed for the collection and pressing procedures. Critical analysis of the literature (Lindley, 1832; Wight, 1852; Hooker, 1890, 1894; Fischer, 1928; Abraham & Vatsala, 1981; Joseph, 1987; Matthew, 1991; Misra, 2007; Mahendranath *et al.*, 2015; GBIF, 2025; POWO, 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 was 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 the Joannah's Orchidarium, Idukki District, Kerala.

RESULTS AND DISCUSSION

Taxonomic treatment

Diplozentrum congestum Wight, Icon. Pl. Ind. Orient. 5: t. 1682. 1851.

Type: Wight, Icon. Pl. Ind. Orient. 5: t. 1682, 1851!

(lectotype, designated here)

Epiphytic herbs; Roots unbranched, smooth, glabrous and terete; Stems rooted at the base, patent to erect; Leaves linear to subterete, 7–10 x 0.8–1.2 cm, articulate, open, coriaceous, bilobed apex; Inflorescence racemose or paniculate, lateral, pendant or erect, multi-flowered; rachis continues peduncle, glabrous, straight. Flowers quaquaversal, resupinate, pinkish to greenish with purple to pink labellum. Sepals free, entire, obtuse; petals smaller than sepals; labellum with two short spurs at the base, entire, ligulate, rigidly attached, longer than sepals; spurs conical. Column without column foot, having a transverse papillose lamella at the base; pollinia 4, comprises 2 unequal pairs, stipe longer than pollinia, obspatulate, large viscidium; not elongate rostellar projection. Capsule obovoid.

Selected specimen examined: INDIA. Tamil Nadu, Shevaroy Hills, 1614 m asl, 07-VII-2020, *JM* 4726 (SDCH: SD College Herbarium, Alappuzha, India). Idem, *JM* 4727 (SDCH: SD College Herbarium, Alappuzha, India).

Distribution and habitat: The species is commonly distributed in South-west part of India. It is an epiphyte that grows in the wet tropical biome. They are endemic to Peninsular India.

Flowering and fruiting: July –October.

Remarks: No specimen of *Diplozentrum congestum* has been traced for Wight's name. But the illustration (plate 1682 in *Icones Plantarum Indiae Orientalis or Figures of Indian Plants*. Vol.5.) serve as the protologue and it depicts the exact characters of the species especially, conduplicate leaves; conical and outward spur. So, the plate 1682 (Wight, 1852) is selected here as the lectotype (Fig. 5).

Diplozentrum longifolium Wight, Icon. Pl. Ind. Orient.
[Wight] t. 1681. 1851. Type: India. On branches of trees,
Orange Valley, Neilgherries, 1851, R. Wight 1681 (K000942503!)

Epiphytic herb; Roots at base; Stem erect, short, 2–4 cm long; Leaves few, 12–14 x 0.9–1.4 cm, open, linear having unequal bilobed apex, oblong; Inflorescence axillary racemes, longer than leaves, branched sparingly, numerous flowers; flowers small, pink with brown patches, congested, with 2 spurs at the base of the lip; dorsal sepal elliptic, bimucronate at the apex, tri-veined, lateral sepals broadly obovate, acute and tri-veined and larger than petals; petals oblong to elliptic, 3 x 1.5 mm, 3–veined; lip tapering, 6 x 3 mm, ovate to lanceolate, 7–veined, having 2 collateral spurs, spur obconical incurved, 1.2–2 mm long; anther with prolonged connectivum, truncate at apex. Pollinium 4, bean shaped, widen at middle.

Selected specimen examined: INDIA. Kerala, Kurichyarmala Hills, 1544 m asl, 21-VII- 2021, *JM* 4731, *JM* 4733 (SDCH).

Distribution: The species is native to Southern India and Sri Lanka. They are found distributed along Wayanad, Palakkad and Idukki (Kerala); Yercaud and Kolli Hills (Tamil Nadu).

Flowering and fruiting: June and July.

Diplozentrum recurvum Lindl., Edward's Bot. Reg. 18:
sub t. 1522. 1832.

Type: India. On branches of trees, Lyamally Hills.
Wallich Cat. no. 7331 (K001127185!).

Epiphytic herb; Stem 6–8 cm long; Leaves folded, recurved, keeled, obtuse, subobtuse or mucronate, 14–20 x 0.4–0.7 cm. Inflorescence racemes panicles recurved, branched frequently; numerous flowers. Flowers white, light pink in the margins and lip, spur base round; dorsal sepal bimucronate at apex, 3–veined, elliptical and lateral sepals acute, broadly obovate, acute; petals subacute, oblong to lanceolate, 3–veined; lip 5–veined, entire, larger than sepals, obtuse, oblong to lanceolate, with 2 collateral cylindrical spurs, spurs base round in shape, 0.8–1 mm long; disc forks at the apex, have a fleshy ridge. Pollinium 4, bean shaped.

Selected specimen examined: INDIA. Kerala, Idukki, Ramakkalmedu, 1107 m asl, 22-X-2022, *JM* 4731, *JM* 4733 (SDCH).

Distribution: Endemic species of Deccan Peninsular India. They are found in Idukki and Wayanad districts of Kerala; Kolar districts and Koorg of Karnataka; Horsey Hills of Andhra Pradesh and Shevaroy & Sirumalai Hills of Tamil Nadu.

Flowering and fruiting: September and October.

Remarks: The species *Diplozentrum recurvum* Lindl. was first described in Edwards's botanical register 18: sub t. 1522 (Lindley, 1832). In the protologue, he denoted that "Leaves complex, fleshy, recurved. Racemes paniculate...". Later Wight (1852), mentioned its "lip ovate, entire, acute, much larger than the sepals; flowers deep pink, fining off on the margins to white, lip crimson."

The second species in the genus, *D. longifolium* was described on Icones Plantarum Indiae Orientalis volume 5. t. 1681, by Wight (1852). In the protologue, we can see that, "racemes axillary, erect, sparingly branched.... Sepals and petals dull brownish, tinged with pink, lip dull pinkish-lilac."

The third species, *Diplozentrum congestum* was also introduced by Wight (1852) in the same volume of Icones Plantarum Indiae Orientalis on sheet 1682, based on the collection from Iyamally hills (High hills south of Coimbatore, India). This species is comparatively smaller element in the genus.

Among these three species, *Diplozentrum longifolium* was reduced as a synonym of *D. recurvum* by without proper investigation of the type material. In the most recent treatment of the genus *Diplozentrum*, *D. longifolium* as synonym of *D. recurvum* was continued (POWO, 2025; GBIF, 2025). In our taxonomic reassessment of *Diplozentrum*, we determined that *D. longifolium* is separate from *D. recurvum* and should be reinstated. *D. longifolium* can be easily identified (see Fig. 4) by sparingly branched raceme inflorescence; pink flowers with brown patches and obconical, incurved spurs *vs.* profusely branched panicle inflorescence; white flowers with light pink in the margins and lip and, straight to outward cylindrical spurs with round apex in *D. recurvum*. Herewith we provide taxonomic key (vegetative phase and reproductive phase) and detailed description of the three species along with distinguishing characters of *D. longifolium* from *D. recurvum*.

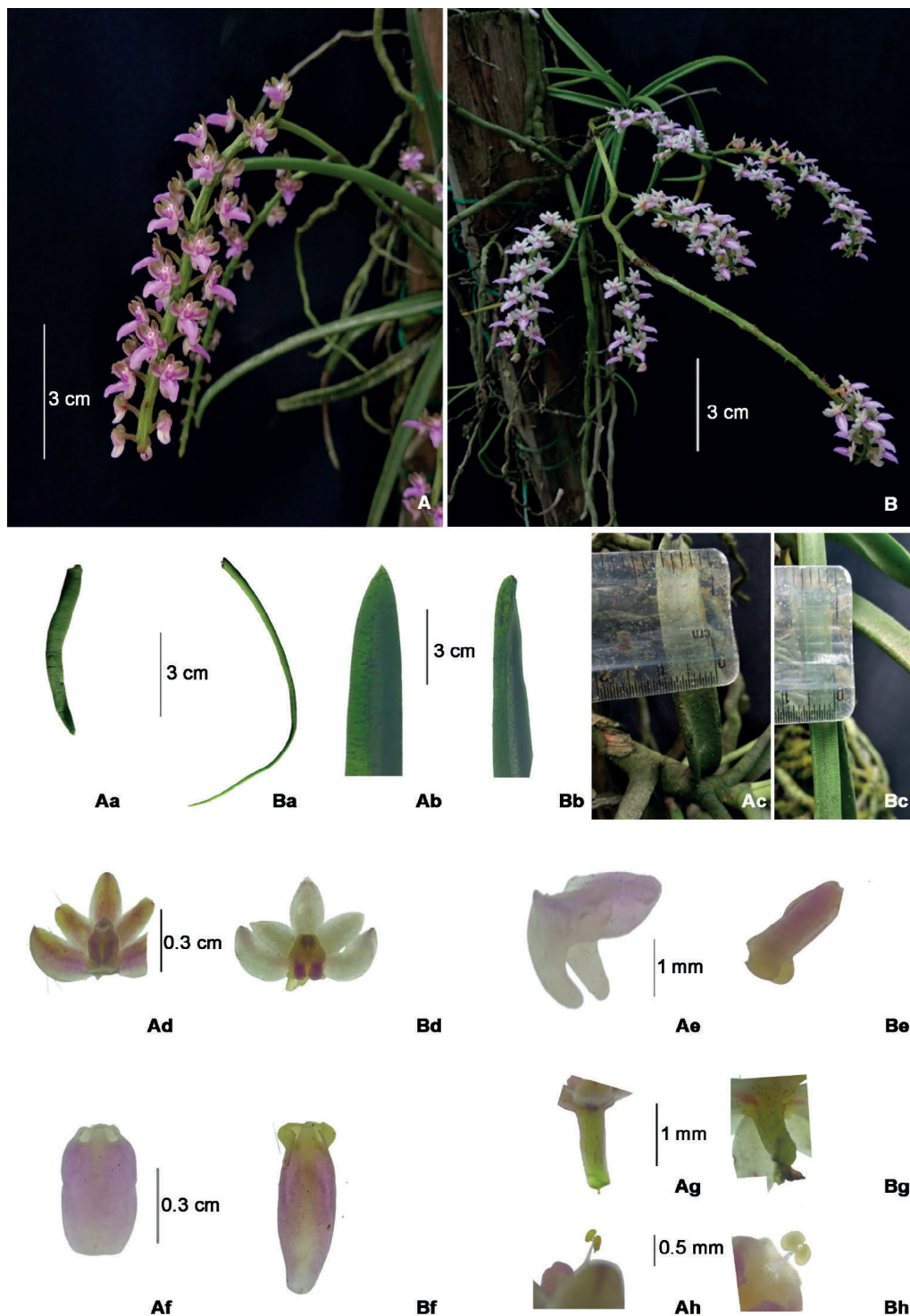


Fig. 4. Comparative features of *D. longifolium* (A-Ah) and *D. recurvum* (B-Bh).

A) *D. longifolium* inflorescence. Aa-Ac) Leaf characters. Ad) Sepals and petals spread. Ae) Spur. Af) Lip. Ag) Column. Ah) Pollinium. B) *D. recurvum* inflorescence. Ba-Bc) leaf characters. Bd) Sepals and petals spread. Be) Spur. Bf) Lip. Bg) Column. Bh) Pollinium.

Fig. 4. Características comparativas de *D. longifolium* (A-Ah) y *D. recurvum*. (B-Bh).

A) *D. longifolium* inflorescencia Aa-Ac) Caracteres foliares. Ad) Sépalos y pétalos extendidos. Ae) Espolón. Af) Labio. Ag) Columna. Ah) Polinio. B) *D. recurvum* inflorescencia. Ba-Bc) Caracteres foliares. Bd) Sépalos y pétalos extendidos. Be) Espolón. Bf) Labio. Bg) Columna. Bh) Polinio.

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

Tabla 1. Morfología comparativa de las especies del género *Diplocentrum*.

Characters		<i>D. congestum</i>	<i>D. longifolium</i>	<i>D. recurvum</i>
Leaf	Character	Open, coriaceous	Open, coriaceous	Folded, glossy
	Size	7–10 x 0.8–1.2 cm	12–14 x 0.9–1.4 cm	14–20 x 0.4–0.7 cm
Inflorescence	Branching	Limited to 1–2	Limited to 1–2	Profusely branched
Flower	Colour	Pinkish to greenish with purple to pink labellum	Pink with brown patches	White, light pink in the margins and lip
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
Pollinium	Stipe	Longer than pollinia	Longer than pollinia	Shorter than pollinia
	Character	Widen at middle	Widen at middle	Not widen at middle

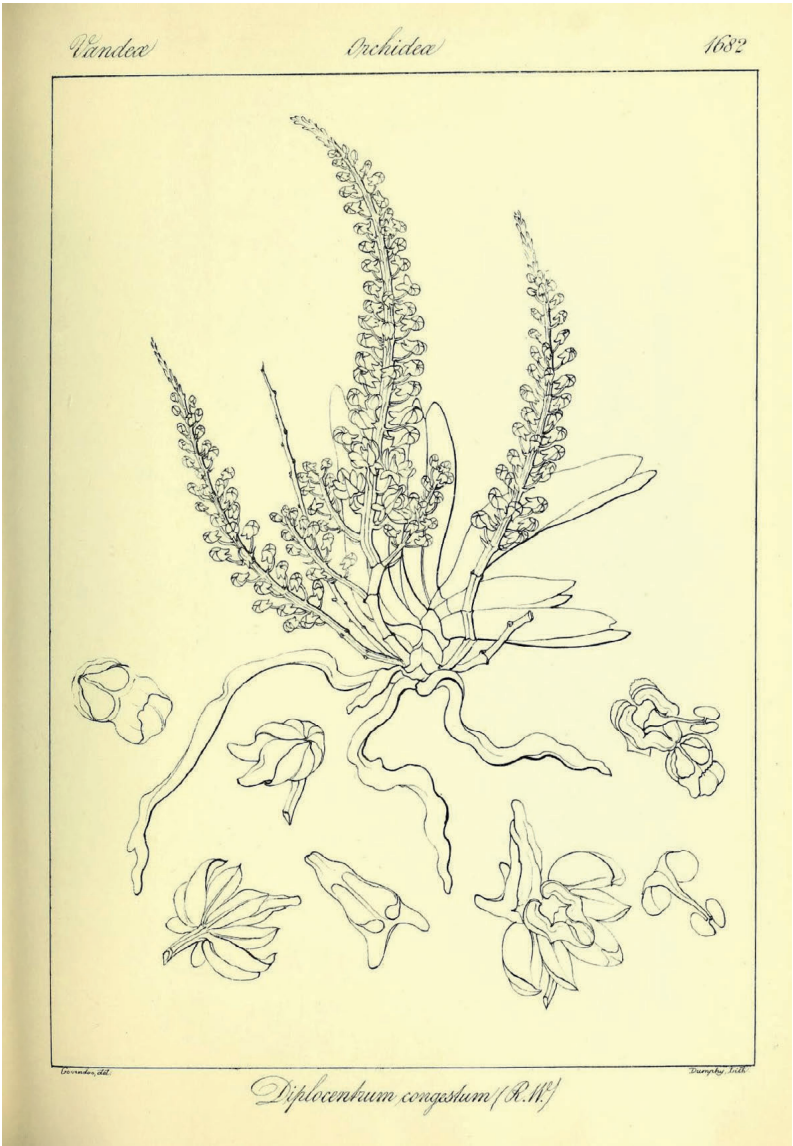


Fig. 5. Lectotype of *D. congestum*.

Fig. 5. Lectotipo de *D. congestum*.

Taxonomical Key to the species of the genus *Diplozentrum*

LEAF CHARACTERS (VEGETATIVE PHASE)

- 1 Leaves coriaceous 2
- 1' Leaves glossy *D. recurvum*
- 2 Leaves congested in stem and length of the leaves 7-10 cm
..... *D. congestum*
- 2' Leaves lax in stem and length of the leaves 12-14 cm
..... *D. longifolium*

INFLORESCENCE AND FLOWERS (FLOWERING STAGE)

- 1 Inflorescence is profusely branched panicle *D. recurvum*
- 1' Inflorescence is branched sparingly 2
- 2 Spur obconical, pointing inward *D. longifolium*
- 2' Spur conical, pointing outward *D. congestum*

This morphotaxonomic studies on the genus *Diplozentrum* should be helpful to clarify the taxonomy and evolutionary history of the tribe- Vandae of Orchidaceae family. The future studies should incorporate a strong component of field work followed by examining its living plants is very important since south Western Ghats is considered as the center of origin of the genus *Diplozentrum*. Besides, ex-situ conservation of this potential ornamental plant group is highly recommended.

ACKNOWLEDGMENT

The authors are thankful to the Kerala Forest Department for permission to conduct research. The corresponding author is grateful to the Head of the Department Botany, Principal and Management of the Sanatana Dharma College, Alappuzha, Kerala for support; Dr. K.N. Gandhi, Harvard University, for nomenclatural suggestions and corrections; DBT Star College Scheme (Urban Category) under head no HRD -11011/8/2024-HRD –DBT dated 10/7/2024 for facilities; Kerala State Biodiversity Board (head no. 3435-03-101-99(P)-2) for financial assistance. Salim P.M. is thankful to the Chairperson: Dr. Soumya Swaminathan; and Executive Director: Dr. G.N. Hariharan, MS Swaminathan Research Foundation Community Agro biodiversity Centre, Puthurvayal, Kalpetta, Kerala for encouragement and support.

CONFLICT OF INTEREST

The authors declare that they have no competing financial interests or personal relationships between authors that could have influenced the work presented in this article.

REFERENCES

- Abraham, A. & Vatsala, P. (1981). Introduction to Orchids with Illustration and Descriptions of 150 South Indian Orchids. Tropical Botanical Garden and Research Institute.
- Fischer, C. E. C. (1928). *Flora of the Presidency of Madras*. Adlard and Son Ltd.
- GBIF Secretariat (2025). *Diplocentrum* Lindl. GBIF Backbone Taxonomy. Checklist dataset. Retrieved from <https://www.gbif.org/es/search?q=Diplocentrum>
- Hooker, J. D. (1890). Orchidaceae. *The flora of British India* 5: 667-858.
- Hooker, J. D. (1894). Orchidaceae. *The flora of British India* 6: 1-198.
- Joseph, J. (1987). Orchids of Nilgiris. Botanical Survey of India.
- Kumar, C. S. & Manilal, K. S. (1992). Epiphytic Orchids of India. *Rheedea* 2 (2): 80-100. <https://dx.doi.org/10.22244/rheedea.1992.02.02.02>
- Lindley, J. (1832). Edwards's Botanical Register. (Vol. 18). James Ridgway.
- Mahendranath, M., Chetty, K. M. & Prasad, K. (2015). A re-collection of *Diplocentrum recurvum* lindl. (Orchidaceae) after a lapse of 100 years or more from Andhra Pradesh, India. *Journal of Threatened Taxa* 7 (10): 7712-7715. <https://dx.doi.org/10.11609/JoTT.o4172.7712-5>
- Mathew, K. M. (1991). An excursion Flora of Central Tamil Nadu, India. Oxford and IBH Publishing Co.
- Misra, S. (2007). Orchids of India, A Glimpse. Bishen Singh Mahendra Pal Singh.
- POWO (2025). Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Retrieved from [http:// www.plantsoftheworldonline.org/](http://www.plantsoftheworldonline.org/)
- Pridgeon, A. M., Cribb, P. J., Chase, M. A. & Rasmussen, F. (2014). Genera Orchidacearum. Vol. 6. Epidendroideae (Part 3). Oxford Univ. Press.
- Wight, R. (1852). Icones Plantarum Indiae Orientalis or Figures of Indian Plants. (Vol.5). Madras: J.B. Pharoah.