



NOTA

Heterostemma dalzellii (Apocynaceae, Asclepiadoideae), a new distributional record from south Western Ghats, India

Heterostemma dalzellii (Apocynaceae, Asclepiadoideae), un nuevo registro distribucional en los Ghats occidentales meridionales, India

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ABSTRACT

The present study provides the new distributional record of *Heterostemma dalzellii* from the Wayanad district of the Kerala part of the south Western Ghats. To facilitate the identification, a detailed description, photographs, and notes on distribution of the plant are provided here.

Keywords: Apocynaceae; Endemism; *Heterostemma dalzellii*; India; Kerala.

RESUMEN

Se presenta un nuevo registro distribucional de *Heterostemma dalzellii* en el distrito Wayanad, sector Kerala de los Ghats occidentales meridionales. Para facilitar la identificación, se brinda una descripción detallada, fotografías y notas sobre la distribución de la planta.

Palabras clave: Apocynaceae; endemismo; *Heterostemma dalzellii*; India; Kerala.

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INTRODUCTION

The genus *Heterostemma* Wight & Arn. (Ceropegieae, Asclepiadoideae, Apocynaceae) was first described by Wight & Arnott (1834). Later, three previously accepted genera, *Symphysicarpus* Hassk., *Oianthus* Benth. and *Ditoceras* Hook.f. were immersed into this genus (Boerlage, 1899; Swarupandan et al., 1989; Meve & Liede, 2002; Endress et al., 2014; Rodda, 2016). *Heterostemma* in its actual circumscription is diagnosed by a twining habit, chartaceous to slightly fleshy leaves, extra-axillary umbelliform cymes, rotate to globose corolla, staminal corona of five flat, radiating basally connate lobes, each with or without an inner appendage, erect subovoid to subquadrate pollinium with a germination crest on the inner side, and paired or single slender to subcylindric follicles (Rodda, 2016; Thaithong et al., 2018). The genus comprises 45 species occurring from India, Sri Lanka, Nepal, China, Taiwan through Myanmar, Vietnam, Laos, Thailand to Malaysia, Indonesia, Philippines, New Guinea, Australia, and the Western Pacific Islands (POWO, 2024).

In India, the genus *Heterostemma* is represented by 11 species (Karthiyeekan et al., 2009; Prasad & Sadasivaiah, 2023) out of which, eight species are found in the Western Ghats (Nayar et al., 2014). Three species: *H. beddomei* (Hook. f.) Swarupan. & Mangaly, *H. deccanense* (Talbot) Swarupan. & Mangaly and *H. vasudevanii* Swarupan. & Mangaly were so far reported from Kerala (Nayar et al., 2006). On a recent collection in Wayanad district, Kerala, the authors could collect an interesting specimen of *Heterostemma*. After critical analysis revealed that, these are belonging to *H. dalzellii* Hook.f., which is a particularly noteworthy addition to the flora of Kerala and the southern Western Ghats.

MATERIALS AND METHODS

Conventional tools and techniques in plant taxonomy are employed for the collection and pressing procedures. Critical analysis of the literature (Hooker, 1883; Karthiyeekan et al., 2009; Nayar et al., 2014; Sasidharan, 2013; GBIF, 2024), as well as from the scrutiny of vouchers deposited in K, 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. After detailed studies, the specimen was sent to the expert on the genus, Dr. Michele Rodda, who confirmed the species as *Heterostemma dalzellii* Hook.f., hitherto known only from the northern parts of the Western Ghats. The species is reported here as an addition to the flora of south Western Ghats. Its voucher material is stored in MSSH (MS Swaminathan Research Foundation Herbarium, Kalpetta).

TAXONOMIC TREATMENT

Heterostemma dalzellii Hook.f., Fl. Brit. India 4: 48. 1883.

Type: INDIA. Vingorla, VII-1852, *N. A. Dalzell s.n.* (lectotype K [K000895026], designated by Kambale *et al.*, 2015). Fig. 1.

H. wallichii Dalzell & A. Gibson Bombay

Fl. 152. 1861, *non* Wight, 1834.

A perennial twining shrub, with puberulous or glabrous, terete stem. Leaves simple, opposite, 6-23 × 4-13 cm, ovate or ovate - oblong, acuminate at apex, glabrous, base, rounded or cordate, rarely subacute; 3 to 5 - nerved, petiolate; petioles 1.9-4.5 cm long, glandular at the base on the upper surface. Flowers in lateral umbellate cymes, cream to pink. Peduncle very short, stout, pubescent; pedicel short, pale green, puberulous, glabrous, Calyx persistent, puberulous outside, 5-partite, small, divided up to the base; lobes scarcely ovate-oblong or obtuse. Corolla rotate, 0.5 cm long divided little below the middle, papillose inside, puberulous outside; lobes 0.2-0.4 x 0.1-0.2 cm, valvate, oblong - ovate, acute; Gynostegium 1 mm long, pink. Corona very conspicuous, of 5 large spatulate lobes projecting horizontally from the staminal-column and lying flat on it when expanded, staminal column very short, depressed; anthers minute terminated by membranous appendages; Style apex depressed, pentagonous. Follicles in pairs, 8-10 cm long, straight, gradually tapering at the apex, green when young, purplish or pink with age. Seeds 8 mm long, orbicular or oblong with a prominent dark brown margin; coma 2.3 cm long.

Flowering and fruiting.— November-January.

Distribution and Habitat.— *Heterostemma dalzellii* is considered an endemic to the Western Ghats, hitherto known only from the northern parts (Gujarat, Maharashtra, Goa, Daman, Diu and Nagarhaveli regions). The present report forms its extended distribution to the southern parts of the Western Ghats. This species is commonly found in twinning on the shrubs in evergreen forest floors. Here, the common associates are *Strobilanthes lurida* Wight, *Thunbergia mysorensis* (Wight) T. Anderson and *Euonymus indicus* B.Heyne ex Roxb.

Specimens examined.— INDIA. Kerala state, Wayanad District, Thollayiram, near Kattimattom forest, 1300 m a.s.l., 21-XI-2019, *P.M. Salim* 0266 (MSSH) and 18-XII-2019, *P.M. Salim* 0267 (MSSH).

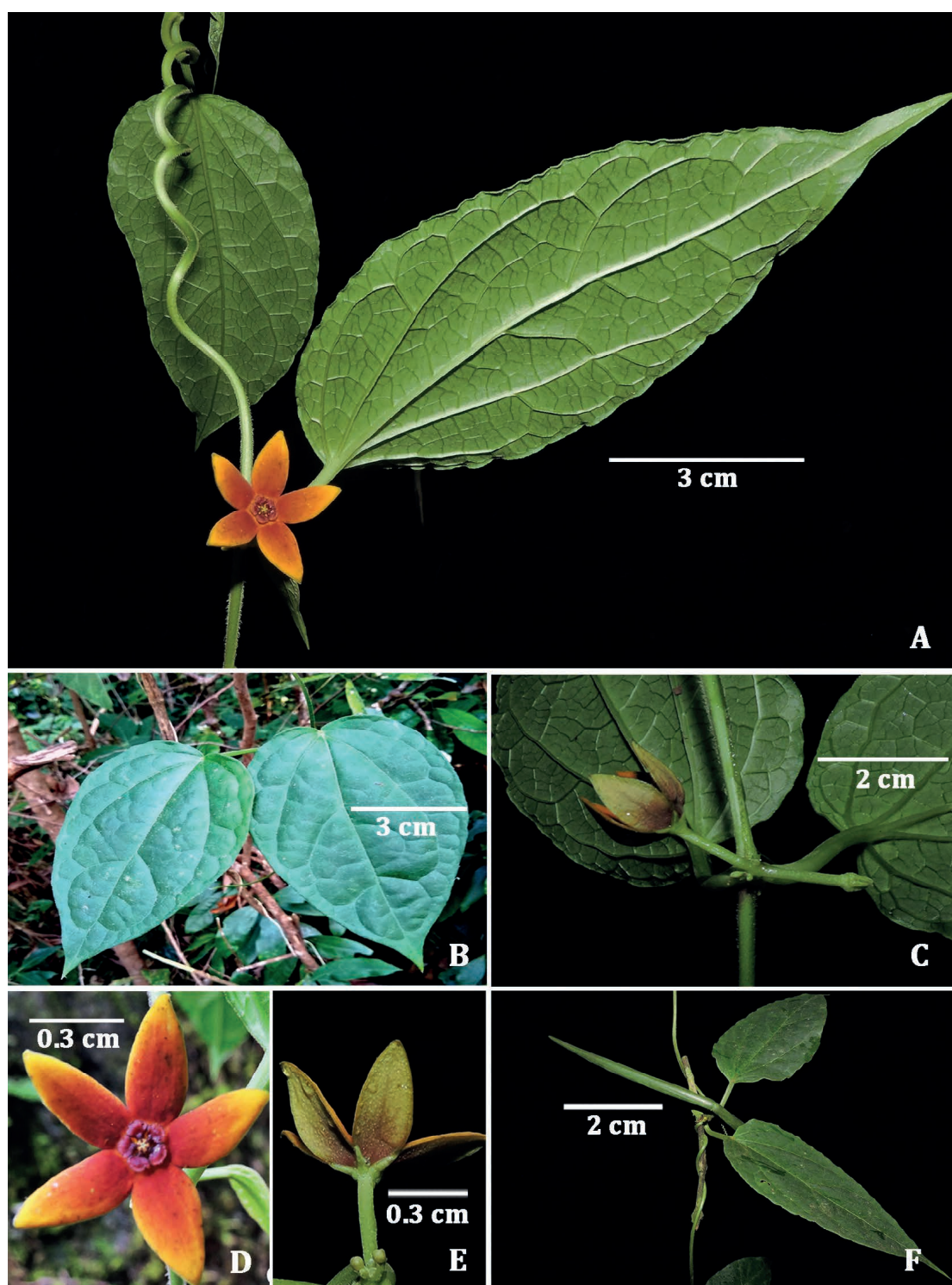


Fig. 1. *Heterostemma dalzellii*. A) Flowering twig. B) Leaves. C) Inflorescence showing the mature flower and bud. D) Flower close-up. E) Flower, lateral view. F) Follicle.

Fig. 1. *Heterostemma dalzellii*. A) Rama en flor. B) Hojas. C) Inflorescencia con flor madura y pimpollo. D) Flor. E) Flor, vista lateral. F) Fólculo.

DISCUSSION

The south Western Ghats, situated at the crossroads of the Indian peninsula and South Asia, is considered a significant biogeographical hotspot area of the world. It has a unique status as an ancestral area holding varied concentrations of endemic species. It is believed that biodiversity linkages of the Indian peninsula and South Asia might have occurred during the process of biological evolution due to multiple physical, climatological and geological changes (Szumik & Goloboff, 2004; Mathew, 2015). The botanical linkage of a number of plant species between these two regions has been reported by Sasidharan (2013). Wayanad, the new accession point of *H. dalzellii*, is a part of Nilagiri Biosphere Reserve, where the Eastern Ghats join to the Western Ghats. Eastern Ghats have similar diversity regions to the north Western Ghats, where the distribution was confirmed earlier. Hence this discovery points to the chances of the distribution of *H. dalzellii* to Eastern Ghats too. A detailed investigation is proposed in this regard.

It is observed that, flower colour and leaf sizes are variable in *H. dalzellii*. Basal leaves are quite large with irregular shape as well as randomly sunk and raised surfaces; upper leaves are getting smaller in size and shape is getting regular. Such a way, flower (corolla) color varies from pale yellow to dark orange through green. *H. dalzellii* can be considered a potential wild ornamental plant to be used as a native species in gardening. It will grow over walls, fences, and even in shades and will bring more beauty and attractive look.

H. dalzellii is coming under the section *Heterostemma*. A total of six species is coming under this taxon in India: *H. alatum* Wight, *H. barikianum* P.Agnihotri, D.Husain, P.Katiyar, D.Sahoo, Rodda & T.Husain, *H. dalzellii* Hook.f., *H. stellatum* Hook.f., *H. tanjorensense* Wight & Arn. and *H. wallichii* Wight & Arn. A key to species of *Heterostemma* sect. *Heterostemma* in India is presented for the easy identification.

Key to species of *Heterostemma* sect. *Heterostemma* in India

- 1 Peduncle absent or very reduced *H. barikianum*
- 1' Peduncle present 2
- 2 Peduncle short, upto 3 mm long. 3
- 2' Peduncle comparatively large, more than 5 mm long. 4
- 3 Leaves elliptic oblong, base truncate *H. tanjorensense*
- 3' Leaves lanceolate, base round *H. stellatum*
- 4 Leaves glabrous throughout 5
- 4' Leaves hairy, ciliate at margins *H. alatum*
- 5 Corona lobes spathulate lobes projecting horizontally and lying flat
..... *H. dalzellii*
- 5' Corona lobes obcordate or orbicular, projecting vertically
..... *H. wallichii*

Heterostemma dalzellii is morphologically similar to two other Indian taxa under section *Oianthus*, particularly *H. beddomei* (Hook.f.) Swarupan. & Mangaly and *H. deccanense* (Talbot) Swarupan. & Mangaly, especially because its round corona. But *H. dalzellii* is easily distinguished from these species by its rotated corolla, papillose inside, and a compressed-globose sessile corona (vs. discoid or depressed globose corolla, inner surface hairy and erect corona).

ETHICAL APPROVAL

The ethical guidelines for plants & plant materials are followed in the study for sample collection & identification.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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