

# **RESEARCH ARTICLE**

#### LEPIDAGATHIS DALZELLIANA (ACANTHACEAE), A NEW SPECIES FROM THE NORTHERN WESTERN GHATS AND LECTOTYPIFICATION OF THE NAME LEPIDAGATHIS PROSTRATA DALZELL

#### Sushant More<sup>1</sup>, Rohit Mane<sup>2</sup>, Mandar Sawant<sup>3</sup> and Harshal Bhosale<sup>4</sup>

1. Institute of Science, Dr. Homi Bhabha State University, Mumbai, Maharashtra.

- 2. Department of Botany, Rayat Shikshan Sanstha, Balwant College, Vita, Sangli, Maharashtra, India.
- 3. Srushthi Conservation Foundation, Pune Maharashtra.
- 4. Environment Resources Management Mumbai, India Pvt Ltd, Mumbai, Maharashtra.

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# Manuscript Info

Abstract

*Manuscript History* Received: 25 April 2023 Final Accepted: 28 May 2023 Published: June 2023

*Key words: -*Acanthaceae, India, Plateau, Barlerieae *Lepidagathis dalzelliana* sp. nov., (Acanthaceae: Barlerieae), is described from Maharashtra, India. The new species is closely allied to *Lepidagathis clavata* Dalzell. in appearance, but differs by long lanceolate, hairy bracts, and spatulate, oblanceolate to ovate-lanceolate glabrous leaves. Colored photographs and notes are provided to facilitate its distinction from closely allied species. In addition, we have designated the lectotype for the name *Lepidagathis prostrata* Dalzell.

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# Introduction: -

Genus Lepidagathis Wild. Consists of 151 species distributed mainly in the tropics and sub-tropics (POWO, 2019). In the last 16 years, there are ten novelties namely L. balkrishnannii Ramadevi & Binoj Kumar, L. benojiana Jithin & Jose, L. shrirangii Natekar, Kambale & Chandore, L. ushae Borude. Gosavi & Chandore, L. ananthapuremanensis V.S.A. Kumar, P. Biju, Sindhu Arya, Josekutty & Augustine, L. sabui Chandore, Borude, Madhav & S.R. Yadav, L. rajasekharae K. Prasad & A.M. Reddy, and L. mahakassapae S. More, M. Sawant, H.S. Bhosale & Kambale, L. decumbens N. Dhatchan. & S. Soosairaj, L. gandhii Gnanasek., A.F.J. King, S.M. Kasim & Arisdason have been described in India (Ramadevi, S. and Binojkumar, S. S. 2008, Jithin & Jose 2017; Natekar et al. 2019; Borude et al. 2020; Biju et al. 2020; Chandore et al. 2020; Prasad & Reddy 2020; More et al. 2022; Balachandran. N. et al. 2022, Gnanasekaran et al. 2023). During 2020 - 2023, while studying the species of Lepidgathis found on the plateaus of low-elevated coastal Konkan and high-elevated Northern Western Ghats, several specimens of the genus Lepidagathis were collected and investigated through careful dissection under a stereo zoom microscope likewise, high-resolution photographs of the specimens available on digital sources were acquired from the curator of the respective herbaria K, BLAT, BM, BSI, CAL, MNHN, BSD (as per Thiers, 2023) and detailed protologues of all Lepidgathis species found in India were studied.

After scrutiny, it was revealed that the specimens collected from Mhavashi, Chalkewadi, and Kaas plateau did not match with any of the *Lepidgathis* described so far, and further that the name *Lepidgathis prostrata* Dalzell. has no type designated yet. Hence in the present paper, we have designated a lectotype for the name *L. prostrata* Dalzell. and described a new species to science.

**Corresponding Author: - Sushant More** Address:- Institute of Science, Dr. Homi Bhabha State University, Mumbai, Maharashtra.

# Typification

*Lepidagathis prostrata* Dalzell. Hooker's J. Bot. Kew Gard. Misc. 2: 138 (1850) Lectotype (designated here): - INDIA, Maharashtra, Bombay [Bombay presidency] Dalzell. s.n. K (K001392460, Image!) [Fig. 1]

#### Remarks

Dalzell described *Lepidagathis prostrata* (1850) based on his collections from Malvan, Bombay presidency [Now in Maharashtra state]. We referred four specimens collected by Dalzell conserved at K (K001392457), (K001392458), (K001392459), and (K001392460) out of these (K001392460!) is designated here as lectotype, being a complete specimen and agrees well with the protologue according to article 9.3 of Schenzen code (Turland et.al 2018).

#### New species

Lepidagathis dalzelliana S. More, Mane, M. Sawant & H.S. Bhosale sp. nov. [Fig. 2]

Type. INDIA, Maharashtra, Satara District, Mhavashi, Dadhamwadi, WGS 84, 17°27'57.17"N, 73°54'20.44", alt. 1125 m a.s.l., 9, March 2021; S. More & R. Mane, RMSM 192 (Holotype, CAL; Isotype, BLAT).

*Lepidagathis dalzelliana* sp nov. is morphologically allied to *L. clavata* Dalzell. but can be distinguished by leaves broadly oblanceolate to ovate-lanceolate, base attenuate (versus leaves oblong-lanceolate, base truncate), terminal, axillary, 3-4 cm long, elongated or pyramidal shaped spikes (versus terminal, 7-8 cm long, oblong or clavate spikes), floral 2.5 - 3cm. long, lanceolate, sterile ca. 3.5 - 3.9 cm long, ovate-lanceolate, hairy bracts (versus floral 1-1.5 cm. long, ovate, hairy, sterile 1.8-2 cm long, lanceolate, plicate, glabrous bracts).

# Description

Decumbent, sub-shrub 30 - 60 cm long, much branched; stems obtusely quadrangular, minutely hairy or glabrous, nodes thick with adventitious roots, internodes 1.5 - 2.0 cm long. Leaves opposite, sessile, broadly oblanceolate to ovate-lanceolate,  $3 - 5.5 \ge 1.5 - 3.2 \text{ cm}$ , apex acute, base attenuate, margin entire, subtly ciliate, glabrous. Spikes axillary or terminal, elongated or pyramidal shaped, 3 - 4 cm long; Flowers few, sessile, bracteate, bracteolate. Floral bracts lanceolate,  $2.5 - 3 \times 0.5 - 0.8$  cm., densely hairy on both sides, 3 - 5 parallel nerves, margin entire, apex spinous; Lower bracts ovate to ovate-lanceolate, sterile, ca. 3.5 - 3.9 x 0.8 - 1 cm long glandular-hairy, leaflike, apex spinous. Bracteoles two,  $1.6 \times 0.4$  cm, linear-lanceolate, densely hairy, margin entire, apex spinouspointed. Calvx five-partite, sepals densely hairy, margin entire; the three outer segments unequal in length, apex spinous-pointed, the upper  $2 \times 0.5$  cm, ovate-lanceolate, 4-5 nerved; lower two connate at base,  $1.6 \times 0.4$  cm. ovate-lanceolate, 3-4 nerved; the inner two lateral segments  $1.4 \times 0.3 - 0.4$  cm, ensiform. Corolla bilabiate, 1.5 - 0.4 cm, ensiform. 1.8 cm long, tube 5-6 mm long, sparsely hairy above; dilated in the lower half, light pinkish to pale vellow. Upper lips 5 mm long, notched, lobes rounded. The lower lips of three unequal lobes, 5 - 6 mm long. Middle lobe longer, lateral two smaller, elliptic. Stamens 4, didynamous; filaments 4 - 8 mm long, white; anther lobes 2 mm long. Disc annular, nectariferous. Ovary ovoid, glabrous, 2 mm long; Styles slender, curved, ca. 1.7 cm long, hairy in the lower half; stigmas minute, shallowly lobed. Capsules turbinate,  $10 \times 4$  mm., glabrous, acute at apex. Seeds two, Golden yellow,  $2.8 \times 3$  mm ovoid to orbicular, with amber-colored hygroscopic long hairs.

#### Etymology

The new species is named after Nicol Alexander Dalzell conservator of forests and superintendent of the Botanical Gardens in the Bombay Presidency, to honour his work and contributions to the field of the botany of Western Maharashtra.

#### Phenology

(Flowering and Fruiting): November to April

#### Distribution

*Lepidagathis dalzelliana* sp. nov is distributed on the plateaus of Satara district namely Mhavashi, Kaas, and Chalkewadi Plateau, and is endemic to the state of Maharashtra.

#### Paratypes

India, Maharashtra, Satara district, Chalkewadi Plateau, WGS 84, 17°35'12.28"N,73°49'47.49"E, alt. 1136 m a.s.l., 13 March 2021, S. More, SSM 193,194 (BSI); India, Maharashtra, Satara district, Satara taluka, Kaas plateau, WGS 84, 17°43'33.19"N,73°49'26.10"E, alt. 1253 m a.s.l., 27 October 2021, S. More, SSM 195 (BLAT).

#### Habitat and ecology

Lepidagathis dalzelliana grows on high-altitude lateritic plateaus from 1000 to 1298 m a.s.l., in accumulated soil and among small stone boulders in association with *Ischaemum impressum* Hack. Lepidagathis mahakassapae S. More, M. Sawant, Kambale & H.S. Bhosale., Justicia trinervia vahl. and Blumea malcolmii Hook.f. It was also observed that Crematogaster sp. ants were feeding and passing the nectar droplets to each other.

#### Notes

It is observed that the population of *Lepidagathis dalzelliana* sp. nov from Kaas and Chalkewadi is highly robust in appearance whereas the Mhavashi population is delicate. At first glance, sterile bracts of new species can be mistaken for leaves but the presence of a spine at the apex and glandular hairy nature differs it from the actual glabrous leaves. *Lepidagathis dalzelliana* sp. nov. is likely to be confused with one form of highly variable species *L. cuspidata* Nees. which grows as a prostrate plant on the open plateaus of northern Western Ghats around Mahabaleshwar, and Panchgani tableland, unlike its typical form which grows as erect subshrub up to 100 to 150 cm. in height. But can be distinguished by unique longer lanceolate, hairy bracts and spatulate, broadly oblanceolate to ovate-lanceolate glabrous leaves in the former whereas hairy cuspidate leaves and glandular-hairy, ovate bracts in the latter.



Figure 1: - Lectotype of *Lepidagathis prostrata* Dalzell. (K, K001392460). © The Board of Trustees for the Royal Botanic Gardens, Kew. (Reproduced with permission).



**Figure 2: -** a - Habit of *Lepidagathis dalzelliana* sp. nov., b - spike close up, c - Style and ovary, d - Capsule, e -Seed, f - Flower, g - Vegetative twig showing leaves, h - Bracts abaxial and side view, i - Bracteoles, j - Sepals (Photographs © Sushant More & Rohit Mane).

#### Acknowledgments: -

The authors are grateful to Mr. Shripad Halbe, and Brihad Bhartiya Samaj, Mumbai for funding the Fieldwork. SM Thanks Authorities Directors of Royal Botanic Gardens, Kew, Dr. Homi Bhabha state university, Mumbai, Institute of Science, Mumbai, and Blatter Herbarium, St. Xavier's College, Mumbai, for the laboratory and library resources. We also thank Dr. Rutuja Kolte, Belgaon for providing the flowering specimen of *Lepidagathis clavata* for study. RM is thankful to the Head of, the Department of Botany and the Principal of Balwant College, Vita for providing the necessary facilities.

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