



Fundación
Miguel Lillo
Tucumán
Argentina

doi

A New Species of *Osbeckia* (Melastomataceae) from Agasthyamala Biosphere Reserve, India

Una nueva especie de *Osbeckia* (Melastomataceae) de la Reserva de Biosfera Agasthyamala, India

Sujana, Kanjiraparambil A.^{id}; S. Navya^{*id}; Amrutha Sundaran^{id}; Rakesh Gopala Vadhyar^{id}

Botanical Survey of India, Southern Regional Centre, Coimbatore -641003, Tamil Nadu, India.

* Corresponding autor: <snavyaagri@gmail.com>

Abstract

Osbeckia ulotricha (Melastomataceae), a new species from Agasthyamala Biosphere Reserve, is described and illustrated. The new species exhibits some morphological similarities to *Osbeckia yercaudensis* Sarav. & Kaliyam., but can be distinguished by the subglobose hypanthium, true bristles on the crown, style with ascending trichomes, and protruding capsule. Micro-morphological characters of the pollen and seeds of the new species are also provided.

Keywords: Biodiversity hotspot; Grasslands; *Osbeckia ulotricha*; Shola, Southern Western Ghats.

Resumen

Se describe e ilustra *Osbeckia ulotricha* (Melastomataceae), una nueva especie procedente de la Reserva de la Biosfera de Agasthyamala. La nueva especie presenta algunas similitudes morfológicas con *Osbeckia yercaudensis* Sarav. & Kaliyam., pero se distingue por su hipanto subgloboso, cerdas verdaderas en la corona, el estilo con tricomas ascendentes y la cápsula protuberante.

► Ref. bibliográfica: Sujana, K. A.; Navya, S.; Sundaran, A.; Vadhyar, R. G. 2026. A New Species of *Osbeckia* (Melastomataceae) from Agasthyamala Biosphere Reserve, India. *Lilloa* 63 (2): 249-259. doi: <https://doi.org/10.30550/j.lil/2343>

► Recibido: 9 de febrero 2026 – Aceptado: 16 de julio 2026 – Publicado: 24 de agosto 2026.

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

► Esta obra está bajo una Licencia Creative Commons Atribución – No Comercial – Sin Obra Derivada 4.0 Internacional.



También se proporcionan los caracteres micromorfológicos del polen y las semillas de la nueva especie.

Palabras clave: Hotspot de biodiversidad; *Osbeckia ulotricha*; Pastizales; Shola, Ghats occidentales del sur.

INTRODUCTION

The genus *Osbeckia* L. comprises many annual or perennial herbs and woody shrubs, with approximately 43 accepted species worldwide, primarily distributed in the Old-World tropics and Australia (Ulloa *et al.*, 2022; POWO, 2025). In India, 29 taxa have been reported so far under the sections: *Amblyanthera* Blume, *Asterostoma* Blume, *Ceramicalyx* Blume and *Osbeckia* L. (Prashob & Thomas, 2019; Giri, 2020; Saravanan & Kaliamoorthy, 2023; Das *et al.*, 2026) among which 21 taxa occur in Tamil Nadu (Narasimhan & Irwin, 2021; Saravanan & Kaliamoorthy, 2023). The section *Asterostoma* is characterized by pentamerous flowers and a hypanthium with emergences and hairs (Triana, 1871). At present, 14 taxa in India belong to this section, and many are found exclusively in the Southern Western Ghats. Situated at the southernmost tip of the Western Ghats, the Agasthyamala hill ranges constitute a biodiversity hotspot, renowned for their rich assemblage of endemic plant species, both documented and yet to be discovered, particularly within the Shola-grassland ecosystems. During a botanical exploration conducted in the Agasthyamala Biosphere Reserve, the authors encountered an *Osbeckia* similar to *Osbeckia yercaudensis* Sarav. & Kalias., but with protruding capsule and crowded leaves at the apex. However, upon close examination and comparative studies, it was confirmed to be a different species that had not been described previously.

MATERIALS AND METHODS

The specimens were collected and dry pressed in the field. Flowers and fruits were preserved for further study. Upon comparative studies with type specimens (MH!), online data sources (BSI, CAL, K, FRC) and by consulting protologues of similar species along with relevant literature survey (Gamble, 1928; Hansen, 1977; Giri & Nayar, 1986; Manickam & Murugan, 2001; Prashob & Thomas, 2019; Giri, 2020; Goldenberg *et al.*, 2022; Saravanan & Kaliamoorthy, 2023) it was concluded that the specimen is different from other species with similar morphology. Dissection and photographs were made using Olympus XZ2- ILST. A Scanning Electron Microscope (Evo M 18, Carl Zeiss) was used to study the micromorphology of pollen and seed. Pollen and seed samples obtained from flowers and mature fruits in the field were preserved in FAA (formalin-acetic acid

alcohol solution) and gradually dehydrated. After air drying, the samples were mounted on a stub and coated with a thin layer of gold-palladium mixture using the Mini Sputter Coater (SC7620, Emitech) and examined under the SEM. Palynological terminology follows Halbritter *et al.* (2018) and Ocampo *et al.* (2022). The distribution map of the newly described taxon was prepared in GeoCAT (Fig. 1) and its conservation status was assessed according to the IUCN Red List Categories and Criteria (IUCN, 2026).

TAXONOMY

Osbeckia ulotricha Sujana, Navya, Amruth.
& Vadhyar sp. nov. Figs. 2-3

Type.— INDIA. Tamil Nadu: Kanyakumari district, Muthukuzhivayal, 8.483033°N, 77.391100°E, 1500 masl, 06 February 2019, *Sujana & Vadhyar 144676* (Holotype MH; Isotype CAL).

Diagnosis.— The hypanthial emergences of *Osbeckia ulotricha* resemble those of *Osbeckia yercaudensis* and *Osbeckia wightiana* Benth. ex Wight & Arn. However, the presence of ascending basal hairs on the style and protruding capsule distinguishes the new species from other morphologically similar taxa. Conferted leaves at the apex, sub-globose hypanthium and ovary crowned with true bristles can be used to easily differentiate this species (Table 1).



Fig. 1. Distribution Map of *Osbeckia ulotricha*, generated using GeoCAT.

Fig. 1. Mapa de distribución de *Osbeckia ulotricha*, elaborado con GeoCAT.

Table 1. Character comparison of *Osbeckia ulotricha* with *O. yercaudensis* and *O. wightiana*.**Tabla 1.** Comparación de características entre *Osbeckia ulotricha*, *O. yercaudensis* y *O. wightiana*.

Character	<i>O. ulotricha</i> Sujana, Navya, Amruth. & Vadhyar	<i>O. yercaudensis</i> Sarav. & Kalliam.	<i>O. wightiana</i> Benth. ex Wight & Arn.
Hairiness in the young stem	dense ascending brown bristles	dense ascending brown hairs	sparse appressed or subappressed, short bristles
Petiole	absent or if present 0.5–3 mm long	ca. 6 mm long	4–8 mm long
Inflorescence	3–5 flowered, cymes condense	2–3 flowered, cymes lax	3–7 flowered, cymes lax
Bract	asymmetrically ovate, ca. 5.5 × 7.5 mm, brown	broadly ovate, ca. 8 × 9 mm, green	ovate, ca. 4 × 6 mm, green
Intersepal emergences	ca. 2 mm long, bulged at tip; hairs ulotrichous, red stalk with red head	ca. 3 mm long, disc-like at tip; hairs stellate; green stalk with red head	ca. 2.5 mm long, disc-like at tip; hairs stellate; green stalk with red head
Hypanthium	sub-globose	campanulate	campanulate
Stamen	profusely twisted, pores oblique ventrally	moderately twisted, pores oblique ventrally	moderately twisted, pores oblique dorsally
Ovary	crown with bristles	crown with hairs	crown with hairs
Stylar hairs	present at base	absent	absent
Capsule	ovary protruding out of the calyx tube	ovary not protruding out of the calyx tube	ovary not protruding out of the calyx tube
Seed	ca. 0.65 mm across, curved, colliculate, uniformly striate	ca. 1 mm across, U-shaped, muricate, uniformly striate	ca. 0.2 mm, curved-cordate, colliculate, occasional blotches without striations

Description.— Shrubs, bushy, 2–3 m high. Branches dichotomous, young stems quadrangular, densely pubescent, hairs longer at nodes; mature stems sub-terete, sparsely strigose to glabrous. Leaves simple, opposite, sessile or sub-sessile; petioles if present sub-terete, 0.5–3 mm long; lamina elliptic-lanceolate, 10–25 × 9–15 mm, base obtuse to sub-rounded, apex acute to cuspidate, margins densely ciliate, densely sericeous when young, 5-veined; veins acrodromous, densely strigose abaxially. Inflorescences terminal, condensed-cymes, 3–5 flowered, subtended by 1 or 2 pairs of leaves. Flowers pentamerous; bracts asymmetrically-ovate, ca. 5.5 × 7.5 mm, apex acute, margins ciliate, pubescent abaxially towards base, brownish. Pedicels terete, ca. 2 mm long. Hypanthium globose to sub-globose, 9–11 × 9–10 mm, densely clothed with stellate emergences; emergences stalked; stalk terete, ca. 1 mm long, red, hairy; hairs ulotrichous, white, persistent. Intersepal emergence stalked, ca. 2 mm long; stalk terete, tip bulged, red, hairy; hairs ulotrichous, white, persistent. Sepals 5, triangular, ca. 8.5 × 5 mm, narrowed towards apex, margins irregular and ciliate, densely ulotrichous abaxially, 1-veined. Petals 5, obovate, 20–23 × 19–21 mm, margins ciliate, pale-purple, veins prominent. Stamens 10; filaments 8.5–9 mm long, white, turning pink on ageing, glabrous; anthers profusely twisted, oblong-falcate, ca. 9.2 mm long, apex beaked, yellow; pores one, ventrally oblique; connective prolonged into a small collar. Ovary 5-locular, 8–9 mm long, united with hypanthium up to one third of its length; anther pocket not extending to the base of ovary, ovary crowned with true bristles; bristles 3–4 mm long, rigid, white; style 8–9 mm long, white, turning pink

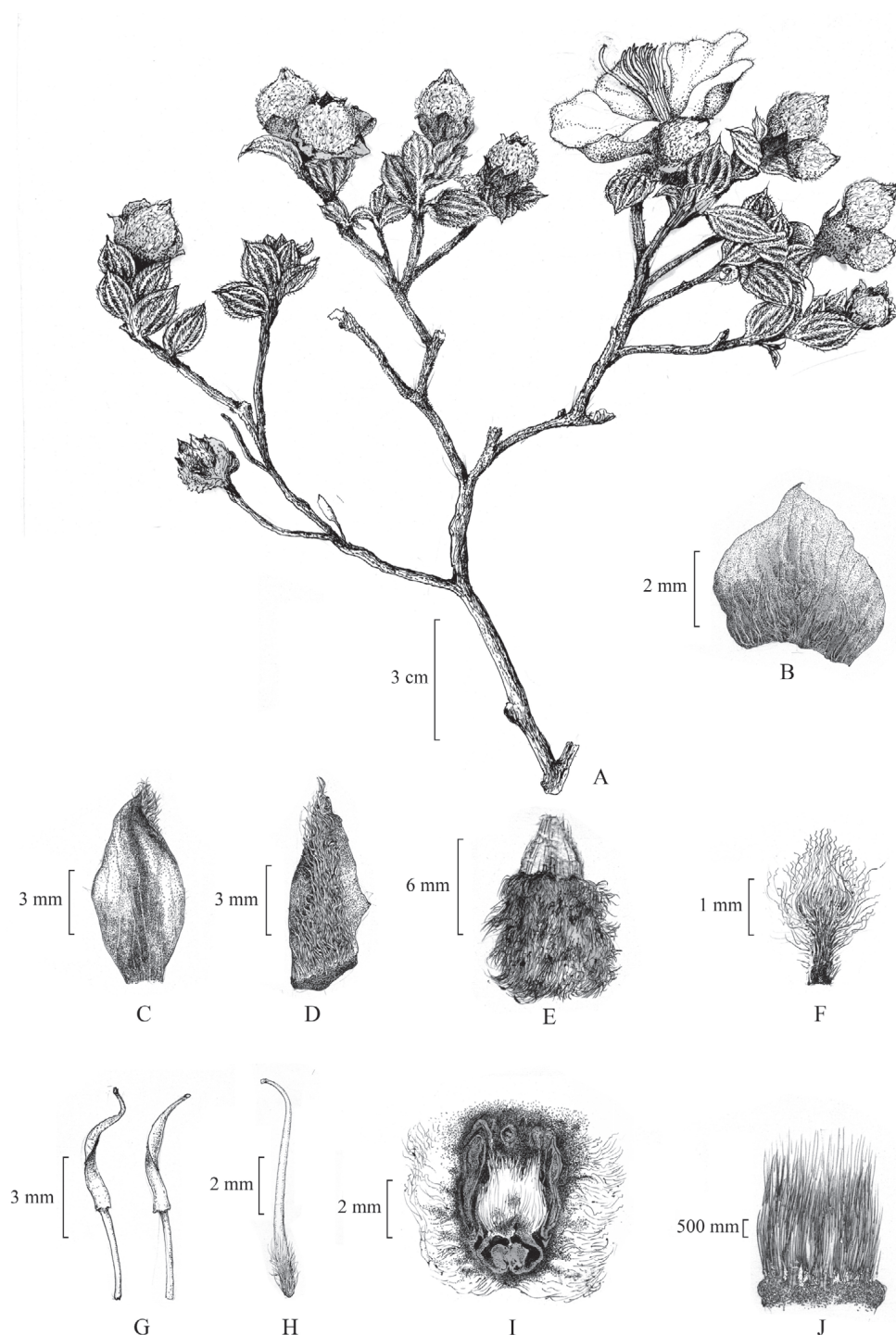


Fig. 2. *Osbeckia ulotricha*. A) Flowering and fruiting twig. B) Bract. C) Sepal, adaxial view. D) Sepal, abaxial view. E) Hypanthium with protruding ovary. F) Intersepal emergence. G) Stamens. H) Pistil. I) Anther pocket (longitudinal section of hypanthium). J) Ovary crowned with true bristles. Drawn by A.T. Durgadas.

Fig. 2. *Osbeckia ulotricha*. A) Ramita en floración y con frutos. B) Bráctea. C) Sépalo, vista adaxial. D) Sépalo, vista abaxial. E) Hipanto con ovario protuberante. F) Emergencia intersepal. G) Estambres. H) Pistilo. I) Bolsillo anteral (corte longitudinal del hipanto). J) Ovario coronado por cerdas verdaderas. Dibujo de A. T. Durgadas.



Fig. 3. *Osbeckia ulotricha*. A) Leafy twigs. B) Leaf, adaxial view and Leaf, abaxial view. C) Stylar hair in withering flower. D) Flower. E) Fruiting twig. F) Seeds, normal (below) and enlarged view (above). G) a: bract; b: sepal abaxial; c: sepal adaxial; d: hypanthial emergence; e: intersepalal emergence; f: anther pocket; g: ovary crown with true bristles.

Fig. 3. *Osbeckia ulotricha*. A) Ramitas con hojas. B) Hoja, vista adaxial y hoja, vista abaxial. C) Tricoma estilar en flor marchita. D) Flor. E) Ramita fructífera. F) Semillas, vista normal (abajo) y vista ampliada (arriba). G) a: bráctea; b: sépalo abaxial; c: sépalo adaxial; d: emergencia hipantial; e: emergencia intersepalal; f: bolsillo anteral; g: corona del ovario con cerdas verdaderas.

on ageing, base hairy; hairs 25–30 in number, ascending; stigma capitate, caducous. Capsules ovoid, 11–12 × 9–10 mm; ovary protruding out of fruiting calyx. Seeds numerous, ovoid-oblong, ca. 0.7 × 0.5 mm, curved, colliculate, stramineous turning black on maturity.

Flowering and fruiting.— February–May.

Distribution and ecology.— The new species is hitherto known only from locations in the Agasthyamala Biosphere Reserve, occurring at elevations of 1200–1500 m. It grows mainly in the damp margins of Tropical Montane Wet Temperate Forest (shola) and Montane Temperate Grassland ecosystems. Major associated species include *Meistera fulviceps* (Thwaites) Škorničk. & M. F. Newman (Zingiberaceae), *Rubus glomeratus* Blume, *Rubus niveus* Thunb. (Rosaceae), *Sonerila travancorica* Bedd. (Melastomataceae), *Symplocos oligandra* Bedd. (Symplocaceae), *Turpinia malabarica* Gamble (Staphyleaceae), *Viburnum coriaceum* Blume (Viburnaceae) etc.

Micromorphology of Pollen.— Grains monads, tricolporate, three colpi with prominent pores, colpi not completely extending to poles, radially symmetrical, isopolar, well-developed pseudocolpi alternating with the true colpi (Fig. 4). Mean pollen size (dry) ca. 24 × 23 μm. Surface texture is striate-rugulate. Colpus membrane granulate. Pore size ca. 5 × 4 μm.

Micromorphology of Seeds.— Seeds ovoid-oblong, 500–700 × 450–550 μm, curved, colliculate, laterally symmetrical, plane ovate. Hilum conspicuous, individual cells elongated, anticlinal boundaries undulate, puzzle-like formations; periclinal walls par-convex (ca. 35 μm), micro-relief striate to reticulate (Fig. 5 A-B).

Paratype.— INDIA, Tamil Nadu, Kanyakumari district, Muthukuzhivayal, 1500 masl, 8.483033°N, 77.391100°E, 06 June 2021, *Sujana & Vadhyar* 147999 (MH).

Etymology.— The specific epithet '*ulotricha*' is derived from the term '*ulotrichi*', which originates from the combination of Greek words: '*oulos*', meaning woolly or crisp, and '*thrix*', meaning hair. In combination, the word '*ulotrichous*' means woolly-curly-haired, which is a key morphological feature of the hypanthium of the newly described species.

Notes.— The micro-morphological studies of the seeds using SEM reveal significant character differences among the new species and its related taxa *O. yercaudensis* and *O. wightiana*. The seeds of the newly described species are curved in shape with a greater number of micro-relieves per unit area. The seeds of *O. yercaudensis* are U-shaped, muricate with uniform striations (Fig. 5 C-D), while in *O. wightiana*, the seeds are curved-cordate, colliculate with occasional blotches without striations (Fig. 5 E-F).

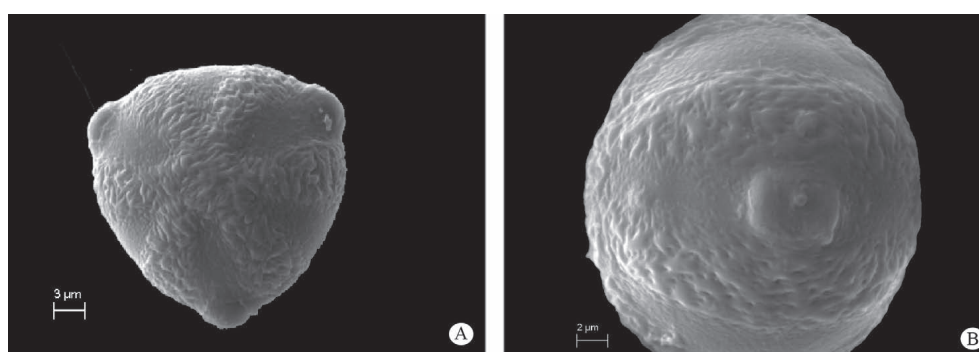


Fig. 4. Pollen of *Osbeckia ulotricha*. A) Polar view. B) Equatorial view.

Fig. 4. Polen de *Osbeckia ulotricha*. A) Vista polar. B) Vista ecuatorial.

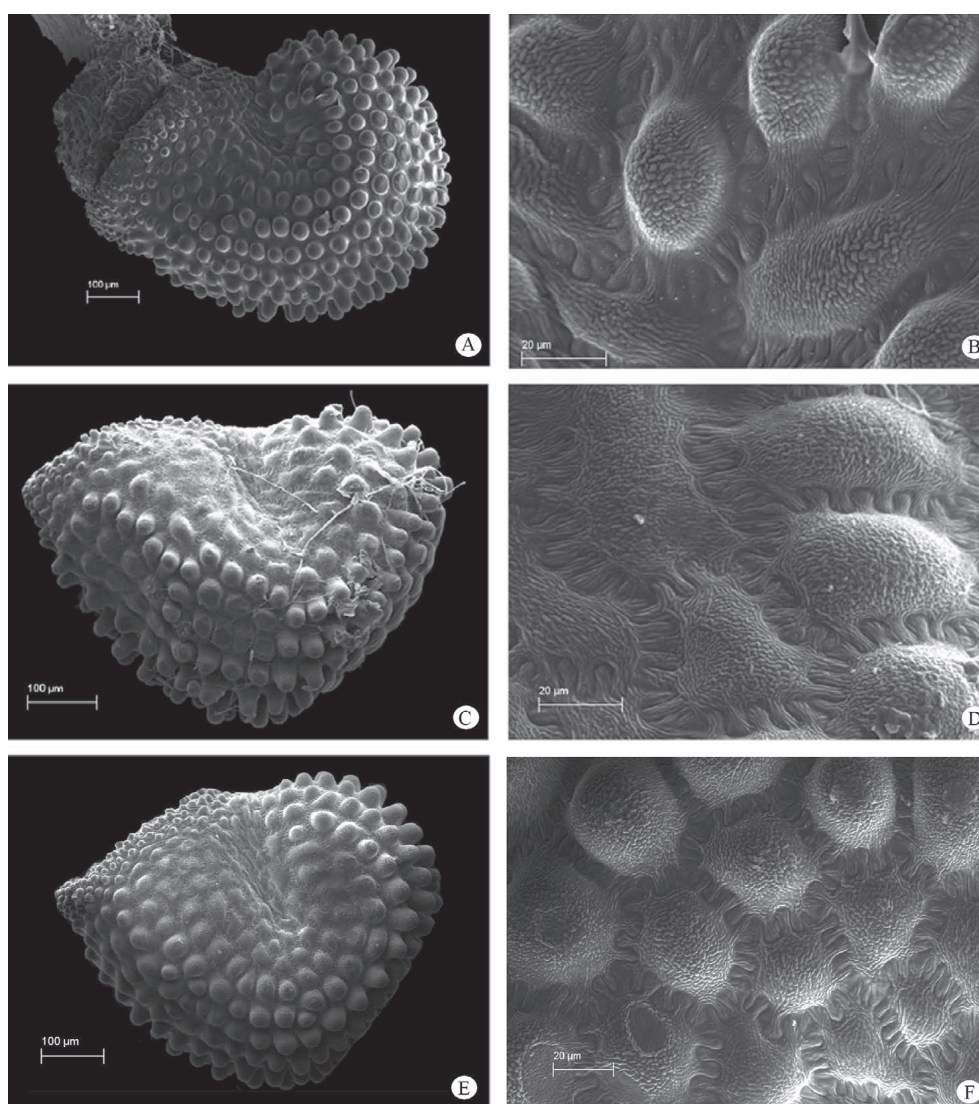


Fig. 5. SEM images of seed and surface ornamentation: A-B) *Osbeckia ulotricha*. C-D) *O. yercaudensis*. E-F) *O. wightiana*.

Fig. 5. Imágenes al microscopio electrónico de barrido (SEM) de las semillas y su ornamentación superficial: A-B) *Osbeckia ulotricha*. C-D) *O. yercaudensis*. E-F) *O. wightiana*.

According to Hansen (1977), the only known *Osbeckia* with stylar hairs is a variety of *O. stellata* Buch.-Ham. ex D.Don (1822:674), which is distributed in the Himalayas, China, and Indo-China and belongs to the sect. *Ceramicalyx*, but that taxon is clearly different as it has an urceolate hypanthium with a neck. Hypanthium shape and indumentum of style are considered as stable characters rather than ecological variation while delimiting the species in *Osbeckia*. A key to the species of *Osbeckia* in India under the section *Asterostoma* is also provided (Prashob & Thomas, 2019). Another species of *Osbeckia* reported from the same distribution range is *O. tirunelvelica* Manickam & Murugan, but is very different from the current species in having only simple hairs on hypanthium.

Conservation Status.— Approximately 50 individuals were in the flowering state, in three locations. In all locations within an area of less than 1 km². However, a comprehensive population study has not been performed, so its conservation status is assessed as Data Deficient (DD) based on the IUCN Categories and Criteria (<https://www.iucnredlist.org/resources/categories-and-criteria>).

Key to the Indian species of *Osbeckia* sect. *Asterostoma*

- 1 Hypanthium with simple hairs only 2
- 1' Hypanthium with simple hairs, emergences and bristles 4
- 2 Hypanthial hairs with a bullate base, leaves turning yellow when dry *O. gracilis*
- 2' Hypanthial hairs without a bullate base, leaves not turning yellow when dry 3
- 3 Sepals subulate; intersepalal emergences stalked, with terminal and lateral hair *O. tirunelvelica*
- 3' Sepals triangular; intersepalal emergences sessile, with hairs at apex only *O. aspera*
- 4 Hypanthium clothed with large scale-like emergences 5
- 4' Hypanthium clothed with stellate headed emergences 7
- 5 Leaves ca. 4 × 1 cm; panicles 2–3-flowered; sepals exceeding hypanthium *O. nutans*
- 5' Leaves ca. 8 × 3 cm; panicles 8–12-flowered; sepals not exceeding hypanthium 6
- 6 Leaves sessile, base truncate *O. nepalensis*
- 6' Leaves petiolate (0.5–1.5 cm long), base obtuse *O. wynaadensis*
- 7 Branchlets pilose; leaves sessile; bracts orbicular *O. leschenaultiana*
- 7' Branchlets otherwise; leaves petiolate; bracts ovate to cordate 8
- 8 Leaves 5–7-veined 9
- 8' Leaves 3–5-veined 10

- 9 Leaf surface bullate, densely hairy, base subcordate *O. reticulata*
 9' Leaf surface not bullate, sparsely hairy, base obtuse to rounded 11
 10 Sepals subulate; anther pores oblique dorsally *O. wightiana*
 10' Sepals triangular; anther pores oblique ventrally 12
 11 Leaves lanceolate, inflorescence a terminal cluster of cymes
 *O. virgata*
 11' Leaves ovate to elliptic, inflorescence a terminal panicle 13
 12 Hypanthium campanulate; sepals emarginate; style glabrous; capsules
 not protruding *O. yercaudensis*
 12' Hypanthium sub-globose; sepals acute; style hairy; capsules protruding
 *O. ulotricha*
 13 Bracts ovate, woolly dorsally; sepals triangular *O. mehrana*
 13' Bracts cordate, sparsely hairy; sepals subulate 14
 14 Branches sparsely hirsute; sepals symmetrical *O. travancorica*
 14' Branches densely strigose; sepals asymmetrical *O. abrahamii*

CONFLICTS OF INTEREST

The authors declared that they have no conflict of interest.

REFERENCES

- Das, B., Pulpra, P. & Nath, N. (2026). *Osbeckia zubeengargiana* (Melastomataceae), a new species from Assam, Northeast India. *Phytotaxa* 747 (1): 1-7.
- Gamble, J. S. (1928). *Flora of the Presidency of Madras* (Vol. 1.) Adlard and Son Ltd. London.
- Giri, G. S. & Nayar, M. P. (1986). A new species of *Osbeckia* (Melastomataceae) from southern India. *Kew Bulletin*: 429-431.
- Giri, G. S. (2020). Melastomataceae. In A.A. Mao & S.S. Dash, *Flowering Plants of India An Annotated Checklist* 1: 551-553.
- Goldenberg, R., Michelangeli, F. A. & Almeda, F. (Eds.). (2022). *Systematics, evolution, and ecology of Melastomataceae*. Cham: Springer International Publishing.
- Halbritter, H., Ulrich, S., Grímsson, F., Weber, M., Zetter, R., Hesse, M., Buchner, R., Svojtka, M. & Frosch-Radivo, A. (2018). Pollen morphology and ultrastructure. In *Illustrated pollen terminology*: pp. 37-65. Cham: Springer International Publishing.
- Hansen, C. (1977). The Asiatic species of *Osbeckia* (Melastomataceae). *Ginkgoana* 4: 1-150.
- IUCN. (2026). The IUCN Red List of Threatened Species, version 2026–1. Gland, Switzerland: International Union for Conservation of Nature. ISSN 2307–8235. <https://www.iucnredlist.org>

- Manickam, V. S. & Murugan, C. (2001). *Osbeckia tirunelvelica*, a new species of Melastomataceae from Western Ghats, India. *Journal of Economic and Taxonomic Botany* 25 (3): 626-628.
- Narasimhan, D. & Irwin, S. J. (2021). *Flowering plants of Tamil Nadu: a compendium*. Care Earth Trust, Chennai. pp. 627-630.
- Ocampo, G., Michelangeli, F. A., Penneys, D. S., Handley, V., González-Moreno, R., Herrera-Dimas, E. & Almeda, F. (2022). A new perspective on seed morphological features in Melastomataceae. In Goldenberg, R., Michelangeli, F. A., & Almeda, F. (Eds.) *Systematics, evolution, and ecology of Melastomataceae*, pp. 491-531.
- Plants of the World Online* (POWO). (2025). Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet: <http://www.plantsoftheworldonline.org>. Retrieved on October 2025.
- Prashob, P. & Thomas, S. M. (2019). The genus *Osbeckia* (Melastomataceae) in India. *Rheedea* 29 (4): 236-305.
- Saravanan, T. S. & Kaliamoorthy, S. (2023). *Osbeckia yercaudensis* (Melastomataceae) a new species from the Eastern Ghats, India. *Phytotaxa* 583 (3): 292-296.
- Triana, J. J. (1871). Les Melastomacées. *Transactions of the Linnaean Society, London* 28: 1-188.
- Ulloa, C., Almeda, F., Goldenberg, R., Kadereit, G., Michelangeli, F. A., Penneys, D. S. & Veranso-Libalah, M. C. (2022). Melastomataceae: Global diversity, distribution, and endemism. In *Systematics, evolution, and ecology of Melastomataceae*, pp. 3-28. Cham: Springer International Publishing.