Memecylon viswanathanii, a new species of Melastomataceae from Kalakkad-Mundanthurai Tiger Reserve (KMTR), India

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Abstract. Memecylon viswanathanii R.Rajesh, P.Sakthidhasan & C.Rajasekar, a new species of Melastomataceae, is described and illustrated from the Kalakkad-Mundanthurai Tiger Reserve (KMTR) in the southern Western Ghats of India. M. viswanathanii is close to M. parvifolium Thwaites and M. varians Thwaites but differs by several vegetative and floral characters. The species is assessed here as Critically endangered as per IUCN Red List.

Keywords: Southern Western Ghats, Critically endangered, M. parvifolium, M. varians.

INTRODUCTION

The genus Memecylon L. belonging to the family of Melastomataceae (The Angiosperm Phylogeny Group IV 2016) has 357 species (Renner et al. 2007 onwards) or around 379 (Michelangeli et al. 2020). It is reported that there are 55 species distributed in India wherein 22 species are endemic to the Western Ghats (Viswanathan and Manikandan 2001; Sivu et al. 2012, 2018; Prabhu and Murugan 2017; Das et al. 2018; Radh and Nampy 2019; Vadhyan et al. 2020). During an inventory in 2017, plant specimens were collected from the Kalakkad-Mundanthurai Tiger Reserve (KMTR) in the southern Western Ghats of Tamil Nadu in India. A critical assessment of pertinent literature (Clarke 1879; Gamble 1919; Bremer 1979, 1987; Viswanathan 2001) revealed that specimens of Memecylon collected from Vaniyangal podavu at an elevation of c. 1405 m MSL in the KMTR were hitherto unknown to science and turned out to be a new species. It is described here with a diagnosis, comparison with closely related species, detailed description, illustrations, phenology and other related details.
Memecylon viswanathanii R.Rajesh, P.Sakthidhasan & C.Rajasekar, sp. nov. (Figures 1 & 2)

Type: INDIA, Tamil Nadu, Tenkasi district, Kadayam Forest Range, Vaniyangal podavu, ±1405 m, 01 March 2017, R. Rajesh, P. Sakthidhasan & C. Rajasekar 1494 (holotype, MH!; isotypes, K!; Herbarium, Department of Botany, Bharathidasan University, Tiruchirappalli).

Diagnosis

Closely related to *M. parvifolium* Thwaites and *M. varians* Thwaites by branches and greyish bark, coria-
Figure 2. *Memecylon viswanathani* R.Rajesh, P.Sakthidhasan & C.Rajasekar, sp. nov. A, trees in the southern Tropical wet evergreen forest; B, tree; C, flowering twig; D, immature floral buds with bracteoles; E, unopened flowers; F, fully opened flowers; G, flowers after fertilization; H, a portion of cleared leaf showing narrowly filiform unbranched sclereids.
ceous leaves with indistinct intramarginal and lateral veins and inflorescence in axillary fascicles but differing in having broadly elliptic leaves with petioles up to 4 mm long, narrowly unbranched filiform sclereids, absence of pedicels and whitish pale blue flowers from *M. parvifolium* and *M. varians*, up to 4 mm long peduncles, warty receptacle and connective bearing gland from *M. parvifolium* and smaller leaves with revolute margin and shorter peduncles from *M. varians* (Table 1).

### Description

Trees, c. 4 m high; branches and branchlets subquadrangular; bark ashy grey mixed with brown; nodes annular; internodes abbreviated, 0.4–2.5 × 0.2–0.6 cm. Leaves decussate – opposite, coriaceous, broadly elliptic, obtuse or obtusely cuneate at base, revolute at margin, obtusely rounded, retuse or emarginate at apex, 1.5–3.2 × 1.0–2.0 cm, green with pale yellow above, yellowish green beneath when dry, yellow with age, glabrous; midrib prominent, sulcate adaxially, raised abaxially; intramarginal and lateral veins indistinct, rarely basal 2 to 3 pairs faintly distinct up to half way adaxially; petioles grooved adaxially, 3–4 × 0.4–0.5 mm. Foliar sclereids monomorphic, narrowly filiform, unbranched. Flowers in axillary fascicles, either at leaf axils or leafless nodes, 6–12 pairs in each fascicle, either at one side or both sides of a node, 4-merous, bisexual with an epigynous disc, 1–1.5 × 1.5–2.0 mm; fascicles each c. 8 mm across; open flowers including hypanthium and expanded petals 5–6 × 2.5–3 mm; bracteoles many, in clusters, at the base of the flowers, elliptic, green, denticulate at margin, c. 0.5 × 1 mm; peduncles 2–4 × 1–2 mm; pedicels 0. Receptacles pale blue, campanulate-cyathiform, prolonged above ovary, continuous with calyx, warty outside. Calyx shallowly 4-lobed; cup warty outside, pale blue outside, c. 1 × 1.2 mm; lobes deltoid or triangular in outline, warty outside, smooth inside, pale blue with pink tinge outside, c. 0.5 × 1 mm. Petals 4, imbricate in bud, whitish pale blue, orbicular, deltoid in outline, slightly undulate at margin, subacuminate at apex, 2.5–3 × 1.5–2 mm. Disc dark blue, smooth. Stamens 8, equal; filaments bluish white, whitish dark blue, incurved in bud, straight, 4–5 × c. 0.2 mm; anthers dithecous, pale brown, opening by slits, c. 0.2 × 0.3 mm; connectives blue, attached ventrally with anthers, nearly axe-shaped, obtuse – rounded at base, 0.8–1 × 0.2–0.3 mm; gland disc-shaped, at dorsal middle of the surface, pinkish brown. Ovary 1-celled; ovules 8, attached to central placenta; style blue to pinkish blue after fertilization, 4–5 × 0.2–0.3 mm. Fruit not collected.

### Etymology

The specific epithet is in honor of Prof. M.B. Viswanathan, Department of Botany, Bharathidasan University, for his contribution to the field of Plant Taxonomy in India.

### Phenology

Flowering: February to April.

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**Table 1.** Comparison of *M. viswanathanii* with *M. parvifolium* and *M. varians*.

| Character | *M. parvifolium* | *M. varians* | *M. viswanathanii* |
|-----------|------------------|--------------|-------------------|
| Leaves    | elliptic to elliptic-obovate, cuneate at base, obtuse to rounded or notched or sometimes acute or occasionally shortly and indistinctly caudate at apex, more or less shining above, drying dark green, 1–3.5 × 0.5–2.5 cm | elliptic, cuneate at base, acute to acuminate or caudate and subacute to obtuse at the very apex, more or less dull on both sides, drying yellowish green, 3–9 × 1.5–3 cm | broadly elliptic, obtuse or obtusely cuneate at base, obtusely rounded, retuse or emarginate at apex, more or less shining above, drying yellowish green, 1.5–3.2 × 1–2 cm |
| Leaf margins | often revolute | not revolute | revolute |
| Petiole length | 1–2 mm | 2–3 mm | 3–4 mm |
| Foliar sclereids | Aggregated to sclerocysts around the veins or vein-endings | irregularly elongated to filiform, often branched | narrowly filiform, unbranched |
| Peduncle length | 0 mm | 1–6 mm | 2–4 mm |
| Pedicels | shorter than or about the same length as the calyx | 0 or shorter than the calyx | 0 |
| Receptacle | smooth | ± papillose | warty |
| Calyx | smooth or shallowly striate inside | smooth or shallowly striate inside | smooth inside |
| Petals | white | blue | whitish pale blue |
| Disc | smooth or shallowly striate | smooth or shallowly striate | smooth |
| Connectives | without a gland | without or with a gland | with a gland |
Memecylon viswanathanii, a new species of Melastomataceae from Kalakkad-Mundanthurai Tiger Reserve (KMTR)

Distribution
Endemic to the Kadayam Forest Range of the Tenkasi district in the KMTR of India.

Habitat
Southern Tropical wet evergreen forest with trees of Mappia nimmoniana (J.Graham) Byng & Stull and Monosia travancorica (Hook.f.) H.Rob. & Skvarla, shrubs of Psychotria bisulcata Wight & Arn., undershrubs of Hedyotis ramarowii (Gamble) R.S.Rao & Hemadri and herbs of Acmella paniculata (Wall. ex DC.) R.K.Jansen, Eriocaulon ensiforme C.E.C.Fischer, Impatiens tanyae R.Kr.Singh, Arigela & Kabeer, Peperomia dindygulensis Miq., Rostellaria simplex Wight, Sonerila travancorica Bedd., Utricularia reticulata Sm. and Zenkeria sebastinei A.N.Henry & Chandrab. Populations are restricted to elevations above 1400 m in the northern part of the KMTR.

Conservation Status
This species comprises 252 mature individuals in 4 populations. We recommend a conservation status of critically endangered (CR) based on IUCN Red List Guidelines and Criteria (IUCN, 2019), on the basis of B1. Extent of occurrence (EOO) – 6.51 km² and B2 and Area of occupancy (AOO) – 0.203 km² (Figure 3).

Taxonomic affinity
Comparison of M. parvifolium, M. varians and M. viswanathanii is given in Table 1.

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