

Memecylon macneillianum (Melastomataceae), a new species from South Andaman, India

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Abstract

Memecylon macneillianum M. Das Das, G. S. Giri, A. Pramanik and D. Maity, a new species from the southern Andaman Islands in India, is described and illustrated. It differs from its closely related species *M. oleifolium* Blume by having both terminal and axillary inflorescences, a higher number (mostly 3–7) inflorescences per node, longer and acutely quadrangular, distinctly furrowed primary inflorescence axes, distinct calyx lobes, and globose fruits. Moreover, in *M. macneillianum* the leaves are thicker, coriaceous and yellowish on both surfaces when dry, whereas in *M. oleifolium* the leaves are thin, chartaceous and olive green with a distinctive rusty-red blush around the midvein on drying.

Introduction

The genus *Memecylon* L. comprises 343 species (Renner et al. 2007) distributed in the Old World tropics and is represented by about 49 species in India with the main concentration of species diversity in the Western Ghats (Das Das and Pramanik 2015). In the course of revisionary work on the family Memecylaceae (=Melastomataceae subfamily Olisbeoideae *sensu* APG IV 2016), the authors came across and critically studied about 18 specimens of 12 gatherings collected between 1891 to 1976 from South Andaman Islands deposited at Central National Herbarium (CAL). The study determined that these specimens were wrongly identified as *M. elegans* Kurz. *Memecylon elegans* is characterized by quadrangular branchlets, leaves obtusely rounded at apices, and inflorescences that arise from abscised leaf scar marked nodes, whereas the specimens under present study show terete to subterete branchlets, leaves caudate-acuminate at apices, distinctly terminal and axillary inflorescences. Though these specimens are morphologically akin to those of *M. oleifolium* Blume having similar habit, elliptic-lanceolate to broadly elliptic leaves and pedunculate inflorescences, a detailed analysis of the characters established that they are taxonomically different and represent a new species. The identity of the new taxon was also confirmed through the study of specimens of allied species deposited in herbaria, viz. CAL, MH, PBL, TBGT, XCH, CALL, and consultation of relevant literature (Blume 1851, Kurz 1872, Parkinson 1923, Maxwell 1980, Bremer 1983, Mathew and Lakshminarasimahan 1992, Lakshminarasimahan and Ray 1995, Sinha 1999, Hughes 2013). The new species is here described and illustrated.

The floristic composition of Andaman and Nicobar Islands, in general, shows a striking affinity with that of Southeast Asian regions. About 10, 8 and 6 taxa of *Memecylon* are shared by Malaysia, Thailand and Borneo respectively with those of the Andaman and Nicobar Islands. The taxonomy of the genus in Malaysia had been covered by King (1900), Ridley (1922), Maxwell (1980) and Hughes (2013). Craib (1931) provided an enumeration of Thai taxa and Bremer (1983) published a revisionary account of the genus in Borneo.

Significant botanical work on the genus *Memecylon* in the Andaman and Nicobar Islands was carried out by Parkinson (1923) who recorded five species from the Andaman Islands. This was preceded by earlier accounts (Kurz 1872; King 1900) and subsequent workers (Mathew and Lakshminarasimhan 1992; Lakshminarasimhan and Mathew 1993; Lakshminarasimhan *et al.* 1993; Lakshminarasimhan and Ray 1995) published new names and new distribution records for the region. Sinha (1999) provided an account of the genus in a floristic study of Great Nicobar. Recently, Murugan (2011) recorded *M. minutiflorum* Miq., a Malayan species from South Andaman Islands. Pandey and Diwakar (2008) provided a comprehensive checklist of floristic elements of Andaman and Nicobar Islands which includes 14 taxa of *Memecylon*. However, their records of *M. amplexicaule* Roxb. and *M. angustifolium* Wight from this region are dubious.

To date, fifteen taxa, including the new species of the genus *Memecylon* have been recorded from Andaman and Nicobar Islands. As an aid to identification a taxonomic key is included for these taxa.

Taxonomic treatment

Memecylon macneillianum M. Das Das, G. S. Giri, A. Pramanik & D. Maity **sp. nov.**

Diagnosis: The new species is similar to *M. oleifolium* Blume but differs in having both terminal and axillary inflorescences, more inflorescences per node (usually 3–7), longer and acutely quadrangular, distinctly furrowed primary inflorescence axes, distinct calyx lobes and globose fruits. However, in *M. oleifolium* inflorescences arise from the leaf axils, peduncles only 1–2 per node, primary inflorescence axes terete, hypanthium truncate and fruits ellipsoid.

Furthermore, in *M. macneillianum* the leaves are thicker, coriaceous and yellowish on both the surfaces on drying, whereas in *M. oleifolium* the leaves are thin, chartaceous and olive green with a distinctive rusty-red blush around the midvein on drying. The hypanthium is campanulate, smooth throughout or papillate on outer side near base in *M. macneillianum* whereas in *M. oleifolium* it is smooth throughout.

Type: INDIA: Andaman & Nicobar Islands: S. Andamans: North Bay Hill Jungle, 9 Aug 1891, King *s. n.*, acc. no. CAL 174710 (holo: CAL 174710 A, barcode CAL 0000027203; iso: CAL 174710 B, barcode CAL0000027206; L 908132-60). Fig. 1.

Tree, 5–8 m high; branches woody, terete, ultimate branches often shallowly grooved or compressed. Leaves elliptic-lanceolate to broadly elliptic, 5–11 × 3–5 cm, glabrous, thick, coriaceous, yellowish on both the surfaces on drying; apex caudate-acuminate, occasionally retuse, margin slightly undulate and often revolute, base cuneate, often decurrent; secondary veins 8–10 pairs, originating at c. 45° angle from midrib, irregularly spaced at 6–10 mm intervals, lateral and intramarginal nerves usually prominent to subprominent on lower surface, faintly visible on upper surface; intramarginal nerves c. 2 mm away from margin; petioles canaliculate, 4–6 mm long, glabrous. Inflorescence terminal and axillary, umbel-like, many-flowered, pedunculate; primary axes 1–7, sometimes up to 9, 1–4 cm long, quadrangular, compressed with 2 opposite deep and 2 opposite shallow grooves, glabrous; secondary axes almost quadrangular, grooved, (2–) 3.0–4.5 (–6) mm long, glabrous; tertiary axes, if present, 2–3 mm long; pedicels 3–5 mm long, bracteate and bracteolate, both broadly ovate or ovate-oblong, caducous. Hypanthium campanulate, smooth throughout or papillate on outside near base, 2–3 × 1.5–2.7 mm, widened at mouth after anthesis; calyx lobes 4, broadly ovate-triangular, apex obtuse or acute, glabrous, smooth; disc-rays prominent. Petals 4, broadly ovate or elliptic-ovate, 1.5–2.5 × 1.25–2.0 mm, apex acute, membranous, margin hyaline, keel prominent towards apex. filaments terete, flattened near base, 2.0–3.5 mm long; anthers oblong, c. 0.5 mm long, thecae restricted to upper side of connective; anther connective elongated, C-shaped at maturity, c. 1.0 × 0.5 mm long, with centrally placed gland. Ovary inferior, subglobose; style columnar, 2.0–2.5 mm long; stigma pointed. Fruits globose, 10–12 mm diam.; persistent calyx crown distinct, c. 1 mm long, areoles c. 2 mm diam., septa 8, prominently raised; pericarp thick, rough. Seed solitary, globose, glossy brown. Fig. 2.

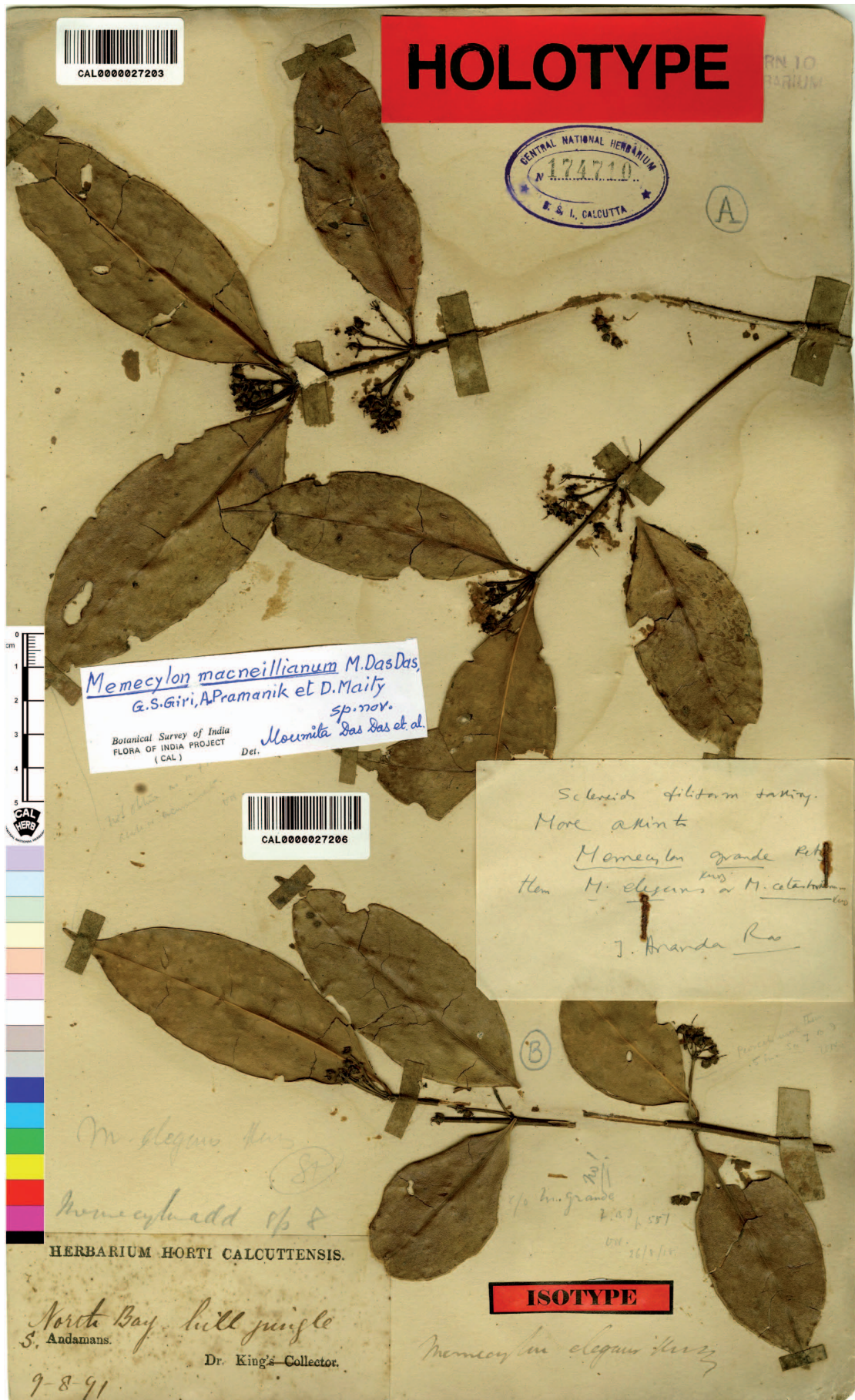


Fig. 1. Holotype and isotype of *Memecylon macneillianum* M. Das Das, G. S. Giri, A. Pramanik and D. Maity.

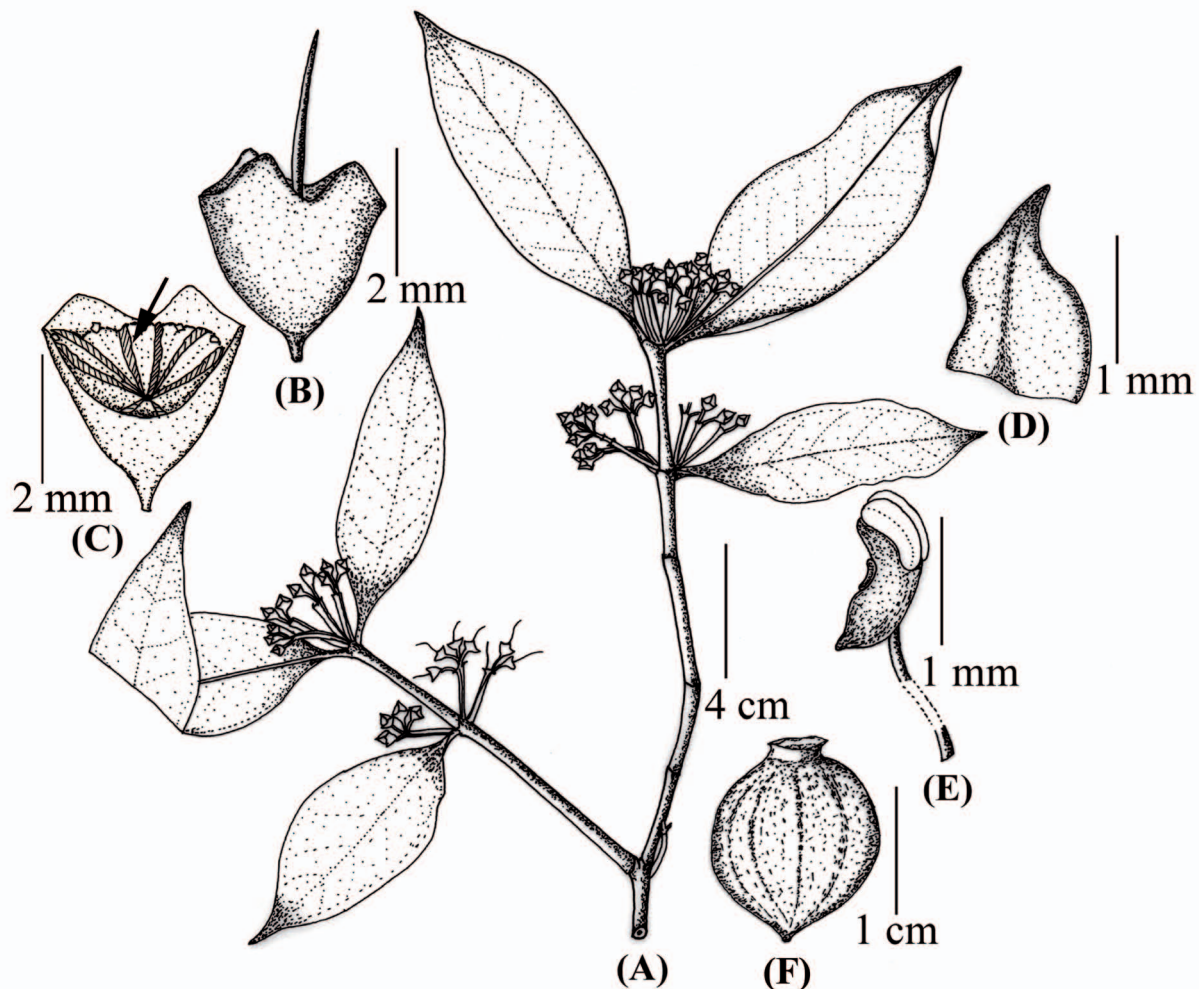


Fig. 2. *Memecylon macneillianum* M. Das Das, G. S. Giri, A. Pramanik and D. Maity: A. flowering branchlet, B. hypanthium showing distinct calyx), C. prominent disc rays marked with arrow (part of hypanthium removed), D. petal, E. stamen, F. fruit. Drawn from *King s.n.* (CAL 174710A).

Distribution: India: endemic to the South Andamans. Fig. 3.

Flowering and Fruiting: June–January.

Additional Specimens examined: INDIA: ANDAMAN AND NICOBAR ISLANDS: South Andamans: Anikhet-jungle Hill, 11 Aug 1894, *King's Collector s.n.* (CAL 174716); Ali Masjid Hill jungle, 28 Oct 1893, *King's Collector s.n.* (CAL 174712; fr.); Without precise locality, 15 Nov 1901, *R. L. Heinig 500*, (CAL; fl.); *ibid.* *R. L. Heinig 416*, (CAL; fl.); Port Mouat jungle Hill land, 03 Oct 1891, *King s.n.* (CAL 174709; fr.); Port Mouat jungle Hill land, 11 Jul 1891, *King s.n.* (CAL); between Garacherama and Monmai Bay Hill Jungle, 16 Jun 1894, *King's Collector s.n.* (CAL 174717; PBL 1646, barcode 0000008768; fl.); Sipighat-Jungle stream, 28 Nov 1893, *King's Collector s.n.* (CAL 174713; fr.); Baratang Island, 21 Jan 1904, *C.G. Rogers s.n.* (CAL; fr.); 10 km towards north from Poona Nallah, 100 m, 26 Jul 1976, *N. Bhargava 4243* (CAL).

Relationships: The presence of both terminal as well as axillary inflorescences is a diagnostic character of this new species. The genus *Memecylon* L. has axillary, cauliflorous or ramiflorous inflorescences. However, only two species in India, *M. terminale* Dalzell and the species described here, *M. macneillianum*, have terminal as well as axillary inflorescences. However, *M. terminale* is easily recognizable through its much smaller and narrower leaves with acute apices and cordate to rounded bases. Moreover, in the latter species the peduncles always arise singly. The new species is closely related to *M. oleifolium* Blume by tree habit, elliptic-lanceolate leaves, pedunculate inflorescences and pedicellate flowers. However, the presence of both terminal as well as axillary inflorescences makes the new species distinct from this as well as other species growing in the Andaman and Nicobar Islands. Notably, more peduncles per node, distinctly lobed calyx and globose fruits make it distinct from all known species in India and adjacent regions. The comparison of the new species and its close relatives for most of the important features is shown in Table 1.

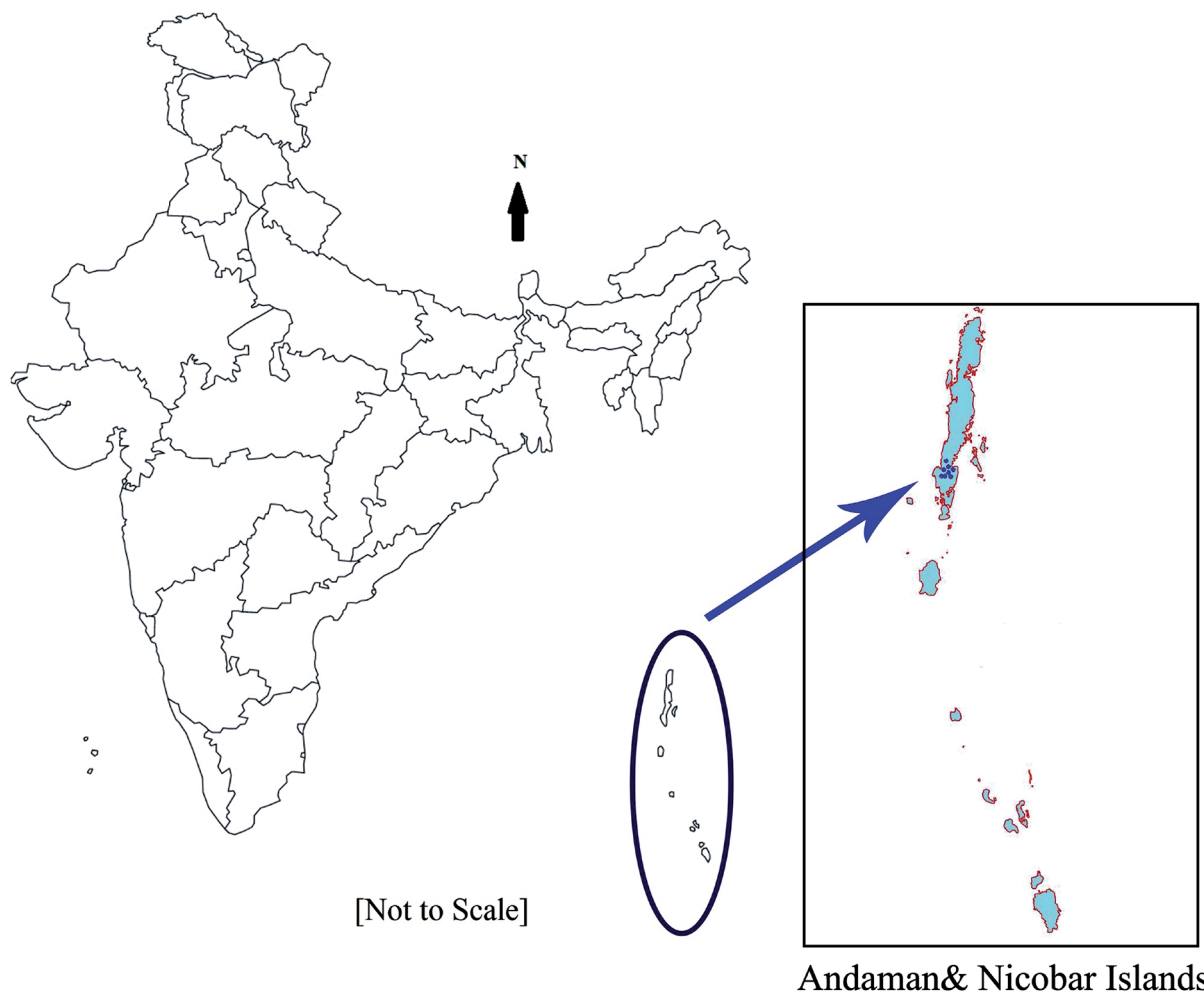


Fig. 3. Distribution of *Memecylon macneillianum* M. Das Das, G. S. Giri, A. Pramanik and D. Maity (blue dots indicate known localities).

Table 1. Comparison of major diagnostic morphological features of *Memecylon macneillianum* M.Das Das *et al.*, *M. oleifolium* Blume and *M. elegans* Kurz.

Characters	<i>M. macneillianum</i>	<i>M. oleifolium</i>	<i>M. elegans</i>
Leaf colour on drying	uniformly yellowish	olive green with a distinctive rusty-red blush around the mid-vein	yellowish green to greenish
Inflorescence position	terminal and axillary	axillary (very rarely terminal)	at leafless axils
Primary inflorescence axes	acutely 4-angular, grooved, compressed	terete (very rarely 2-grooved)	4-angular
Numbers of peduncles per node	(1-)3-7	1 (-2)	1-2
Hypanthium rim	distinctly 4-lobed; lobes ovate, ± acute	Truncate	entire or undulate
Fruit shape	globose	ellipsoid, rarely globose	globose

Etymology: The specific epithet honours Dr. John McNeill (E), a renowned taxonomist and nomenclature specialist. The orthography of the epithet follows Rec. 60C.5(a) of the ICN.

Conservation status: The species is known only from the old collections mentioned above. No recent collection has been located at CAL, PBL, MH, TBGT, XCH, CALI. Given the limited information on the present status of the species, we recommend treating it under the Data Deficient (DD) category (IUCN Standards and Petitions Subcommittee 2014). Further rigorous population study is needed to estimate its proper conservation status.

Key to the taxa of *Memecylon* occurring in Andaman & Nicobar Islands

1. Leaves small, $\leq 4.5 \times 2.5$ cm..... 2
- 1: Leaves larger, mostly $> 5 \times 3$ cm (sometimes leaves smaller in *M. edule* and *M. intermedium*, but then leaves always elliptic to ovate-elliptic with shortly caudate apices) 3
2. Ultimate branchlets 4-angled; leaves rhomboid to ovate-rhomboid, drying dark brown above, slightly paler below; inflorescence 5–10-flowered *M. pauciflorum*
- 2: Ultimate branchlets thinly 2-grooved; leaves suborbicular to obovate, drying coppery-brown to dark blackish brown on both surfaces; inflorescence 10–30-flowered *M. scutellatum* var. *brevifolium*
3. Leaves larger, $\geq 14 \times 5.5$ cm 4
- 3: Leaves smaller, mostly less than $\leq 11 \times 5$ cm 5
4. Leaves oblong, olive-green on drying; secondary venation prominent; primary peduncles 2–3 mm long; secondary inflorescence axes up to 1 mm long *M. kurzii*
- 4: Leaves ovate or ovate-elliptic, brownish on drying; secondary venation not prominent; primary peduncle 10–15 mm long; secondary inflorescence axes c. 10 mm long *M. pulchrum*
5. Leaf-apices obtuse 6
- 5: Leaf-apices acute or acuminate 7
6. Ultimate branchlets terete or slightly 2-grooved; leaves brownish on drying, paler beneath; peduncles terete or lengthwise grooved, up to 1 cm long *M. balakrishnanii*
- 6: Ultimate branchlets 4-angled; leaves yellowish to greenish-yellowish on both surfaces on drying; peduncles sharply 4-angled, usually > 1 cm long *M. elegans*
7. Inflorescences both terminal and axillary *M. macneillianum*
- 7: Inflorescences axillary and/or on bare nodes 8
8. Leaves coriaceous, base rounded to cordate 9
- 8: Leaves comparatively thin, base cuneate in most of the leaves 10
9. Leaves sessile to subsessile, lower surface rusty-brown or yellowish on drying; peduncles shorter, less than 3 mm, few-flowered; pedicels up to 1.5 mm long, thick; fruits ellipsoid *M. caeruleum*
- 9: Leaves distinctly petiolate, lower surface brown on drying; peduncles ≥ 5 mm long, many-flowered; pedicels > 2 mm long, slender; fruits globose *M. ovatum*
10. Leaves lanceolate or narrowly ovate 11
- 10: Leaves otherwise 12
11. Leaves lanceolate with long acuminate apices *M. andamanicum*
- 11: Leaves elliptic with obtuse to shortly caudate apices *M. edule*
12. Anther connective subglobose with basally attached gland *M. garcinioides*
- 12: Anther connective elongated with central gland 13
13. Plants to 5 m high; fruits yellowish-green at maturity *M. minutiflorum*
- 13: Plants to 25 m high; fruits reddish or blue at maturity 14
14. Leaves ovate-elliptic, blackish-green above on drying; primary inflorescence axes 3–12 mm long; anther connectives J'-shaped; fruits globose, blue *M. intermedium*
- 14: Leaves oblong-elliptic to oblong-lanceolate, olive-green above on drying; primary inflorescence axes 14–25 mm long; anther connectives oblong; fruits ellipsoid, reddish *M. oleifolium*

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References

- APG IV (2016) An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. *Botanical Journal of the Linnean Society* 181: 1–20 <http://dx.doi.org/10.1111/boj.12385>
- Blume CLV (1851) *Museum Botanicum Lugduno-Batavum sive stirpium Exoticarum, Novarum vel Minus Cognitarum ex Vivis aut Siccis Brevis Expositio et Descriptio*, Vol. 1. Leiden.
- Bremer K (1983) Taxonomy of *Memecylon* (Melastomataceae) in Borneo. *Opera Botanica* 69.
- Craib WG (1931) *Memecylon*. In *Florae Siamensis Enumeratio*, vol. 1. Siam Society: Bangkok.
- Das Das M, Pramanik A (2015) Revision of the family Memecylaceae. In India. *Flora India Project Report* (unpublished). Botanical Survey of India: Kolkata.
- Hughes M (2013) Memecylaceae. In: Kiew R, Chung RCK, Saw LG, Soepadmo E. (Eds.) *Flora of Peninsular Malaysia, Series II: Seed Plants* vol. 4. Forest Research Institute Malaysia: Kepong
- IUCN Standards and Petitions Subcommittee (2014) Guidelines for Using the IUCN Red List Categories and Criteria. Version 11. Prepared by the Standards and Petitions Subcommittee. Downloadable from www.iucnredlist.org/documents/RedListGuidelines.pdf
- King G (1900) Materials for a Flora of the Malayan Peninsula. *Journal of the Asiatic Society of Bengal*, Pt. 2, 69: 1–88.
- Kurz S (1872) New Barmese Plants (Part First). *Journal of the Asiatic Society of Bengal*, Pt. 2 41: 291–318.
- Lakshminarasimahan P, Kumar K, Ray LN (1993) *Memecylon scutellatum* (Lour.) Naud., new to the flora of Andaman Islands. *Journal of the Andaman Science Association* 9: 87–88
- Lakshminarasimahan P, Mathew SP (1993) A new name for an Indian *Memecylon* (Melastomataceae). *Novon* 3: 58 <http://dx.doi.org/10.2307/3391422>
- Lakshminarasimahan P, Ray LN (1995) Notes on two rare *Memecylon* species (Melastomataceae) from Andaman-Nicobar Islands, India. *Indian Journal of Forestry* 18: 260–262.
- Mathew SP, Lakshminarasimhan P (1992) *Memecylon oleifolium* Bl. (Melastomataceae) – A new record for India from Andaman Islands. *Geobios New Reports* 11: 155–156.
- Maxwell JF (1980) Revision of *Memecylon* L. (Melastomataceae) from the Malay Peninsula. *The Gardens' Bulletin, Singapore* 33: 31–150.
- Murugan C (2011) *Memecylon minutiflorum* Miq. (Memecylaceae) – A New Record for India from the Mount Harriet National Park, Bay Islands, India. *Indian Journal of Forestry* 34 (4): 469–470.
- Parkinson CE (1923) *A Forest Flora of the Andaman Islands*. Government Central Press: Simla, India.
- Renner SS, Triebel D, Almeda F, Stone D, Ulloa C, Michelangeli FA, Goldenberg R, Mendoza H (2007) *MELnames: a database with names of Melastomataceae*. <http://www.melastomataceae.net/MELnames/> [accessed on 26.05.2016].
- Sinha BK (1999) *Memecylon*. *Flora of Great Nicobar Island*. Botanical Survey of India: Calcutta.

