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Cover: Rufous-headed Hornbill *Rhabdotorrhinus waldeni* © Philip Godfrey C. Jakosalem.



A new distribution record of *Memecylon clarkeanum* Cogn. (Melastomataceae) to Karnataka from Sharavathi river basin, central Western Ghats, India

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Abstract: *Memecylon clarkeanum* Cogn., a vulnerable species, is reported as a new record for Karnataka from primeval sacred forest, Rameshwara Devarakadu of Hulkodu village in the region of Sharavathi river basin, Sagar taluk, Shivamogga district, central Western Ghats. The present discovery highlights the importance of sacred groves in conserving rare, endangered and endemic flora. Prior to this, the species was reported as a new record for India from Kerala in 2012. The present paper illustrates the range extension of the species further towards northern latitudes up to central Western Ghats, Karnataka. The study assessed distributional range, habitat, ecology, status of threat, and vulnerability for planning conservation measures.

Keywords: Conservation, endemic flora, Karnataka, new report, range extension.

Memecylon L., is one of the largest genera in the family Melastomataceae. In 1753, Linnaeus introduced the genus *Memecylon* with a description of *Memecylon capitellatum* from Sri Lanka (Linnaeus, 1753). The genus, today comprising ca. 352 accepted species distributed in Old World tropics (“*Memecylon* L. | Plants of the World Online | Kew Science,” 2018). The members of *Memecylon* are small trees or shrubs and found in habitats ranging from tropical wet evergreen to semi-evergreen forests and most of them are understory species (Bremer 1981; Das 2017; Melastomataceae.Net, 2020). Clarke (1879) reported 40 species and 27 varieties of *Memecylon* for the flora of British India, whereas, Cooke (1901) recorded five species from the Bombay presidency and Gamble (1919) reported 18 species from

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the presidency of Madras (Clarke 1879; Cooke 1901; Gamble 1919). The digital Flora of Karnataka included 11 species of *Memecylon* from the state (Herbarium JCB 2020). The recent study on this genus for India have delimited 53 species of which 26 are endemics to the region (Das 2017).

In 2018, while documenting angiosperm diversity of Rameshwara Devarakadu, a sacred (Kaanu) forest at Hulkodu village, Sagara taluk, Shivamogga district in the region of Sharavathi river basin, central Western Ghats, the authors have collected a specimen of a *Memecylon* species. The specimen was critically examined by referring relevant literature and digital images of type specimen (Thwaites C.P2468), it was identified as *Memecylon clarkeanum* Cogn. (Saldanha & Ramesh 1984; Ramaswami et al. 2001; Bhat 2003; "HerbWeb", 2020). The species was earlier thought to be an endemic to Sri Lanka until it was reported as a new record for India from the evergreen forests of Wayanad, Malappuram

and Kozhikode districts of Kerala by Sivu et al. (2012). Later, Udayavani & Ramachandran (2013) reported the occurrence of *M. clarkeanum* from Nilgiris, Tamil Nadu. The present collection of this species from a sacred grove (14.134N and 74.959E, altitude of 640 m) in Sharavathi river basin constitutes the first authentic record from Karnataka and therefore reported here as an addition to the flora of Karnataka with full bibliographic citations, morphological description, ecology, association, phenology, distribution, and specimens examined with colour photographs of plant to facilitate further collection, correct identification and conservation. The specimen (KUBPHS150) is deposited in Biodiversity Laboratory of BUILDER Project, Bio Sciences Complex, Kuvempu University, Shankarghatta, Shivamogga, Karnataka. The species has been globally assessed its threat status and treated it under 'Vulnerable' category (World Conservation Monitoring Centre 1998).



Image 1. *Memecylon clarkeanum* Cogn.: A—Habit | B—Phyllotaxy and dorsal view of leaves | C—Immature/Unripe fruit with hypantho-calyx rind | D—Fruit insertion (Fruit bud) | E—Acuminate leaf apex | F—Cuneate leaf base | G—Stout petiole (Channelled upper side) | H—Fruiting twig | I—Pale lower leaf surface and shape of lamina | J—Shiny upper leaf surface. © Savinaya M.S.



Image 2. Leaf phenological stages of *Memecylon clarkeanum* Cogn.: A—Leaf insertion | B—Leaf bud (Purple colour leaf bud) | C—Immature leaf (Turning green) | D—Expanding leaf | E—Matured leaf | F—View of matured leaves in the terminal position of branch | G—Dry leaf. © Savinaya M.S.

TAXONOMIC TREATMENT

Memecylon clarkeanum Cogn.

in DC. Mon. Phan. 7: 1141. 1891; Trimen, Handb. Fl. Ceylon 2: 217. 1894; Bremer, Opera. Bot. 50: 24.1979; Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 6: 213. f. 3B.1987. M. Heyneanum Benth. in Wall. ex Wight & Arn. var. *latifolia* Clarke in Hook.f., Fl. Brit. Ind. 2: 560. 1879. Sivu et al., Taiwanica 57(3): 327–330. 2012. Das, Taxonomic Account of Memecylaceae (Ph.D. Thesis), University of Calcutta. 2017. Type: Sri Lanka: Thwaites C.P. 2468.

Shrubs, 2–2.5m high. Stems up to 4 cm in girth; branchlets subterete; internodes 4–5 cm long; bark shallowly fissured, greyish-brown. Leaves widely elliptic to lanceolate, 15–20 × 3–6 cm, apex acuminate, base cuneate, margins entire, pale beneath, glaucous above, coriaceous; midrib raised below, with fairly prominent intramarginal veins and secondary veins, foliar sclereids filiform; petioles 7–10 mm long, channelled on upper

side. Inflorescence a fascicle, 2 or 3-flowered, strictly on leafless nodes, sessile; pedicels absent or shorter than receptacle. Bracts ovate-lanceolate, ca. 1.5 mm long, visible to naked eyes. Flower buds acute in shape; flowers 4–6 mm across, pale blue. Hypantho-calyx campanulate, ca. 2.5 mm across, truncate; disk rays prominent, raised, yellowish or white. Petals 4, broadly ovate, ca. 4 × 4.5 mm, pale blue, acute at apex. Stamens 8, equal; filaments folded in buds, slender, ca. 5mm long, whitish-blue; anthers ca. 2 mm long, horse-shoe-shaped, curved; connectives with a central brown gland. Ovary unilocular with 10–12 ovules; free-central placentation; style subulate, filiform, ca. 5 mm long, pale bluish-white; stigma pointed. Fruits globose, 8–10mm with persistent calyx rind, yellow, bluish-black at maturity, 1-seeded.

Distribution

Global distribution: Sri Lanka and India.

India: Kerala (Kozhikode, Malappuram, and Wayanad

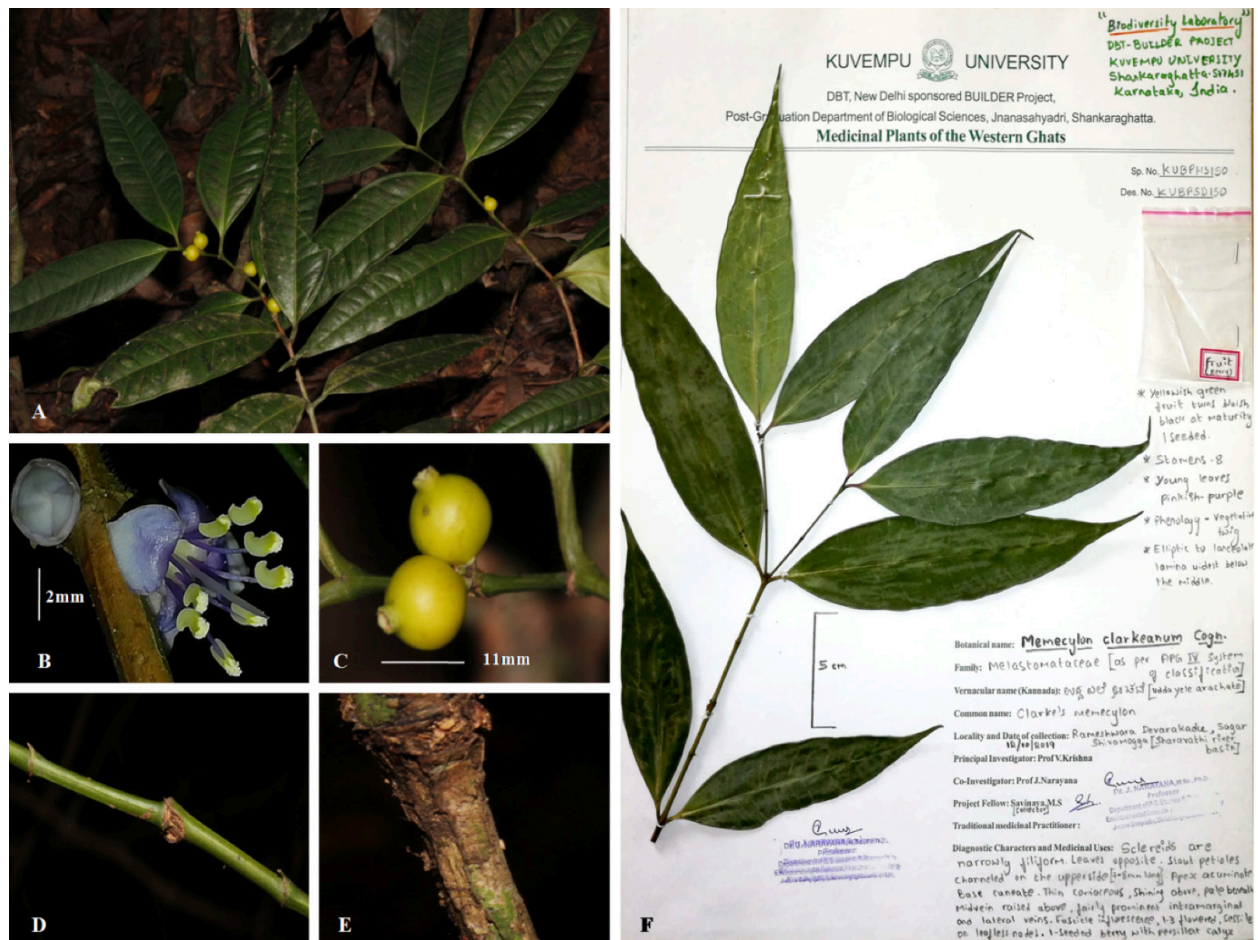


Image 3. *Memecylon clarkeanum* Cogn.: A—Fruiting branch | B—Inflorescence | C—Immature fruit | D—Leafless node | E—Shallowly fissured bark | F—Herbarium sheet. © Savinaya M.S.

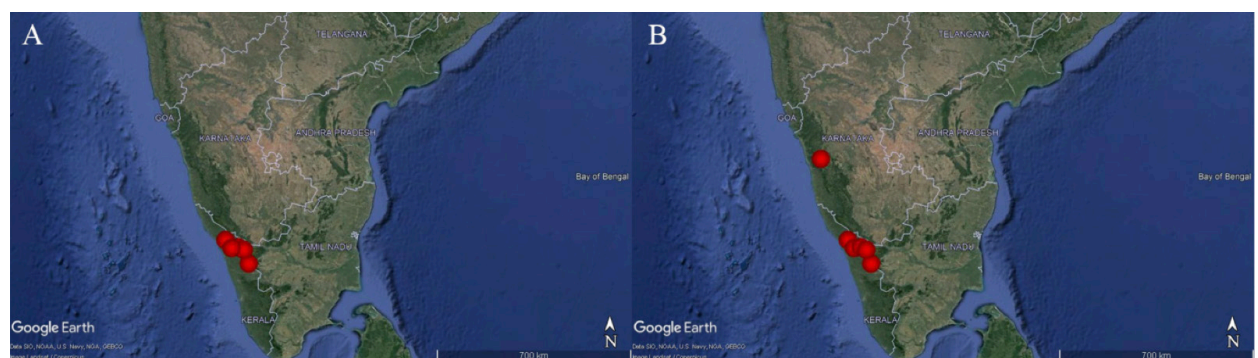


Image 4. Distribution map of *Memecylon clarkeanum* Cogn. in India. A—Previous distribution map | B—Present distribution map. Map source—Google Earth.

districts), Tamil Nadu (Nilgiri district), Karnataka (Shivamogga district).

Habitat ecology

Memecylon clarkeanum Cogn. is recorded at an altitude range of 640 m in Rameshwara sacred grove

in a semi-evergreen forest in the Sharavathi river basin, Shivamogga district, Karnataka. The area receives an annual rainfall of 2,800–3,200 mm and the average temperature ranges 23–25 °C. The particular habitat is a slope of an undulated mountain terrain covered with thick canopy of gigantic trees.

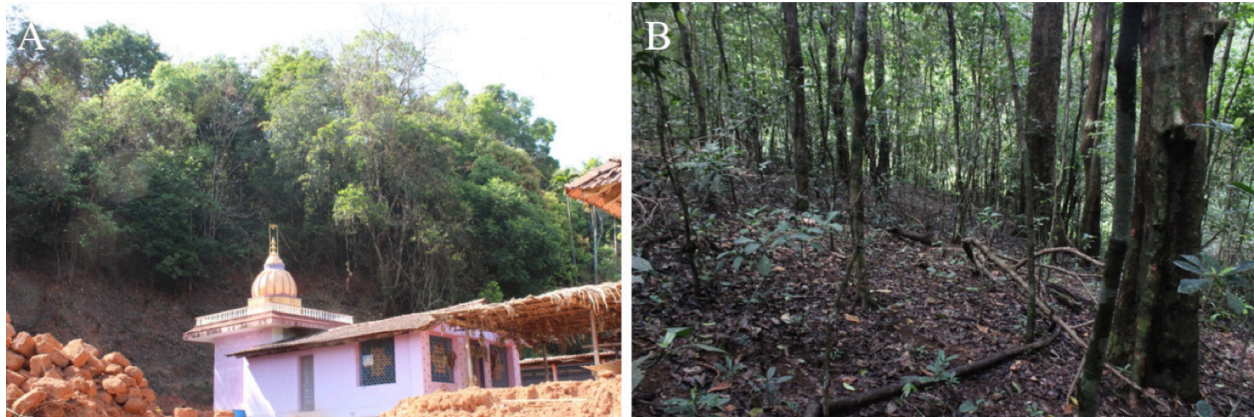


Image 5. A—View of Rameshwara temple | B—Stand view of sacred forest (Rameshwara devarakadu, Hulkodu, Sagar, Shivamogga, Karnataka). © Savinaya M.S.

Associated species

The associated plant species commonly found in the habitat are *Aporosa lindleyana* (Wight) Baill., *Artocarpus hirsutus* Lam., *Canarium strictum* Roxb., *Chukrasia tabularis* A.Juss., *Diospyros buxifolia* (Blume) Hiern, *Holigarna grahamii* (Wight) Kurz, *Hopea ponga* (Dennst.) Mabb., *Ixora brachiata* Roxb., *Ixora nigricans* R. Br. ex Wight & Arn., *Knema attenuata* (Hook.f. & Thomson) Warburg, *Olea dioica* Roxb., *Psychotria flavida* Talbot, and *Syzygium laetum* (Ham.) Gandhi.

Phenology: Flowering starts in the month of September and continues till November. Fruits can be seen throughout the month of December and January.

Conservation status: *Memecylon clarkeanum* Cogn. is listed as 'Vulnerable' based on the threat factor (A1c) (World Conservation Monitoring Centre 1998).

NOTES

The present record confirmed the range extension of the species from south to north and distributed up to central Western Ghats in Karnataka which deserves phytogeographical significance. Further its occurrence in sacred groves is a testimony that signifies the importance of age old practice of conserving representatives of past vegetation in the name of sacred forests which have immense biodiversity values for humanity.

The Rameshwara Devarakadu is a community forest of Hulkodu village where indigenous communities make use of forest green leaves for various agricultural purposes. Though, a season based green leaves collection by pruning tree branches was followed, the understory shrubs often get affected due to falling of woody branches during the course of collection knowingly or unknowingly. The authors identified only two individuals, of which only one plant is in reproductive

stage. Since they occur near areca plantations, there is severe threat of anthropogenic pressure. Therefore, strict conservation of sacred groves should be followed under the guidance of the state forest department and regular monitoring must be done with the support of the local indigenous communities.

Specimen examined: KUBPHS150, 01.iv.2018, India, Karnataka, Shivamogga district, Sagar taluk, Hulkodu village, Rameshwara devarakadu (Sacred grove), Sharavathi river basin, central Western Ghats, Savinaya M.S.

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