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RESEARCH ARTICLE

***Rotala khaleeliana* sp. nov. (Lythraceae), a new species from lateritic hills of Kannur, Kerala, India**²C.N. Sunil, ¹*M.K. Ratheesh Narayanan, ³M.K. Nandakumar,³Jayesh P. Joseph, ⁴V. Abdul Jaleel & ³N. Anil Kumar

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*Rotala***Abstract**

Rotala khaleeliana, a new species of *Rotala* (Lythraceae) from the lateritic hills of Kannur, Kerala, India is described and illustrated. It is closely allied to *R. rosea*, but differs by having angular stem, leafless old stem with swollen internodes, dimorphic leaves, linear- subulate calyx appendages 2 times longer than the calyx lobes, minute petals with trilobed apex, stamens inserted at the base of the calyx tube, slightly trilobed ovary and papillose seeds with a distinct depression.

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Introduction

Rotala Linn. is an aquatic or amphibious, tropical or subtropical genus with more than 45 species, of which 20 are reported from India (Cook, 1979, Mabberley, 2005). In 1989, Joseph and Sivarajan revised the genus for Peninsular India and reported 16 species. Later floristic explorations in India have resulted in the addition of four more species, namely *Rotala malabarica* (Pradeep et al., 1990), *R. andamanensis* (Mathew and Lakshminarasimhan, 1990), *R. belgaumensis* (Yadav et al., 2010) and *R. tulunadensis* (Prasad et al., 2012). *Rotala* is thus represented by 25 species in India, of which 21 are from Peninsular India.

During a recent floristic exploration in the laterite hills of north Malabar the authors collected an interesting specimen belonging to the genus *Rotala* Linn. On critical analysis, revealed that the specimen was distinct from the hitherto known taxa of the genus and is described here as a new species.

***Rotala khaleeliana* Sunil, Ratheesh & Nandakumar sp. nov.** (Figs. 1 & 2).

Type: INDIA, Kerala, Kanayi Kanam, 100 m, 22 September, 2011, Sunil, Ratheesh Narayanan & Nandakumar 2416 (Holotype, CAL; Isotypes, MH; MSSRF).

Erect aquatic or amphibious annual or perennial herbs. Stem 12–43 cm tall, simple or branched; old stem often denuded of leaves, quadrangular, spongy with constricted nodes and slightly swollen internodes, striate and somewhat rough, reddish or dull green, 2–4 mm across; branches quadrangular, narrowly winged. Leaves sessile, decussate, dimorphic; submerged leaves 10–30 x 2–5 mm, linear-lanceolate, base cuneate to semi-amplexicaule, margins entire, apex long-acuminate, 1-nerved, thin and flaccid, pale green to pink, glabrous; aerial or upper leaves 5–14 x 2–4 mm, ovate-lanceolate, base cuneate to attenuate, margins entire, apex truncate to slightly bimucronate or rarely obtuse, green, slightly fleshy, lateral veins indistinct, glabrous. Flowers monomorphic, sessile, axillary, solitary; floral bracts like foliage leaves and decreasing in size towards apex, exceeding the flowers; bracteoles 0.8–1.2 mm

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long, linear-subulate, acuminate, as long as or shorter than calyx tube; calyx tube 1–1.3 mm long, campanulate to urn-shaped; lobes 5, 0.15–0.2 mm long, triangular; calyx appendages alternating with calyx lobes, 0.3–0.5 mm long, linear-subulate, two times the size of calyx lobes; petals 5, minute, up to 0.2 mm long, narrowly obovate, trilobed at apex, hyaline, persistent; stamens 5; filaments inserted at the base of the calyx tube, 0.4–0.5 mm long; anthers level with the top of the calyx tube, globose-oblong, reddish; ovary 0.5–0.7 x 0.4–0.6 mm, subglobose, slightly trilobed; style short, ca. 0.2 mm long; stigma capitate, papillose. Capsules 1.8–2.2 x 1.6–2 mm, globose, obscurely trilobed, exceeding the calyx, red, 3-valved. Seeds many, 0.3–0.4 x 0.2–0.3 mm, semi-ovoid with concave ventral side, slightly hairy, straw-coloured.

Figure 1. *Rotala khaleeliana*. A. Habit. B. Basal leaf. C. Aerial Leaf. D. Stem T.S; E. Flower. F. Calyx with stamens; G. Petal; H. Gynoecium; I. Fruit; J & K. Seeds.

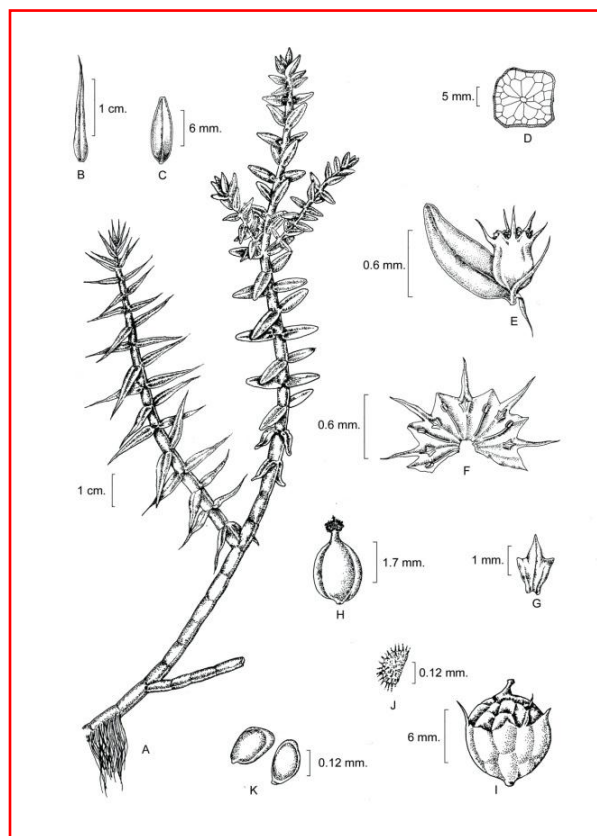


Figure 2: A, B & C. Habit showing dimorphic leaves and angular stem with swollen internodes; D. Aerial branches with flowers; E. Fruit; F. Submerged stem with semi-amplexicaule leaves; G. Flowers



Flowering and fruiting: August – December.

Note: *Rotala khaleeliana* sp. nov. is similar to *R. rosea* but differ from the latter by the characters given in the Table 1.

Etymology: The specific epithet is in honor of Dr. K. M. Khaleel, Principal, Sir Syed College, an ardent naturalist and botanist who devoted his life for the conservation of wetlands of Malabar, and creating awareness and imparting education on nature, natural resources, and conservation.

Additional specimen examined (Paratype): INDIA. Kerala: Kannur District, Nadukani, 20 September 2012, Sunil & Jaleel MSSH 2843 (Herbarium of M S Swaminathan Research Foundation, Wayanad).

Table 1. Diagnostic morphological characters of *Rotala khaleeliana* and *R. rosea*

Characters	<i>Rotala khaleeliana</i>	<i>Rotala rosea</i>
Stem	Quadrangular, up to 43 cm long; old stem leafless with constricted nodes and slightly swollen internodes, rough	Terete, up to 30 cm tall, leafy throughout, smooth
Leaves	Dimorphic; submerged leaves linear-lanceolate, apex long-acuminate, base semi-amplexicaule, thin, flaccid, longer than aerial leaves, up to 30 mm long; aerial leaves ovate-lanceolate, apex truncate to bimucronate, slightly fleshy, up to 14 mm long.	Monomorphic, linear-lanceolate, apex obtuse or acute.
Calyx appendages	Two times longer than the calyx lobes	As long as the calyx lobes
Petals	5, minute, hyaline, apex trilobed, persisting in fruit	5 or rarely 4, distinct, pink, apex dentate, not persisting in fruit
Stamens	Inserted at the base of the calyx tube	Inserted just below the middle of the calyx tube
Seeds	Semi-ovoid with concave ventral side, slightly hairy	Ovoid to round, shining, smooth

Conservation status: The species is having restricted distribution in lateritic plateau of north-eastern part of Kannur district, Kerala and the habitat is prone to mining, land conversion, and grazing. It grows in association with *Ischaemum mangaluricum*, *Blyxa aubertii*, *Oryza rufipogon*, *Utricularia reticulata*, *Geissaspis tenella* and *Eriocaulon cuspidatum*.

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