



Rotala dhaneshiana, a new species of Lythraceae from India

M. K. RATHEESH NARAYANAN¹, C. N. SUNIL², T. SHAJU³, M. K. NANDAKUMAR⁴, M. SIVADASAN^{5,6} & A. H. ALFARHAN⁵

¹Department of Botany, Payyanur College, Edat P.O., Payyanur, Kannur – 670 327, Kerala, India.

²Department of Botany, S.N.M. College, Moothakunnam, Maliankrara P.O., Ernakulam – 683 516, Kerala, India.

³Tropical Botanic Garden and Research Institute, Palode P.O., Thiruvananthapuram – 695 562, Kerala, India.

⁴Community Agrobiodiversity Centre, M. S. Swaminathan Research Foundation, Puthoorvayal, Kalpetta, Wayanad – 673 121, Kerala, India.

⁵Department of Botany & Microbiology, College of Science, King Saud University, P. O. Box 2455, Riyadh –11451, Kingdom of Saudi Arabia.

⁶Corresponding author: email: drmsivadasan@gmail.com

Abstract

Rotala dhaneshiana, a new species of Lythraceae collected from a semi-marshy area of Wayanad Wildlife Sanctuary in Kerala, India is described and illustrated. It is closely allied to *R. malampuzhensis* usually in having trimerous flowers, but differs in having 4-angled, narrowly winged stems, long epicalyx lobes alternating with sepals, obovate-apiculate petals, and absence of nectar scales. It resembles *R. juniperina*, an African species in having trimerous flowers but differs in having sessile, decurrent-based leaves and sessile pistil.

Key words: Endemic species, Kerala, Myrtales, Wayanad Wildlife Sanctuary

Introduction

The genus *Rotala* Linnaeus (1771: 143, 175) (Lythraceae) has tropical and subtropical distribution and is represented by more than 50 species of aquatic or amphibious plants. Cook (1979) in his revision of the genus recognized 44 species including 19 Indian species. After Cook's revision, additional species were described from India: *Rotala cookii* Joseph & Sivarajan (1988: 143), *R. vasudevani* Joseph and Sivarajan (1989: 195), *R. malabarica* Pradeep *et al.* (1990: 59), *R. andamanensis* Mathew & Lakshminarasimhan (1990: 189), *R. belgaumensis* Yadav *et al.* (2010: 499), *R. tulunadensis* Prasad *et al.* (2012: 58), *R. khaleeliana* Sunil *et al.* (2013: 14), *R. meenkulamensis* Prasad & Raveendran (2013a: 105), *R. kasaragodensis* Prasad & Raveendran (2013b: 451) and *Rotala sahyadrica* Gaikwad *et al.* (2013), summing up 29 species of *Rotala* in India, of which 24 are from Peninsular India.

During a recent floristic exploration in Wayanad Wildlife Sanctuary in Kerala, India interesting specimens belonging to the genus *Rotala* were collected. Critical study and analysis revealed that they are distinct from the hitherto known taxa of the genus and are described here as a new species.

Taxonomy

Rotala dhaneshiana Sunil, Ratheesh & Sivadasan, *sp. nov.* **Type:**—INDIA. Kerala: Wayanad District, Muthanga Range of Wayanad Wildlife Sanctuary, Maragadha, semi-marshy area, 900 m, 18 September 2012, *Sunil & Ratheesh Narayanan 2211* (holotype CAL!, isotypes MH!, TBGT!). Figures 1 & 2.

Rotala dhaneshiana resembles *R. malampuzhensis* in having decussate leaves and usually trimerous flowers, but differs in having 4-angled stems, prominent long epicalyx lobes, obovate, apiculate petals, and absence of nectar scales.

MSSH 4212 (Community Agrobiodiversity Centre (CAbC)-MS Swaminathan Research Foundation Herbarium, Wayanad!).

Acknowledgements

The authors are grateful to the Director, Community Agrobiodiversity Centre (CAbC), M. S. Swaminathan Research Foundation, Wayanad, the Manager and Head of the Department of Botany, Sree Narayana Mangalam College, Maliankara, the Manager and Head of the Department of Botany, Payyanur College, Payyanur, and the Director, Tropical Botanic Garden and Research Institute (TBGRI), Thiruvananthapuram for various help. The services rendered by Mr. K. T. Satheesh and Ms. V. Mini, CAbC, MSSRF, Wayanad and logistics provided by the Kerala Forest Department for fieldwork are gratefully acknowledged. Sincere thanks are expressed to Dr. J. F. Veldkamp (L) for critical remarks on the manuscript. The last two authors acknowledge the encouragement and support extended by the Deanship of Scientific Research, King Saud University, through the research group project No. RGP-VPP-135. The authors thank anonymous reviewers for their valuable comments.

References

- Beauvois, A.M.F.J.P. de (1812) *Essai d'une nouvelle agrostographie, ou nouveaux genres des Graminées: avec figures représentant les caractères de tous les genres*. Chez l'auteur, Paris, lxxiv+182 pp.
<http://dx.doi.org/10.5962/bhl.title.474>
- Burman, N.L. (1768) *Flora Indica: cui accredit series zoophytorum Indicum, nec non prodromus florum Capensis*. Cornelius Haek, Leiden, 241+28 pp, +67 plates.
<http://dx.doi.org/10.5962/bhl.title.60581>
- Cook, C.D.K. (1979) A revision of the genus *Rotala* (Lythraceae). *Boissiera* 29: 1–156.
- Fernandes, A. (1974) *Rotala juniperina*. [sér. 2] *Boletim da Sociedade Broteriana* 48: 126.
- Gaikwad, S.P., Sardesai, M.M. & Yadav, S.R. (2014) *Rotala sahyadrica* sp. nov. (Lythraceae) from Western Ghats, India. *Nordic Journal of Botany*: 32: 575–577
<http://doi:10.1111/j.1756-1051.2013.00322>.
- Gamble, J.S. (1924) *Flora of the Presidency of Madras 2*. Adlard & Son Ltd., London, ii+579–1346 pp.
- Hooker, J.D. (1896) *The flora of British India 7*. L. Reeve & Co., London, viii+842 pp.
- IUCN. (2012) *IUCN Red List Categories and Criteria: Version 3.1*. Second edition. IUCN, Gland, Switzerland and Cambridge, UK, iv +32 pp.
- IUCN. (2014) *Guidelines for using the IUCN Red List Categories and Criteria*. Version 11. Prepared by the Standards and Petitions Subcommittee, 87 pp. Available from: <http://www.iucnredlist.org/documents/RedListGuidelines/> (accessed:27 September 2014).
- Joseph, K.T. & Sivarajan, V.V. (1988) *Rotala cookii*: A new species of Lythraceae from India showing Hippuris syndrome. *Plant Systematics and Evolution* 159: 141–144.
- Joseph, K.T. & Sivarajan, V.V. (1989) *Rotala* Linn. (Lythraceae) in peninsular India. *Proceedings of the Indian Academy of Science (Plant Science)* 99:179–197.
- Linnaeus, C. (1753) *Species Plantarum, exhibentes plantas rite cognitatas, ad genera relatas, cum differentiis specificis, nominibus trivialibus, synonymis selectis, locis natalibus, secundum sexuale digestas I*. Laurentii Salvii, Holmiae, xii+ 560 pp.
<http://dx.doi.org/10.5962/bhl.title.669>
- Linnaeus, C. (1759) *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis, ed.2, 2*. Laurentii Salvii, Holmiae, iv+825–1384 pp.
<http://dx.doi.org/10.5962/bhl.title.542>
- Linnaeus, C. (1771) *Mantissa Plantarum Altera Generum, ed. 6, 2*. Laurentii Salvii, Holmiae, vi+143–588 pp.
- Mathew, S.P. & Lakshminarasimhan, P. (1990) *Rotala andamanensis* – a new species of Lythraceae from Andaman Islands. *Bulletin of the Botanical Survey of India* 32:189–191.
- Pennell, F.W. (1943) A second summary of the Scrophulariaceae of New Guinea. *Journal of the Arnold Arboretum* 24 (3): 243–274+5 pls.
- Pradeep, A.K., Joseph, K.T. & Sivarajan, V.V. (1990) *Rotala malabarica*, a new species of Lythraceae from India. *Botanical Bulletin of*

Academica Sinica 31: 59–61.

- Prasad, K.S., Biju, P., Raveendran, K. & Bhat, K.G. (2012) *Rotala tulunadensis* sp. nov. (Lythraceae) from Kerala, India. *Nordic Journal of Botany* 30: 58–60.
<http://dx.doi.org/10.1111/j.1756-1051.2011.01275.x>
- Prasad, K.S. & Raveendran, K. (2013a) A new species of *Rotala* L. (Lythraceae) from Kerala, India. *Taiwania* 58 (2): 104–107.
- Prasad, K.S. & Raveendran, K. (2013b) *Rotala kasaragodensis* (Lythraceae), a new species from Kerala, India. *Edinburgh Journal of Botany* 70(3): 451–454.
<http://dx.doi.org/10.1017/s0960428613000140>
- Schlechtendal, D.F.L. von & Chamisso, L.K.A. von (1830) *Plantarum Mexicanarum a cel. Viris Schiede et Deppe collectarum recensio brevis*. *Linnaea* 5: 554–625.
- Steudel, E.G. (1853) *Synopsis Plantarum Glumacearum I. Gramineae*. J.B. Metzler, Stuttgartiae, 475 pp.
- Steudel, E.G. (1854) *Synopsis Plantarum Glumacearum II. Cyperaceae*. J.B. Metzler, Stuttgartiae, 348 pp.
- Sunil, C.N., Ratheesh Narayanan, M.K., Nandakumar, M.K., Joseph, J.P., Jaleel, V.A. & Anil Kumar, N. (2013) *Rotala khaleeliana* sp. nov. (Lythraceae), a new species from lateritic hills of Kannur, Kerala, India. *International Journal of Advanced Research* 1 (2): 14–16.
- Vahl, M. (1805) *Enumeratio Plantarum vel ab aliis, vel ab ipso observatarum, cum earum differentiis specificis, synonymis selectis et descriptionibus succinctis*. 2. N. Molleri et Filii, Hauniae, 423 pp.
<http://dx.doi.org/10.5962/bhl.title.7564>
- Yadav, S.R., Malpure, N.V. & Chandore, A.N. 2010. *Rotala belgaumensis* (Lythraceae) from the Western Ghats, India. *Nordic Journal of Botany* 28: 499–500.
<http://dx.doi.org/10.1111/j.1756-1051.2009.00612.x>