

***ROOTALA KASARAGODENSIS* (LYTHRACEAE), A NEW SPECIES FROM KERALA, INDIA**

K. S. PRASAD & K. RAVEENDRAN

A new species of *Rotala* (Lythraceae) from India, *R. kasaragodensis* K.S.Prasad & Raveendran, is described and illustrated.

Keywords. India, Kerala, Lythraceae, new species, *Rotala kasaragodensis*.

INTRODUCTION

The genus *Rotala* L. (Lythraceae) is distributed mainly in tropical and subtropical regions of the world. The total number of accepted species is currently 53, including the nine species and two varieties described since the genus was last revised (Cook, 1979). Twenty species have been reported for Peninsular India (Joseph & Sivarajan, 1989; Mathew & Lakshminarasimhan, 1990; Pradeep *et al.*, 1990; Yadav *et al.*, 2010; Prasad *et al.*, 2012). During recent floristic explorations in northern Kerala, the first author collected an interesting specimen of *Rotala*, closely allied with *R. occultiflora* Koehne from Mugu in Kasaragod District. Professor C. D. K. Cook, Meilen, Switzerland, who confirmed the novelty of the plant, pointed out that he also collected this plant from Dakshina Kannada District, Karnataka in 1986 and identified it as *Rotala occultiflora* Koehne on seeing the characteristic bracteoles but without examining floral details (pers. comm.). On critical examination, the two collections are quite different from known taxa and are described here as the new species *Rotala kasaragodensis*.

SPECIES DESCRIPTION

***Rotala kasaragodensis* K.S.Prasad & Raveendran, sp. nov. Fig. 1.**

Similar to *Rotala occultiflora* Koehne but differing in the obscurely five-ribbed stem, monomorphic leaves arranged in whorls of three, consistently having four calyx lobes, consistently having two stamens and the obscurely trilobed ovary. – Type: India, Kerala, Kasaragod District, Mugu, 12°36'56"N, 75°1'40"E, 150 m, on wet soil, 6 ix 2012, *K.S. Prasad* 03120 (holo CAL; iso BSI, MBGS, MH).

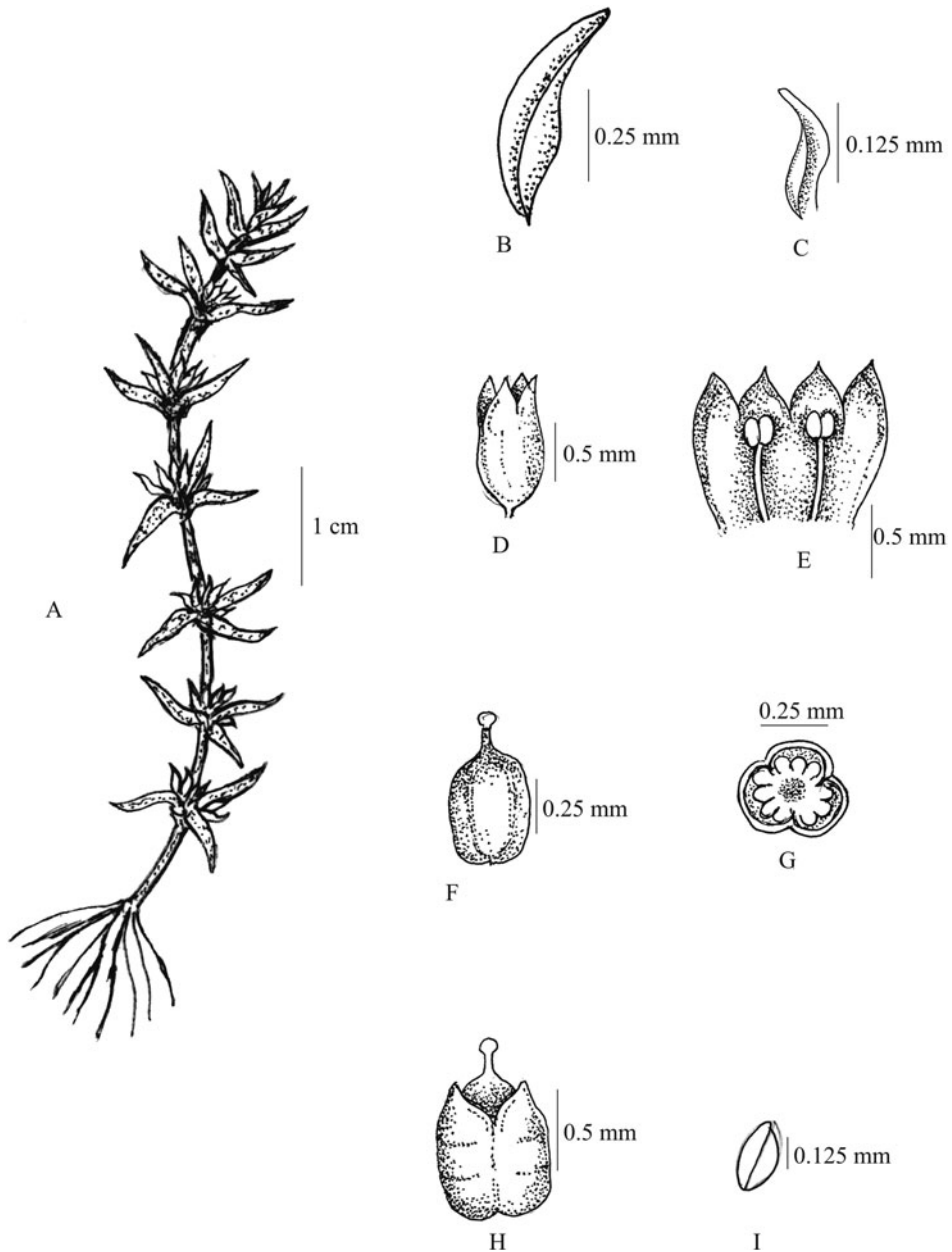


FIG. 1. *Rotala kasaragodensis* K.S.Prasad & Raveendran. A, habit; B, leaf; C, bracteole; D, flower; E, calyx, opened; F, gynoecium; G, ovary, cross-section; H, fruit; I, seed.

Terrestrial annual herbs. *Stems* creeping and branching below, erect above, obscurely 5-ribbed, green, glabrous, 24–64 mm long. *Leaves* simple, monomorphic, in whorls of 3, 4–6 × 0.5–0.7 mm, ovate-lanceolate, base boat-shaped, reddish and slightly puberulent,

green distally, tip sub-acute, margins entire. *Flowers* monomorphic, sessile, axillary, solitary. *Bracts* leaf-like, $4-6 \times 0.5-0.7$ mm, reddish at the point of attachment with the stem, at base boat-shaped and partly enclosing the flower. *Bracteoles* 2, leaf-like, reddish at extreme base, $0.5-2 \times 0.2-0.6$ mm, boat-shaped at base, partly enclosing the flower. *Floral tubes* thin, translucent, campanulate-urceolate, $0.9-1 \times 0.4-0.5$ mm; lobes 4, triangular, not spreading, pinkish, $0.2-0.3 \times 0.1-0.15$ mm. *Petals* absent. *Stamens* 2, included; filaments $0.5-0.6$ mm long, white, attached at the base of the floral tube; anthers dorsifixed, c.0.1 mm across, yellowish. *Ovary* oblong to obovoid, $0.4-0.6 \times 0.3-0.4$ mm, obscurely trilobed; style up to 0.1 mm long, simple; stigma capitate. *Capsule* oblong, $0.9-1.1 \times 0.4-0.6$ mm, somewhat longer than the calyx, 3-valved. *Seeds* ovoid to elliptic, planoconvex, $0.2-0.3$ mm long, fewer than 10 per fruit, black.

Distribution. Known only from Kasaragod District in Kerala and Dakshina Kannada District in Karnataka.

Habitat and ecology. The material was collected from waterlogged soil on lateritic plains, growing in association with *Chrysopogon aciculatus* (Retz.) Trim., *Desmodium triflorum* (L.) DC., *Lindernia crustacea* (L.) F.Muell., *L. ciliata* (Colsm.) Pennell, *L. rotundifolia* (L.) Mukherjee, *Justicia nagpurensis* Graham, *Lobelia alsinoides* Lam., *Murdannia nudiflora* (L.) Brenan, *Mecardonia procumbens* (Mill.) Small, *Selaginella delicatula* (Desv. ex Poiret) Alston and *Anthoceros* sp.

Phenology. Flowers August–October.

Etymology. The new species is named after the District ‘Kasaragod’ which includes the type locality, Mugu.

Taxonomic note. *Rotala kasaragodensis* K.S.Prasad & Raveendran is allied to *R. occultiflora* Koehne but differs in the characters given in Table 1.

TABLE 1. Comparison between *Rotala kasaragodensis* and *R. occultiflora*

Character	<i>Rotala kasaragodensis</i>	<i>Rotala occultiflora</i>
Habit	Terrestrial herb	Aquatic herb
Stem	Obscurely 5-ribbed, rough	Terete or quadrangular, delicate
Leaves	Monomorphic, in whorls of 3, reddish puberulent at base	Dimorphic, in whorls of 3 or 4 in same population, green and glabrous at base
Bracts and bracteoles	Red at base	Green at base
Calyx	Tube campanulate-urceolate; lobes consistently 4	Tube sub-urceolate; lobes consistently 5
Stamens	Consistently 2	Usually 3, occasionally more or fewer in same population
Ovary	Oblong to obovoid, obscurely trilobed	Ellipsoidal
Capsule	Oblong	Ellipsoidal
Seeds	Ovoid, planoconvex	Semi-ellipsoidal

Additional specimens studied. INDIA. Kerala, Kasaragod District, Manya lateritic plateau, 12°33'54"N, 75°2'51"E, 150 m, 16 ix 2012, in wet areas, K.S. Prasad 03131 (Sir Syed College Herbarium); Karnataka, Dakshina Kannada District, Ullal, 12°48'50.31"N, 74°50'24.42"E, 10 m, 26 x 1986, in brackish pool, C.D.K. Cook & R. Frey 4676 (Z n.v.).

ACKNOWLEDGEMENTS

The authors are indebted to Dr C. D. K. Cook, Meilen, Switzerland for his opinion on the identity of the specimen; to the Principal and Management of Sir Syed College, Taliparamba for providing the necessary facilities; to Mr P. Biju, Department of Botany, Government College, Kasaragod for help in the field, and to Mr Sukumaran for the illustration. The first author is grateful to Kerala State Council for Science Technology and Environment (KSCSTE) for financial assistance.

REFERENCES

- COOK, C. D. K. (1979). A revision of the genus *Rotala* (Lythraceae). *Boissiera* 29: 1–156.
- JOSEPH, K. T. & SIVARAJAN, V. V. (1989). *Rotala* Linn. (Lythraceae) in Peninsular India. *Proc. Ind. Acad. Sci. (Plant. Sci.)* 99: 179–197.
- MATHEW, S. P. & LAKSHMINARASIMHAN, P. (1990). *Rotala andamanensis* S. P. Mathew and P. Lakshminarasimhan – a new species of Lythraceae from Andaman Islands. *Bull. Bot. Surv. India* 32: 189–191.
- PRADEEP, A. K., JOSEPH, K. T. & SIVARAJAN, V. V. (1990). *Rotala malabarica*, a new species of Lythraceae from India. *Bot. Bull. Acad. Sin.* 31: 59–61.
- PRASAD, K. S., BIJU, P., RAVEENDRAN, K. & BHAT, K. G. (2012). *Rotala tulumadensis* sp. nov. (Lythraceae) from Kerala, India. *Nordic J. Bot.* 30: 58–60.
- YADAV, S. R., MALPURE, N. V. & CHANDORE, A. N. (2010). *Rotala belgaumensis* sp. nov. (Lythraceae) from Western Ghats, India. *Nordic J. Bot.* 28: 499–500.

Received 9 October 2012; accepted for publication 7 June 2013