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A New Species of *Salacia* (Celastraceae) from India

Kanjiraparambil Arjunan Sujana [(1)*], S. Nagaraju [(1)], M. K. Ratheesh Narayanan[(2)] & N. Anil Kumar[(3)]

1. Central Botanical Laboratory, Botanical Survey of India, AJCB Indian Botanic Garden, Botanical Garden P. O., Howrah, West Bengal, India – 711103.
2. Department of Botany, Payyanur College, Edat P. O., Kannur, Kerala, India – 670327
3.Community Agrobiodiversity Centre, M. S. Swaminathan Research Foundation, Puthoorvayal P. O., Kalpetta, Wayanad, Kerala, India – 673577.
** Corresponding author. Email: sujanakole@gmail.com*

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ABSTRACT: A new species, *Salacia wayanadica* Sujana, Nagaraju, Ratheesh & Anil Kumar, from Wayanad (Western Ghats), India is described and illustrated. Its distinctive characters are discussed and comments made on differences between this and related species. Information on habitat, distribution, phenology, local uses and conservation status are provided.

KEY WORDS: Celastraceae, India, New species, *Salacia wayanadica*.

INTRODUCTION

The genus *Salacia* L. (Celastraceae) consists of approximately 200 species distributed in tropical America, Africa and Asia (Mabberley, 2008). The family Hippocrateaceae is now included in Celastraceae as a subfamily that comprises 5 tribes, 24 genera, and *c*. 357 species (Mennega, 1997). Delimitation of the Hippocrateaceae genera is controversial. According to Peyritsch (1878) *Salacia* L. and *Hippocratea* L. belong to Hippocrateaceae. In India, the genus *Salacia* is represented by 21 species, of which 15 species are known to occur in Peninsular India (Ramamurthy & Naithani, 2000). Among them, 10 species are recorded from Kerala (Sasidharan, 2004; Ramamurthy & Venu, 2005; Nayar *et al*., 2006, Udayan *et al*. 2012, 2013), and 5 species have very small distributional ranges and are endemic to Kerala. This paper describes yet another species of *Salacia* L., *S. wayanadica* from the evergreen forests of the Western Ghats of Kerala, India.

TAXONOMIC TREATMENT

Salacia wayanadica Sujana, Nagaraju, Ratheesh & Anil Kumar, ***sp. nov.*** Figs. 1,2

Type: **INDIA**: Kerala, Wayanad, Periya, Chandanathode, evergreen forests, (11°50'36.8"N 75°78'30.2"E) 853m, 28 Feb. 2011, *Sujana K. A.* 0401(Holo CAL!; Iso MH!).

Paratype: **INDIA**, Kerala, Wayanad, Periya, Chandanathode, evergreen forests, (11°50'36.8"N 75°78'30.2"E) 853m, 03 February 2012, *Sujana K. A.* 0511; Varayal, evergreen forests, (11°43'52.6"N 74°52'44.2"E) 968m, 24 April 2013, *Sujana K. A.* 0682 (*M*.S. Swaminathan Research Foundation, CAbC, Wayanad, Kerala, India).

Salacia wayanadica Sujana, Nagaraju, Ratheesh & Anil Kumar resembles to *Salacia macrosperma* Wight which has similar elliptic-oblong leaves with entire leaf margin and thick pedicel but differs significantly in the determinate number of flowers (6–12), oblong petals, and 5-6 cm diameter spheroid, tuberculate fruits. In this new species calyx lobes are tipped with tuft of 10–12 crisped hairs, transversely opening anthers, and the ovules being solitary in each cell (Table 1). This new species also looks like *Salacia malabrica* Gamble through its inflorescences, but is easily distinguished by the leaf margin (entire vs. serrate), thinner and longer pedicels and apex of calyx lobes.

Robust liana, 20–25m tall, DBH 20–28 cm, branches terete, stout, glabrous, smooth, often covered with bryophytes and lichens. Twigs blackish, densely lenticellate. Leaves simple, opposite, young leaves curly and twisted, lamina open fully on maturity; stipules not seen, leaving inter petiolar ring; petiole 0.8–1.2 cm long, canaliculated, drying black, twisted; blade ((6–)12–15(–18) × (2.5–) 4–5(–5.5)) cm, oblong to elliptic, the base cuneate rarely rounded, the apex obtuse, the margin entire and thickened, slightly revolute, coriaceous, glabrous, glaucous, drying olive green sometimes light brown and punctate on the abaxial side, venation brochidodromous, veins on both sides prominent, secondary and tertiary veins distinct, 10–12 pairs, lamina frequently covered by epiphyllous bryophytes. Inflorescence on large axillary or extra axillary fascicle or glomerule with 6–12 flowers. Bracts minute, deltoid, margin irregularly serrate, apex acute, ciliate, scaly, brownish orange, persistent. Pedicels 10–12 mm long, terete, pruinose. Flower buds spherical, open flowers greenish yellow, *ca*. 5 mm across at anthesis. Sepals 5, gamosepalous, lobes *ca*.

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Table 1. The main diagnostic characters for separation of *Salacia wayanadica* from *S. macrosperma*

Character	*Salacia wayanadica*	*Salacia macrosperma*
Habit	robust liana	diffuse rambling shrub
Leaf		
Apex of the lamina	obtuse	acuminate
Size (largest leaves)	18 × 5.5 cm	13 ×6 cm
Lateral veins	distinct	obscure
Flowers	6 –12 on axillary or extra axillary fascicle or glomerule	numerous on axillary or extra axillary fascicle or glomerule
Pedicels	10 –12 mm long	3 – 6 mm long
Calyx lobes	lobes tipped with a tuft of 10 –12 crisped hairs	lobes fringed with rusty hairs
Petals	oblong, apex sub-obtuse, base cordate, margin yellow	ovate, apex obtuse, base broad, margin white
Anthers	anthers dehiscing transversely	anthers dehiscing longitudinally
Fruits	spheroid, epicarp tuberculate	irregularly ovate, epicarp smooth
Seeds	plano-convex	ovoid

0.5 × 1 mm, triangular, apex acute tipped with a tuft of 10–12 crisped hairs, margins entire. Petals 5, *ca*. 2 × 1.5 mm, oblong, apex sub-obtuse, base cordate, margin entire, papery, glabrous, thickened at middle, membranous towards margins, green, margin yellow, drying yellowish brown. Disc annular pulvinate, slightly pentagonous at base, 1–1.25 mm high, *c*.1 mm thick, carnose, inner margin raised in a thicker ring, the outer margin not flattened, rounded at edge, orange. Stamens 3, recurved, erect at anthesis, *c*. 0.4 mm long, anther only emerging on the stamen-pockets formed by the fusion of disc and ovary, the filament flattened wide but very short, basifixed, tetralocular, thecae confluent, dehiscing transversally. Pistil pyramid shaped, ovary 3 locular, single ovules in each locule; style *ca*. 0.7 mm long, after anthesis central triangular stigma dries up. Drupes spheroid, 5–6 cm diameter, orange-red, the epicarp crustaceous, tuberculate, drying dark brown. Seeds 3, 1.6–2.2 × 1–1.5 cm, slightly plano-convex, purplish brown, covered with pulp, testa thick, non-albuminous, cotyledons thick, usually conferruminate, radicle inferior.

Flowering & Fruiting: February–July.

Habitat and ecology: *Salacia wayanadica* occurs in evergreen forests at an altitude of 700 m. It apparently occurs only in small areas within forest extensions, but such distribution may be a sampling artefact. The plant was found growing together with other rare and endemic species such as *Eugenia argentea* Bedd. (Myrtaceae), *Memecylon randerianum* S. M. Almeida & M. R. Almeida (Melastomataceae), *Meteoromyrtus wynaadensis* (Bedd.) Gamble (Myrtaceae), *Pinanga dicksonii* (Roxb.) Blume and *Vateria indica* L. (Dipterocarpaceae). It was observed that its seeds are eaten by Malabar giant squirrel (*Ratufa indica* Erxleben), and fruits by Lion tailed macaque (*Macaca silenus* Linnaeus).

Distribution: *Salacia wayanadica* is known from Chandanathode and Varayal reserve forests of Periya forest section under North Wayanad forest Division in southern Western Ghats of Kerala, India. It is apparently endemic and very sparsely distributed in the evergreen forests.

Local uses: Ripen fruits are collected and eaten by local inhabitants residing around the type locality. Paste of root bark mixed with coconut oil is applied externally to treat scabies, twice a day till it cures.

Etymology: The species is named after the type locality, Wayanad district of Kerala, one of the floristically rich regions of the southern Western Ghats.

Conservation status: Populations of the new species are fragmented and seen in the margins of evergreen forests of Western Ghats at 700 m elevation and represented by a few scattered mature individuals in North Wayanad forest division. In all localities, populations of this new species are very small. It was observed that there were only seven mature individuals in a 1 km^2 area of Chandanathode. None of the localities is protected. The population at Chandanathode and Varayal is adjacent to human habitation and increased anthropogenic pressure in the form of non-timber forest products collection; widening and clearing of road side worsen the situation. A detailed assessment of its geographical distribution, population, reproductive biology is necessary for understanding threat causing factors and for formulating strategy for man assisted species recovery programme. As a first step, seeds taken from the wild collection were grown at M. S. Swaminathan Botanical Garden, Kalpetta, and 96% germination was observed in a growth media consisting of 3 parts vermicompost, 2 parts sand and 1 part farm soil. These seedlings after acclimatization will be transplanted in its natural habitat in association with Kerala Forest Department.

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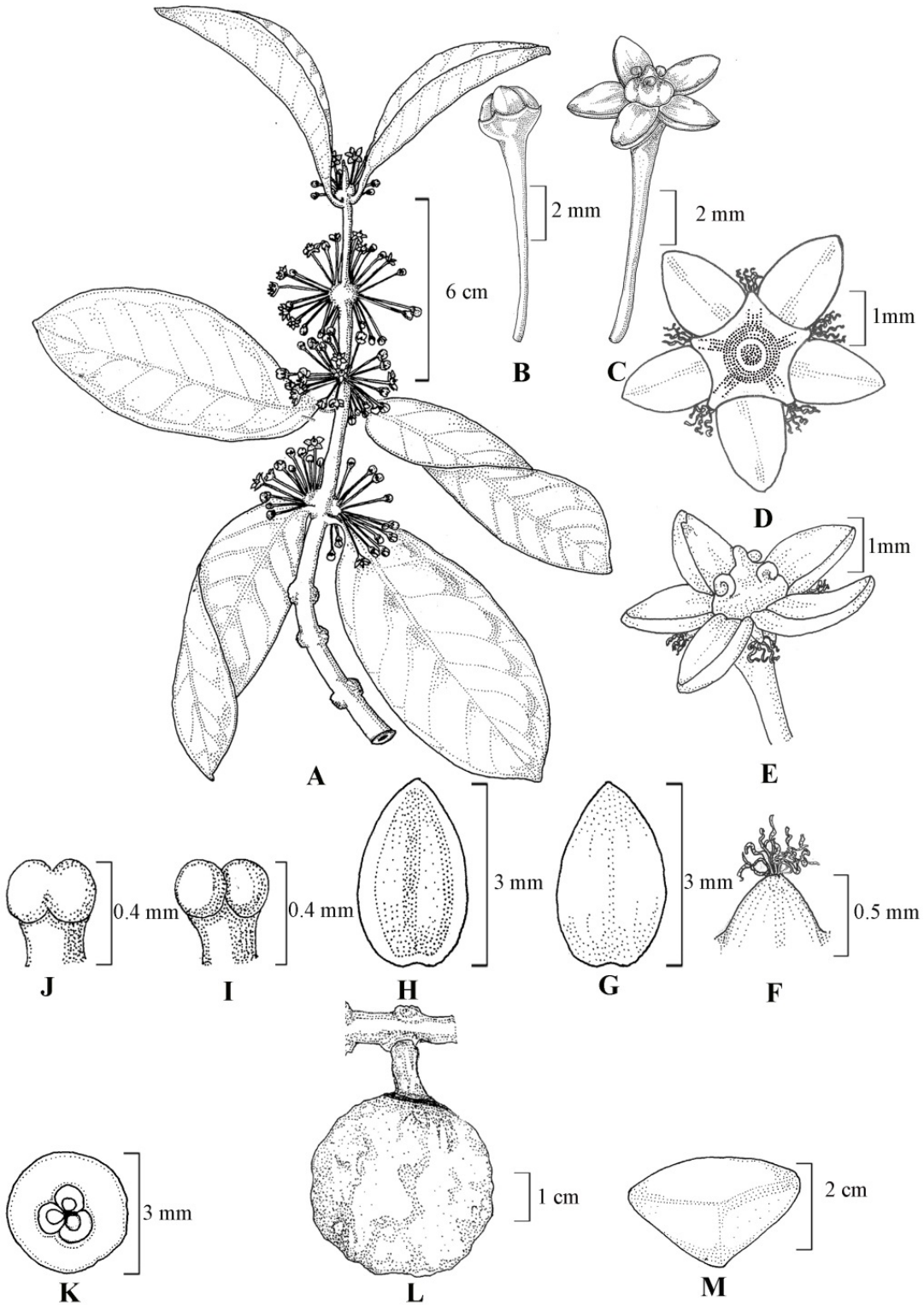


Fig. 1. *Salacia wayanadica* Sujana, Nagaraju, Ratheesh & Anil Kumar. A: Habit. B: Flower bud. C: Flower. D: Apical view of a flower. E: Side view of the flower. F: Calyx lobe tipped with tuft of hairs. G: Petal adaxial view. H: Petal abaxial view. I: Stamen dorsal view. J: Stamen ventral view. K: Transverse section of ovary. L: Fruit. M: Seed. Drawn by Nagaraju S.

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Fig. 2. *Salacia wayanadica* Sujana, Nagaraju, Ratheesh & Anil Kumar. A: Habit. B: Close view of the stem. C: Leaves. D: Twig with inflorescence. E: Closer view of the inflorescences. F: Fruit.

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