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Symplocos abrahamiana (Symplocaceae) -A new species from the Southern Western Ghats, Kerala, India.

R. Jagadeesan, A. Gangaprasad, Sam P. Mathew, J. Stephan and

E.S. Santhosh Kumar

R. Jagadeesan and A. Gangaprasad, Department of Botany, University of Kerala, Kariavattom P.O., Thiruvananthapuram, Kerala 695 581, India.
Sam p Mathew, J. Stephan and E.S. Santhosh Kumar, Jawaharlal Nehru Tropical Botanic Garden and Research Institute, Palode, Karimankode P.O., Thiruvananthapuram, Kerala 695 562, India.

Symplocos abrahamiana R. Jagadeesan *et al*. sp. nov. closely allied to *Symplocos macrocarpa* Wight ex C. B. Clarke and *Symplocos viridissima* Brand, located from the Southern Western Ghats, India, is described and illustrated here as a new species along with key for identification.

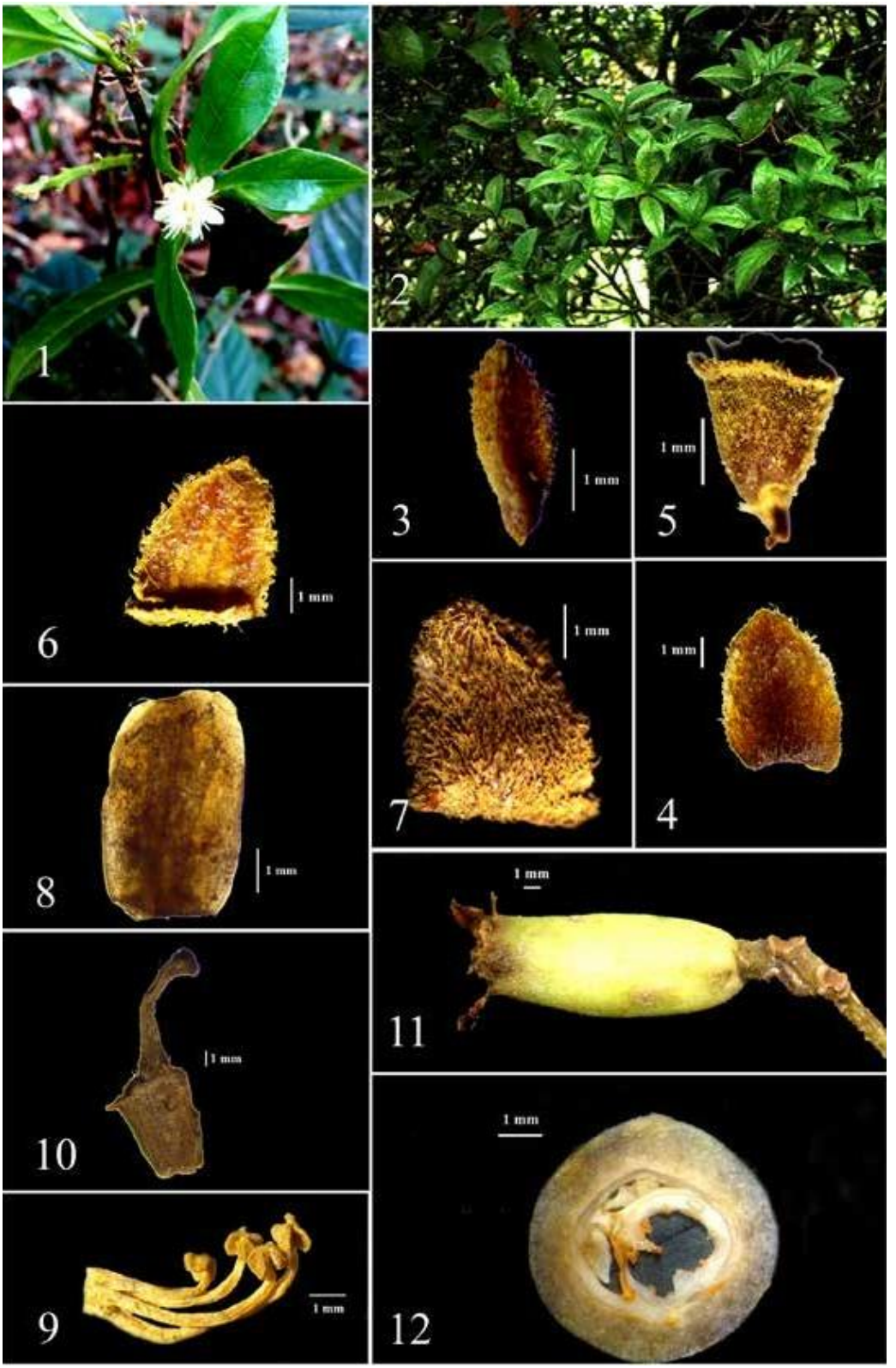
Symplocos Jacq. consists of about 300 taxa distributed along the tropics of the New World (Southeast United States extending to Mexico and Brazil), South to Southeast Asia (East Indies) and Australia (Brand, 1901; Nooteboom, 1975; Stahl, 1995; Hore 1983). Clerk has enumerated 64 species, for the Flora of British India (Hooker, 1882). Gamble (1921) included 20 species of *Symplocos* in the 'Flora of the Presidency of Madras'. Nooteboom (1975) also recognized two sub genera such as *Hopea* and *Symplocos* in his revisionary work on Symplocaceae of the Old World, excluding New Caledonia. Sasidharan (2004) cited 19 taxa from the Kerala region in his 'Flowering plants of Kerala'. The latest enumeration of the genus *Symplocos* from the Western Ghats accounted 14 species and 11 subspecies (Nair *et al,* 2014). Fritsch *et. al.* (2008) have enumerated 318 species under the family Symplocaceae within two genus *Symplocos* and *Cordyloblaste* respectively. Although, the family Symplocaceae is well established, its systematic position is still remaining slightly uncertain (Caris *et al*, 2002). The Indian species of *Symplocos* are mostly included under the section, *Lodhra* G. Don, characterized with an articulation found between the pedicel and calyx tube, petals connate at base, terete staminal filaments and mostly 3–celled to rarely 1–celled endocarp (Fritsch *et al.* 2008).

During the recent exploration at Eravikulam National Park of the Southern Western Ghats, the authors have come across an interesting *Symplocos* specimen. On critical taxonomic investigations and perusal of literature revealed the taxon is morphologically unique and exhibits remarkable dissimilarities with other known taxa of the genus. Hence, it is described and illustrated here as a new species.

***Symplocos abrahamiana* R. Jagadeesan, A.Gangaprasad et S. P. Mathew sp nov. (Fig. 1)**

Type: India, Kerala State, Idukki District, Eravikulam National Park, ±2000 m, 27 March 2016, R. Jagadeesan 9075, (Holotype: CAL; Isotype, TBGT, KUBH).

Symplocos abrahamiana R. Jagadeesan *et. al.* is closely allied to *Symplocos macrocarpa* Wight ex C. B. Clarke and *Symplocos viridissima* Brand, but principally differs in its elliptic leaves, 6-10 pairs of lateral nerves, tomentose calyx lobes, bracts and bracteoles, 60-80 stamens, cylindrical-ellipsoid fruits (1-1.5 cm long) and smooth endocarp (not grooved).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Etymology

Specific epithet of the new taxon is named after late Prof. (Dr) A. Abraham, (1914–1994), a great visionary and the founder of the Botany Department, University of Kerala in 1959 and Jawaharlal Nehru Tropical Botanic Garden and Research Institute in1979, for his great contributions to the field of Cytogenetics, Plant breeding and Conservation of plant species.

Description

Large shrubs to small trees up to 8 m. Stem cylindrical; bark grey, smooth; young branchlets sub angular, glabrescent; terminal vegetative buds pubescent. Leaves simple, alternate, exstipulate; petiole 5–9 mm, brown, canaliculate near the base on adaxial side, appressed pubescent; lamina 5–13 × 2.5–6 cm, elliptic, shortly attenuate towards base, margin distantly serrate, glandular, acuminate to caudate at apex, acumen 5–15 mm, coriaceous, sparsely pubescent on abaxial nerves, glabrous, shiny on adaxial side; midvein prominent beneath, impressed above, secondary veins 6–10 pairs, reticulate, convergent towards apex with intramarginal venation. Inflorescence usually in axillary spikes to rarely single flowered then subsessile; peduncle 1–5 cm, sub angular, glabrescent; bracts 4.5–5 × 2.8–3 mm, caducous, brown, ovate, acute at apex, truncate at base, ciliate along margin, concave below, adaxially tomentose, abaxially glabrous; bracteoles, 2.8–3 × 1.3–1.5 mm, caducous, brown, lanceolate, acute at apex, truncate at base, ciliate along margin, adaxially tomentose, abaxially glabrous beneath. Flowers lax, 1–6, 9–9.5 × 10–12 mm across, white. Calyx yellowish green; tube 1.7–2 mm, green, pubescent; lobes 5, 3–4 × 1.5–2 mm, unequal, ovate, margin ciliate, acute at apex, persistent in fruit. Corolla white, lobes 5, 4.5–5 × 2.3–2.5 mm, elliptic, sub obtuse at apex, 5 nerved. Stamens 60 – 80 in 3 irregular series, 5–7 mm, pentadelphous, stamens shorter than corolla or as long as corolla; filaments 4–6 mm long; anthers c. 1 mm across, basifixed. Disk prominent, pentagonous, pubescent on margins. Ovary 3–locular; ovules 2 per locule; style 6–8 mm, longer than corolla, constricted at middle; stigma capitate. Fruit 10–15 × 4–6 mm, cylindrical to ellipsoid with blunt apex, crowned with calyx lobes; mesocarp thick, fleshy; endocarp thin, smooth, not grooved, 1–3 seeded. Seed 0.7–0.9 cm, brown, ovoid–oblongoid, hard, slightly depressed at apex.

Table 1.
Morphological Comparison of *Symplocos abrahamii* sp. nov. with its allied species S. *macrocarpa* and *S. viridissima*.

Charecters	*S. macrocarpa*	*S. viridissima*	*S. abrahamiana*
Leaves	Elliptic-lanceolate, ovate, 12-16.5 cm long, chartaceous; lateral nerves 5-11 paired	Oblong-elliptic, 7-10 cm long, coriaceous; lateral nerves 3-6 paired	Elliptic, 5-13 cm long, coriaceous; lateral nerves 6-10 paired
Petiole	5-12 mm long	2-5 mm long	5-9 mm long
Inflorescence	Spike, 1-4 cm long	Raceme, 1-2 cm long	Spike to single flowered, 1-5 cm long
Bracts and bracteoles	Spathulate, caducous	Triangular-ovate, persistent	Ovate-lanceolate, caducous
Calyx lobes	2.5-3.5 mm long, tomentellous	1-2 mm long, puberulous	3-4 mm long, tomentose
Stamens	Ca. 40 numbers	30-50 numbers	60-80 numbers
Disk	Pentagonous, shortly pilose	Cylindrical, glabrous	Pentagonous, pubescent on margin
Style	Hairy at base	glabrous	glabrous
Fruits	Cylindrical, 25-30 mm long	Ampulliform, 5-7 mm long	Cylindrical-ellipsoid, 10-15 mm long

Distribution and Ecology

Symplocos abrahamiana R. Jagadeesan *et al.* is found to occur in the shola forest of Eravikulam National Park in Idukki District, Kerala State, India. Around 10 individuals were located from an area of 2sq km. The associated species are *Achyranthes aspera* L. var. *porphyristachya* (Wall. ex Moq.) Hook. f., *Ageratina adenophora* (Spreng.) R. M. King & H. Rob., *Camellia sinensis* (l.) Kuntze, *Cinnamomum sulphuratum* Nees, *Clerodendrum infortunatum* L. and *Impatiens goughii* Wight. Flowering and fruiting once in a year: December–May.

Conservation Status

The species located at Eravikulam National Park is the region protected under wildlife act. Based on the observed and available data, the species is provisionally assessed here as 'Critically Endangered: (A1ace; B2ab(iv,v); C2a(1); D) following IUCN Red List Categories and Criteria in 2016. No efforts have so far been taken for *ex situ* conservation of the species.

Additional specimen examined (Paratype)

India, Kerala: Eravikulam to Marayur road side (Idukki), 2050 m, 04.04.2016 R. Jagadeesan 9103 (KUBH).

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References

Brand, A. 1901. Symplocaceae, Das Pflanzenreich IV – 242 (Heft 6) 1–100.

Brandis. D. 1906. Indian Trees. 437–441. Jayyed press, Ballimaran, Delhi–6.

Cronquist, A. 1981. An integrated system of classification of flowering plants – Columbia University Press, New York.

Fritsch, P. W., B.C. Cruz, F. Almeda, Y. Wang & S. Shi. 2006. Phylogeny of *Symplocos* based on DNA sequences of the chloroplast trnC–trnD intergenic region – Systematic Botany 31: 181–192.

Fritsch, P.W., L.M. Kelly, Y. Wang, F. Almeda and R. Kriebel. 2008. Revised infrafamilial classification of Symplocaceae based on phylogenetic data from DNA sequences and morphology – Taxon 57: 823–852.

Gamble J.S. 1921. Flora of Presidency of Madras – pp. 778–784. London.

Hooker J. D. 1882. Styraceae Clarke. C. B – In: Hook. f., Flora of British India. 572–588. Ashford, Kent.

Hore. D. K. 1983. Distribution and endemism of Indian species of *Symplocos* – Indian forester 109: 246–253.

IUCN. 2016. IUCN Red List Categories and Criteria: version 11. IUCN Standards and Petitions Committee. Gland, Switzerland and Cambridge, U.K. http: // cmsdocs. S03. amazonaws. Com/ Red List Guidelines. Pdf.

Nair, T. S., Rasiya, B. A. and Sibi, M. 2014. Flowering plants of the Western Ghats, India – 1: 1934. Jawaharlal Nehru Tropical Botanic Garden and Research Institute, Thiruvananthapuram.

Hore. D.K 1990. Symplocaceae – In: Nayar M.P. *et al*, Fascicles of Flora of India 20:137–172. Botanical Survey of India, Calcutta.

Nooteboom, H.P. 1975. Revision of the Symplocaceae of the Old World, New Caledonia excepted – Leiden University Press, Leiden, Netherlands.

Sasidharan. N. 2004. Biodiversity documentation for Kerala, Part 6 – Flowering plants. 273–275. Kerala Forest Research Institute, Peechi.

Stahl, B. 1995. in S. P.Churchill, H. Balslev, E. Forero & J. L. Luteyn (eds.). Biodiversity and conservation of neotropical montane forests, Diversity and distribution of Andean Symplocaceae – pp. 397–405. The New York Botanical Garden, Bronx, New York.

Takhtajan, A. 1997. Diversity and classification of flowering plants – Columbia University Press, New York.

Legend

Figure 1. *Symplocos abrahamiana* sp. nov. (1), Flowering twig (2), Habit (3), Bracteole dorsal view, (4) Bract dorsal view, (5) Calyx tube, (6) Calyx lobe ventral view, (7) Calyx lobe dorsal view, (8) Petal, (9) Stamens, (10) Style and Stigma, (11) Fruit, (12) C.S. of fruit.