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Symplocos dasyphylla (Symplocaceae): revised description and lectotypification

Symplocos dasyphylla (Symplocaceae): descrição revisada e lectotipificação

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Abstract

Symplocos dasyphylla Brand is one of the most poorly known species of *Symplocos* occurring in Rio de Janeiro. This species has been erroneously considered a synonym of *S. itatiaiae* Wawra, and the original description of *S. dasyphylla* does not contain the characters needed to diagnose the species. Here we provide a revised augmented description of *S. dasyphylla*, lectotypification, illustration, citations of material examined, data for assessing its conservation status, and a key to the species of *Symplocos* section *Hopea* occurring in Rio de Janeiro.

Key words: Atlantic Rain Forest, Brazil, flora, Rio de Janeiro, taxonomy.

Resumo

Symplocos dasyphylla Brand é uma das espécies menos conhecidas de *Symplocos* que ocorre no Rio de Janeiro. Esta espécie tem sido erroneamente considerada um sinônimo de *S. itatiaiae* Wawra e a descrição original de *S. dasyphylla* não contém todos os caracteres necessários para reconhecer a espécie. É fornecida uma descrição revisada e aumentada, lectotipificação, ilustração, citação de materiais examinados, dados para avaliar seu estado de conservação, e uma chave para as espécies de *Symplocos* seção *Hopea* ocorrentes no Rio de Janeiro.

Palavras-chave: Brasil, flora, Mata Atlântica, Rio de Janeiro, taxonomia.

Introduction

Brazil contains 42 species of *Symplocos* Jacq. (Symplocaceae) that occur primarily in the Atlantic Rain Forest and the Cerrado biomes in the Southern and Southeastern regions of the country (Bidá 1995; Aranha Filho *et al.* 2007; Aranha Filho & Martins 2012). About half (22 species) of the known species of *Symplocos* occur in Rio de Janeiro, making it one of the richest states in Brazil for *Symplocos* diversity. The Brazilian species of *Symplocos* all belong to *S.* subgenus *Symplocos*, distributed among two of the three sections of the genus, i.e., *Symplocos* section *Symplocos* (ca. 150 species) and *Symplocos* section *Hopea* (L.) A. DC. (29 species; *sensu* Fritsch *et al.* (2008), but sectional name according to Aranha Filho *et al.* (2010a)).

Symplocos dasyphylla Brand, endemic to Rio de Janeiro, is a little-known member of *S.* section *Hopea*. In describing *S. dasyphylla*, Brand (1901) provided a succinct description of the species, including neither an illustration nor details of floral and fruit characters. A lack of information about these characters, combined with the paucity of known collections of this species available for study, has made assessing the taxonomic status of this species difficult. Taxonomists who studied the family in Brazil subsequent to Brand's treatment have placed *S. dasyphylla* under *Symplocos itatiaiae* Wawra (e.g. Bidá 1995), without providing an adequate justification for doing so. No descriptions of the species have been published since Brand (1901).

Recent taxonomic studies of Brazilian *Symplocos* have detected new species (e.g. Aranha Filho *et al.* 2009a, b) and new records for

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the Brazilian flora (e.g. Aranha Filho *et al.* 2010b), updated the synonymy (e.g. Aranha Filho 2009; Aranha Filho *et al.* 2007), validated names (e.g. Aranha Filho *et al.* 2009c), and documented rare and narrow Brazilian endemics (Aranha Filho *et al.* 2009e). The present work contributes to the taxonomic understanding of Brazilian *Symplocos* by providing a revised augmented description of *S. dasyphylla* and a justification for its recognition as a species distinct from *S. itatiaiae*. The species is lectotypified and illustrated, and a list of specimens examined, assessment of its conservation status, and a key to the species of *Symplocos* sect. *Hopea* occurring in Rio de Janeiro are included.

Material and Methods

In 2009 we conducted field work in Teresópolis and Nova Friburgo (state of Rio de Janeiro) but were unable to locate any populations of *Symplocos dasyphylla*. Habitat, habit, and phenological data were obtained from herbarium specimens. Collections of *Symplocos* were examined from the following herbaria (acronyms according to Thiers (2012)): A, B, BHCB, BM, BR, C, CAS, CEN, CEPEC, CESJ, DS, ESA, ESAL, F, FLOR, G, G-DC, GH, HAS, HB, HBR, HRCB, HUCS, HUEFS, IAC, IBGE, ICN, K, M, MBM, MBML, MO, OUPR, P, R, RB, RFA, S, SP, SPF, SPSF, TO, UB, UEC, UPCB, US, and VIC. The terminology used in the description and key is based on Hickey (1973) and Hickey & King (2000).

Most of the species of *Symplocos* sect. *Hopea* are cryptically dioecious (Aranha Filho *et al.* 2009d; Wang & Hu 2011). Male and female inflorescences and flowers can be morphologically distinct, but they share some characters. To avoid repetition we describe the inflorescences and flowers, generally stating the shared features and then describe the features specific to male and female inflorescences and flowers.

Results and Discussion

Symplocos dasyphylla Brand in Engl., Das Pflanzenr. IV.242 (Heft 6): 27. 1901. Type: BRAZIL. RIO DE JANEIRO: Haunt du Morro do Cubicado bei Petropolis, 1560 m, 7.VII.1879, fl. and fr., *A.F.M. Glaziou 10483* (lectotype, here designated, P 648421!; isolectotypes B destroyed (F negative 4342 in F!, MO!, NY), BR!, C(2)!, F! (fragment), G!, K!, LE, P 648425). Fig. 1

Shrub to small tree, 2.3–? m tall, dioecious. Branches sinuate in cross section, slightly winged, transversally fissured or fissures lacking, greenish,

greenish yellow, greenish brown or brownish. Leaves simple, alternate, exstipulate, distributed evenly along branch; petiole 1.5–5 mm long, abaxially rounded, adaxially flat to concave, glabrous; young leaves with glabrous blade; mature blade elliptic, obovate or rarely oblanceolate, 1.2–3(–4) × 0.6–1.2(–1.8) cm, coriaceous, venation ± cladodromous, abaxially with inconspicuous secondary and tertiary veins, adaxially with midvein slightly elevated, base attenuate, margin entire, obscurely revolute, marginal glands lacking or rarely 1 to 3 present on distal half, then early caducous (only scars seen), apex subacute, shortly acuminate, acuminate-retuse, obtuse or rounded, acumen (when present) 0.5–2 mm long, apical gland caducous or less often persistent. Inflorescence axillary, raceme, spicate, botryoid or one-flowered; peduncle visible or rarely obscured by bracts, glabrous; bracts 0.3–2 × 0.5–1.2 mm, numerous, strongly imbricate, clasping peduncle base, caducous but usually a few retained at peduncle base, apical gland present at least in some bracts, margin sparsely ciliolate or entire, proximal bracts predominantly rotund and ovate, coriaceous, apex rounded or obtuse, distal ones mostly lanceolate, ovate or elliptic, coriaceous or membranaceous, apex acute or obtuse. Flower 2.2–3.2 mm long, unisexual; hypanthium funnellform, glabrous; pedicel absent or up to 1 mm long, articulated; bracteoles 0.5–1 × 0.2–0.5 mm, deltoid or elliptic, flat or vaguely concave, margin ciliolate or entire, marginal glands usually present on proximal half, apex acute, apical gland present, membranaceous, 1 to 2 per flower, caducous or occasionally persistent, glabrous. Calyx connate at base, (4–)5-lobed, lobes 0.2–0.6 × 0.3–1.1(–1.5) mm, somewhat equal in length, rotund or ovate, erect or nearly so, margin eglandular, sparsely ciliolate or entire, apex subacute, rounded or obtuse, glabrous. Corolla basally connate, tube 0.2–0.3 mm long, 3–4-lobed, lobes whitish or whitish green, 1–2 × (0.3–)0.5–1.7 mm, elliptic, ovate or spatulate, reflexed, flat or concave, margin entire or sparsely ciliolate, apex obtuse or rounded, glabrous. Stamens and staminodes epipetalous, adnate to corolla at base, loosely arranged in clusters alternate with corolla lobes, filaments terete, ± filiform, distinct or inconspicuously connate up to 0.5 mm, whitish, glabrous, anthers basifixed, globose to ellipsoid, opening by longitudinal slits, notably shorter than filaments, yellowish. Ovary inferior with axillary placentation. Disc present at ovary apex, annular

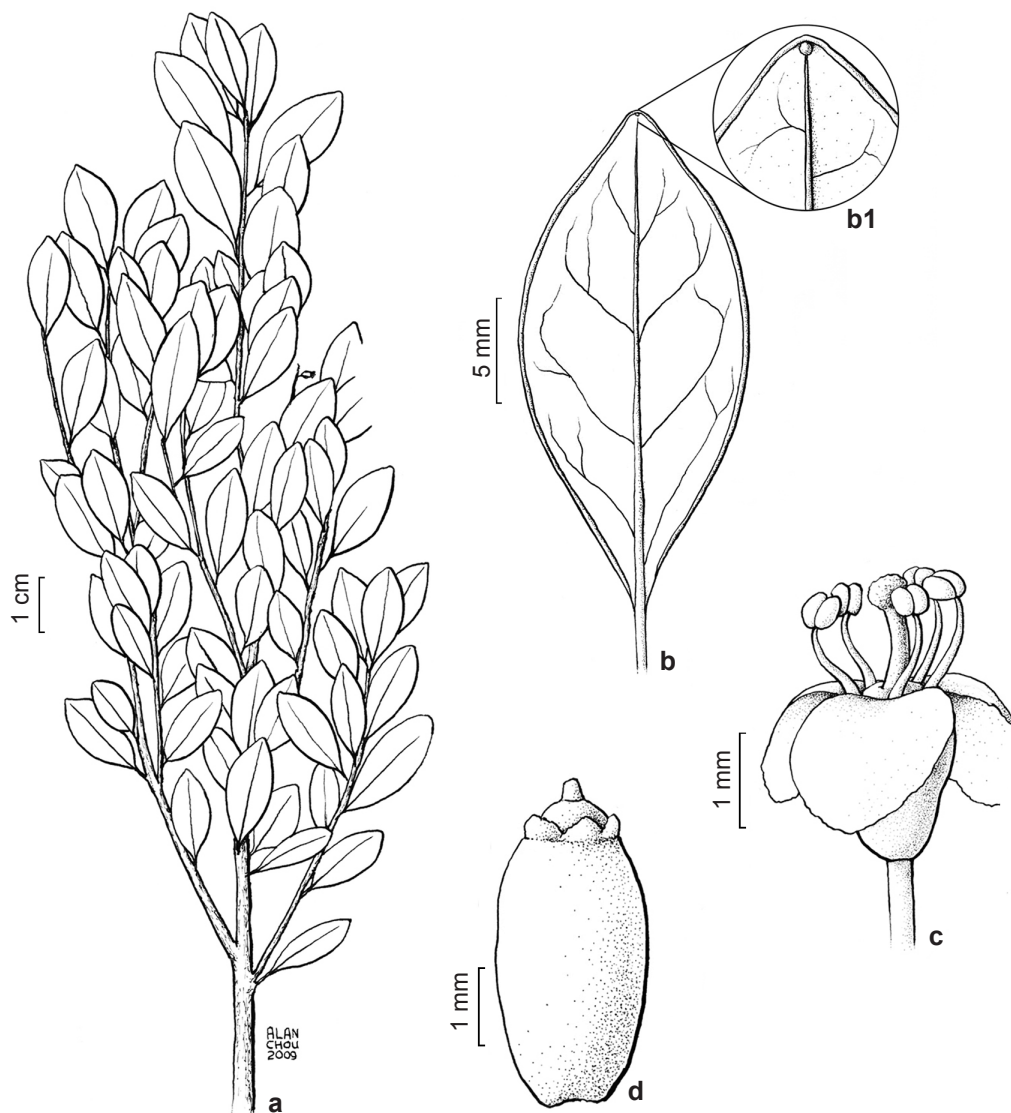


Figure 1 – a-d. *Symlocos dasyphylla* Brand (Glaziou 10483, P 648421) – a. branch detail; b. abaxial surface of the leaf; b1. detail of the leaf apex; c. female flower; d. mature fruit.

to slightly 3-lobed in transverse view, smooth or slightly rugose, glabrous. Male inflorescence 3.5–7.2(–12) mm long, (1–)2–6-flowered; peduncle 0.5–4 mm long. Male flower with hypanthium 0.2–0.7 mm long; stamens 6–11, filaments 0.5–2.2 mm long; anthers 0.3–0.45 × 0.25–0.4 mm; ovary aseptate or with 1 to 3 incomplete septa, ovules absent or notably reduced and non-fertile, style absent or rarely present, then ± filiform, and up to 1 mm long, stigma lacking, disc flat or slightly concave in longitudinal view, 0.3–1 mm in diam. Female inflorescence 2.9–5.2 mm long, 1-flowered; peduncle 0.7–2 mm long. Female

flower with hypanthium 0.8–1.7 mm long; staminodes 3–8, filaments 0.5–2 mm long; anthers 0.3–0.4 × 0.25–0.3 mm, producing malformed and non-viable pollen grains; ovary 3-carpellate and 3-locular, ovules 2 to 4 per locule, 1 to 2 well developed and 0 to 2 reduced in size, developed ovules 0.5–0.7 mm long, ovate to nearly ellipsoid, pendulous; style 0.6–1.2 mm long, cylindrical; stigma capitate or slightly 3-lobed, disc short cylindrical or less often dome-like in longitudinal view, 0.7–1 mm in diam. Drupe 4–4.5 × 2–2.5 mm, ellipsoid, 1-locular and presumably 1-seeded, apex 1–1.7 mm in

diam.; fruiting calyx lobes 0.5–0.8 × 0.3–0.8 mm, erect around the disc; disc visible, dome-like, exceeding the calyx in length; endocarp 0.1–0.15 mm thick. Seeds not seen.

Material examined: RIO DE JANEIRO: Nova Friburgo, Reserva Ecológica Municipal de Macaé de Cima, sítio Sophronites, 22°33'S - 42°30'W, 17.VII.1987, fl., *S.V.A.*

Pessoa et al. 234 (MBM, RB); Santa Maria Madalena, Parque Estadual do Desengano, Pedra do Desengano, 28.VI.1989, fl., *G. Martinelli et al.* 13358 (RB); no municipality indicated, Serra dos Órgãos, 14.XI.1887, *A.F.M. Glaziou* 16745 (BR, F, G, K, P[2], US, syntypes); no municipality indicated, no locality indicated, s.d., *A.F.M. Glaziou s.n.* (E 00285296 ex P).

Key to the species of *Symplocos* section *Hopea* in Rio de Janeiro state

1. Blade of young leaves with trichomes.
 2. Blade of young leaves sparsely to densely strigose or pilose-strigillose; bracts 0.9–3 mm long; corolla lobes 0.6–2.5(–3) mm long; drupe (4.7–)5–7.5(–9) × 2.6–5 mm *S. celastrinea*
 - 2'. Blade of young leaves densely tomentose-sericeous; bracts 1.5–10 mm long; corolla lobes 3–3.7 mm long; drupe (9.5–)10–15 × 6–8 mm *S. insignis*
- 1'. Blade of young leaves glabrous.
 3. Inflorescence fasciculate, if single flowered then peduncle lacking.
 4. Shrub 0.5–1.5 m tall; leaves ascending; fruiting calyx lobes obscuring the disc; seed sub-orbicular in cross section *S. minima*
 - 4'. Tree 2–7 m tall; leaves patent; fruiting calyx lobes not obscuring the disc; seed sinuate in cross section *S. itatiaiae*
 - 3'. Inflorescence racemose, spicate, panicoid, thyrsoid or botryoid, if single flowered then peduncle present.
 5. Calyx with two lobes notably larger than the other three *S. rizzinii*
 - 5'. Calyx with (4)5 lobes more or less equal in length.
 6. Corolla 5–7-lobed, lobes patent to ascending *S. oblongifolia*
 - 6'. Corolla 3–4-lobed, lobes reflexed (unknown in *S. neglecta*).
 7. Drupe (11–)13–25 mm long *S. estrellensis*
 - 7'. Drupe 4–10.3 mm long.
 8. At least some petioles exceeding 10 mm; bracts without an apical gland *S. revoluta*
 - 8'. Petioles shorter than 10 mm; at least some bracts with an apical gland.
 9. Branches slightly winged; leaves 1.2–3(–4) × 0.6–1.2(–1.8) cm; peduncle of female inflorescence 0.7–2 mm long; drupe 4–4.5 × 2–2.5 mm, ellipsoid *S. dasyphylla*
 - 9'. Branches not winged; leaves 3.4–8.5 × 1.5–2(–2.8) cm; peduncle of female inflorescence 5–12 mm long; drupe 8–10.3 × 3–5 mm, obpyriform or ovoid *S. neglecta*

Brand (1901) described *Symplocos dasyphylla* on the basis of two collections: *A.F.M. Glaziou* 10483 and 16745. Specimens of both collections either exhibit label discrepancies regarding date and/or locality, or the date or locality are not indicated. Nonetheless, we consider all the specimens that we studied as types and assume that such discrepancies are transcription errors because, according to Brand (1901) and Glaziou (1905–1913), all the specimens of the two collections constitute a single gathering. In addition, the collections ascribed to Glaziou very often contain confusing or even unreliable label data (Wurdack 1970). We choose the specimen

of *Glaziou* 10483 from P (P 648421) as lectotype because all the information on its label accords with the protologue and it has the best overall flowering and fruiting material.

Symplocos dasyphylla belongs to *Symplocos* sect. *Hopea* by its dioecious breeding system, basally connate corolla, stamens that are adnate to the corolla only at the base and united only at the base, terete filaments, 3-carpellate ovary, and 1-locular fruit. It is distinguished from other members of this section by the combination of its glabrous young leaves, mature leaves 2–3(–4) × 0.6–1.2(–1.8) cm with entire margin, racemose, spicate or botryoid inflorescence, corolla with 3

to 4 reflexed lobes, and drupe 4–4.5 × 2–2.5 mm. These differences serve to justify the recognition of *S. dasyphylla* as a distinct species. Specimens in flower, flower bud, and fruit were collected respectively in June and July, November, and July.

Symplocos dasyphylla has often been considered a synonym of *S. itatiaiae* because of similar leaf dimensions and rather small inflorescences. However, *S. itatiaiae* has leaves with inconspicuously serrulate margins (vs. entire in *S. dasyphylla*), fasciculate inflorescences or if single flowered then peduncle lacking (vs. racemose, spicate, or botryoid, if single flowered then peduncle present), and a corolla with 5 to 6 patent to ascending lobes (vs. 3 to 4 reflexed lobes).

Symplocos dasyphylla is known from few collections, having been collected only in the municipalities of Petrópolis, Nova Friburgo, and Santa Maria Madalena, all in the state of Rio de Janeiro. Little is known about the habitat of the species. The label on *G. Martinelli et al. 13358* states that it is a shrub collected in a cloud forest, among rocks and fully exposed to the sun. Indeed, other species of *Symplocos* that grow in cloud forests of Rio de Janeiro have rather small leaves and short internodes, like *S. dasyphylla*. However, the label of *S.V.A. Pessoa et al. 234* states that *S. dasyphylla* was collected in partial shade in Nova Friburgo (Reserva Ecológica Municipal de Macaé de Cima). Based on other collections of *Symplocos* made in the same area of *S.V.A. Pessoa et al. 234*, we surmise that *S. dasyphylla* was probably collected between 1100 to 1300m elevation in montane/upper montane rain forest, as a small tree.

Although *S. dasyphylla* occurs in protected areas at least in Nova Friburgo and Santa Maria Madalena, the paucity of collections suggests rarity and a high degree of threat. There are no data regarding abundance or population size of this species, but based on its apparent rarity and apparent vulnerability to human activities we consider this species to be at least vulnerable [VU: B1ab (iii), D2], according to IUCN (2010) criteria.

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