

## SYMPLOCOS ATLANTICA (SYMPLOCACEAE), A NEW SPECIES FROM THE ATLANTIC RAIN FOREST OF BRAZIL

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**Abstract.** *Symplocos atlantica* (Symplocaceae), a new species from the Atlantic Rain Forest of Brazil, is described and illustrated. The new species is morphologically similar to *Symplocos glandulosomarginata* and *S. glaziovii*, from which it can be distinguished by young leaves with an eglandular margin or rarely with 1–3 early caducous glands per cm, a pilose and dome-like to short-cylindrical disc in flower, and fertile ovules 0.2–0.5(–0.6) mm long.

**Keywords:** Atlantic Rain Forest, Brazil, cloud forest, Symplocaceae, *Symplocos*

During a phytosociological study at Cuscuzeiro Mountain, Ubatuba, São Paulo, the second author discovered a population of *Symplocos* Jacq. in which individuals exhibited unusual morphological features. He promptly alerted the first author, who was preparing the treatment of Symplocaceae for the São Paulo State Flora, to the presence of this population, wondering about its identification. Further study by the first author confirmed that this population represents an undescribed species. The description presented here is based on field observations and the study of herbarium specimens.

***Symplocos atlantica*** Aranha, *sp. nov.* TYPE: BRAZIL. São Paulo: Ubatuba, Parque Estadual da Serra do Mar, Cuscuzeiro, 23°18'14"S, 44°47'15"W, 1270 m, 15 November 2008, R. Bertoncello & T. J. Mello 904 (Holotype: UEC; Isotype: CAS). Fig. 1.

*Frutex vel arbor 1–9 m alta, ramulis dense tomentosis. Lamina folii juvenis abaxialiter dense tomentosa, ad marginem eglandulosa, raro 1–3 glandulis in 1 cm, caducis. Folia matura petiolo rubello, raro virello, lamina ad*

*marginem eglandulosa, (3–)4–8 × 1.1–2.7 cm. Inflorescentia axillaris, fasciculata, 4–6 mm longa. Stamina 17–41, recurva et discum, stylum et stigmatem tegentia raro solum stigmatibus visibili. Discus tholiformis vel brevicylindricus, dense pilosus. Ovarium ovulis fertilibus, ovoideis, ellipsoideis vel intermedium obovoideis, 0.2–0.5(–0.6) mm longis. Drupa late ellipsoidea vel subglobosa, (9–)10–12 × 7.5–9.5 mm.*

*Shrub or tree, evergreen, 1–9 m tall. Branches erect, strongly angled and vaguely fissured; branchlets angled, densely gray- or white-tomentose, glabrescent; vegetative buds gray- or white-tomentose, glabrescent. Leaves simple, alternate, petiolate, stipules lacking; young leaf blade with abaxial surface densely gray- or white-tomentose, adaxial surface glabrous, margin eglandular or rarely with 1 to 3 glands per cm, early caducous; mature leaves with petiole reddish or rarely greenish, ± rounded abaxially, concave to canalliculate adaxially, 4–11 mm long, white-tomentose, glabrescent; blade light green on abaxial surface and dark green on adaxial surface, elliptic to broadly elliptic, obovate or less often oblong, (3–)4–8 × 1.1–2.7 cm, coriaceous,*

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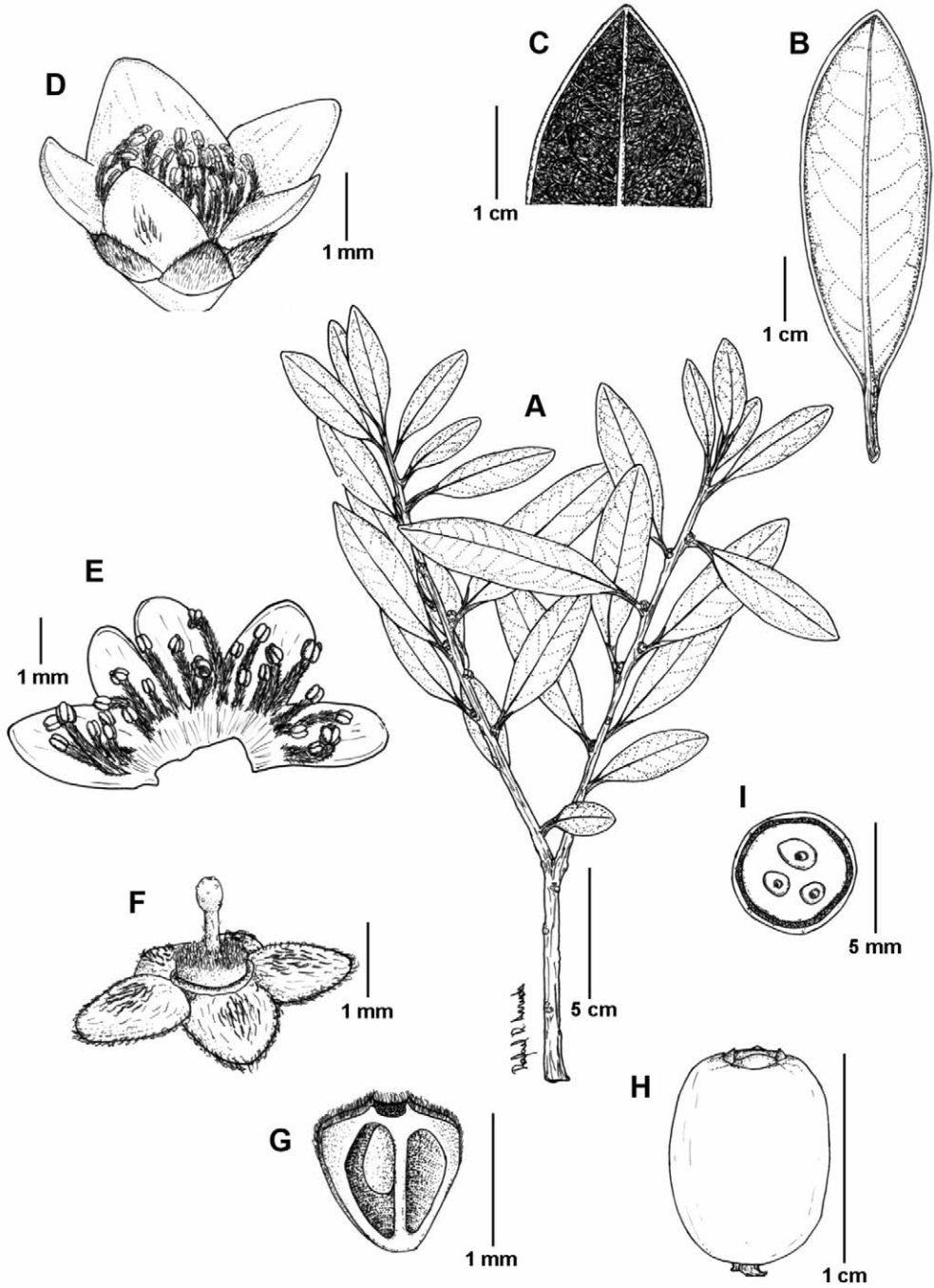


FIGURE 1. *Symplocos atlantica* Aranha. **A**, flowering branch; **B**, representative leaf (abaxial surface); **C**, leaf apex showing indument and eglandular margin; **D**, flower; **E**, corolla opened outward to show epipetalous and pubescent stamens; **F**, flower with corolla removed and calyx opened outward to show pilose disc, style, and stigma; **G**, ovary in longitudinal section to show fertile ovule size and shape; **H**, mature fruit; **I**, fruit in cross section. A–G from the holotype, H–I from *R. Bertoncetto & M. Pansonato 894* (UEC). Drawn by Rafael R. Arruda.

abaxial surface sparsely tomentose to glabrous, midvein adaxially impressed near the apex, otherwise sulcate, sparsely puberulent at base, venation obscurely brochidodromous, base attenuate to cuneate, margin entire, revolute, eglandular, apex acute, subobtuse, or rarely uncinately rounded or short-acuminate, acumen (when present) up to 2 mm long, apical gland when present caducous. *Inflorescences* axillary, fasciculate, 4–6 mm long, 1- to 7-flowered; bracts 6 to numerous, imbricate, the 2–4 basal bracts persistent to caducous, deltoid to subrotund, keeled,  $0.5\text{--}2(-3) \times 0.9\text{--}1.5$  mm, margin ciliolate or not, apex acute to subobtuse, apical gland usually caducous, abaxial surface densely white-pubescent, adaxial surface glabrous to sparsely white-pubescent, other bracts deltoid to rotund,  $1\text{--}2 \times 1\text{--}2$  mm, margin ciliolate, apex acute to obtuse, apical gland lacking, abaxial surface densely white-pubescent, adaxial surface sparsely white-pubescent to occasionally glabrous. *Flowers* bisexual, 3.8–4.5 mm long; hypanthium completely adnate to ovary, 0.5–0.8 mm long, broadly funnelform to campanulate, glabrous; calyx lobes 5, erect, pale green, subdeltoid to rotund,  $0.5\text{--}1.2 \times 1.0\text{--}1.5$  mm, abaxial surface densely white-pubescent throughout or occasionally only at apex, adaxial surface sparsely white-pubescent, margin ciliate, marginal glands often present, usually early caducous, apex rounded to subacute; corolla tube 0.1–0.3(–0.5) mm long, lobes 5–7, 1- or 2-whorled, outer whorl 5-lobed, inner whorl (when present) 1- to 2-lobed, white to pale yellow, ascending to patent, elliptic, deltoid, ovate or obovate,  $2\text{--}3 \times 1.5\text{--}2.5$  mm, both surfaces sparsely papillose, abaxial surface glabrous to sparsely white-pubescent medially, adaxial surface glabrous, margin glabrous to sparsely ciliolate, apex rounded to subacute; stamens 17–41, shortly connate or distinct, epipetalous, adnation of filaments to corolla 0.5–1.0 mm, in 2–4 series of different lengths, arched inward and obscuring the disc, style, and stigma, or rarely only the disc and style; filaments when connate up to ca. 0.1 mm long, deltoid, free portion of the filaments 0.5–2.0 mm long, densely pubescent; anthers basifixed, opening by longitudinal and lateral slits, yellowish, ellipsoid to globose,  $0.3\text{--}0.5 \times 0.2\text{--}0.4$  mm; disc at ovary apex elevated up to 0.5 mm long, dome-like to short-cylindrical, apex rounded to truncate in longitudinal view and circular to slightly 5-lobed

in transverse view, 1–2 mm diam., often marginally thickened, densely white-pilose; ovary 2- to 3-locular, inferior; ovules 1 or 2(or 3) per locule, but only one well-developed (fertile) per locule, other ovules (when present) notably reduced in size; fertile ovules ovoid, ellipsoid, or occasionally obovoid, 0.2–0.5(–0.6) mm long; style straight, cylindrical, 0.5–0.9 mm long, glabrous to sparsely pubescent; stigma capitate to slightly 2- or 3-lobed, papillose. *Drupe* purplish black, broadly ellipsoid to subglobose, 1- to 3-locular, (9–)10–12  $\times$  7.5–9.5 mm, apex 0.3–0.4 diam., glabrous; calyx lobes persistent, slightly appressed to disc or rarely erect,  $0.5\text{--}1.2 \times 1.0\text{--}1.5$  mm, glabrous or occasionally pubescent mostly near the apex on abaxial surface; disc always visible, dome-like, enlarged and not distended beyond persistent calyx, or occasionally distended beyond persistent calyx. *Seeds* 1–3, one per locule, ellipsoid,  $5\text{--}7 \times 0.5\text{--}2.0$  mm.

**Phenology:** flowering mostly from October to November and fruiting from November to February.

**Distribution:** known only from Cuscuzeiro (Ubatuba Municipality, northeastern São Paulo state) and Morro do Papagaio (Paraty Municipality, southern Rio de Janeiro state), Brazil.

**Habitat:** cloud forest, but occasionally in the transition zone between cloud forest and high montane ombrophilous forest at 1000–1270 m and about 4 km from the ocean, in the Atlantic Rain Forest.

**Conservation status:** restricted to the summits of Cuscuzeiro and Morro do Papagaio. Both are protected areas (Parque Estadual da Serra do Mar and APA Cairuçu, respectively). The distributional range encompasses fewer than 5000 km<sup>2</sup>. The lower elevations between the two known areas of occurrence for this species have been deforested (Assis, 1999; Assis et al., 2000). Thus, according to IUCN (2001) criteria, we recommend an Endangered (EN B1a, b[iii]) status for this species.

**Etymology:** the specific epithet of the new species refers to its habitat, in the Atlantic Rain Forest biome.

**Additional specimens examined:** BRAZIL. Rio de Janeiro: Paraty, fronteira entre Rio de Janeiro e São Paulo, fronteira Paraty e Ubatuba, Morro do Papagaio, 1000 m, 21 Nov. 1990, C. Farney & Valdo 2493 (K, RB). São Paulo:

Ubatuba, Parque Estadual da Serra do Mar, Cuscuzeiro, 1270 m, 20 Dec. 2006, R. Bertonecello & M. Pansonato 893 (UEC); 27 Feb. 2007, R. Bertonecello & M. Pansonato 894 (MO, RB, UEC); 27 Feb. 2007, R. Bertonecello & M. Pansonato 895 (MBM, SPF, UEC); 27 Feb. 2007, R. Bertonecello & M. Pansonato 896 (UEC); 15 Nov. 2008, R. Bertonecello & T. J. Mello 899 (NY, UEC); 15 Nov. 2008, R. Bertonecello & T. J. Mello 900 (UEC); 15 Nov. 2008, R. Bertonecello & T. J. Mello 902 (UEC); 15 Nov. 2008, R. Bertonecello & T. J. Mello 903 (UEC, UPCB); 15 Nov. 2008, R. Bertonecello & T. J. Mello 905 (BHC, UEC).

The K specimen with the label information "Paraty, Paraty-Mirim, Ponta da Barra, Farney 2493" is clearly a duplicate of the collection Farney & Valdo 2493 (the first set of which is deposited at RB), despite the fact that it has a different locality and the second collector is not listed on the label. We assume the differences between the labels are due to transcription errors on the K label, because Farney never collected in Ponta da Barra and when he collected in Morro do Papagaio he went with the second collector (Valdo), an employee at Parque Estadual da Serra do Mar (C. Farney C. de Sá [the first collector], pers. comm.). Furthermore, the RB specimen indicates that there is a duplicate at K.

Based on the classification of Fritsch et al. (2008), *Symplocos atlantica* belongs to the informally named group Neosymplocos, a well-supported clade within *Symplocos* series *Symplocos*. Species within this clade are recog-

nized by their pubescent filaments (Aranha Filho et al., 2007; Fritsch et al., 2008). In addition, *S. atlantica* can be characterized by the following combination of characters: an eglandular young leaf margin or rarely with 1–3 early caducous glands per cm, a pilose and dome-like to short-cylindrical disc in flower, and fertile ovules 0.2–0.5(–0.6) mm long. The species is also unusual in its reddish petioles on at least some leaves on each branch, young leaf blades densely gray- or white-tomentose abaxially, and mature flowers with stamens arched inward obscuring the disc, style, and stigma (rarely only the disc and style).

The new species is most similar to *Symplocos glandulosomarginata* Hoehne and *S. glaziovii* Brand. *Symplocos glandulosomarginata* is distinguished by its always greenish petioles (vs. reddish at least in some leaves on each branch in *S. atlantica*), densely glandular mature leaf margin (vs. eglandular mature leaf margin), stamens that are erect to slightly arched inward with the disc, style, and stigma always visible (vs. arched inward with the disc, style, and stigma not visible or rarely only the disc and style not visible), and fertile ovules (0.7–) 0.8–0.9 mm long (vs. 0.2–0.5(–0.6) mm long). *Symplocos glaziovii* is readily distinguished from *S. atlantica* by its densely glandular young leaf margins, more than 3 glands per cm with scars visible on the mature margin (vs. eglandular or rarely with 1–3 early caducous glands per cm), and a glabrous and completely flat disc in flower (vs. pilose and dome-like to short cylindrical).

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