



## Two new species of *Guatteria* (Annonaceae) from the Atlantic Forest of Brazil

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### Key words

Atlantic Forest Hotspot  
Bahia  
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**Abstract** *Guatteria emarginata* and *G. stenocarpa*, two new species from the Atlantic Forest in Espírito Santo and Bahia, Brazil, are presented here. *Guatteria emarginata* is characterized by narrowly obovate, verruculose leaves, densely covered with cinereous hairs on the lower side and an emarginate apex. *Guatteria stenocarpa* is remarkable among the Atlantic Forest species of the genus for its narrowly ellipsoid to cylindric monocarps of 22–25 mm long.

**Resumo** São descritas duas espécies novas de *Guatteria* da floresta atlântica do Espírito Santo e da Bahia. *Guatteria emarginata* é caracterizada pelas lâminas foliares estreitamente obovadas, verruculosas, densamente cobertas por indumento cinéreo na face abaxial e pelo ápice emarginado. *Guatteria stenocarpa* é única entre as espécies de *Guatteria* da floresta atlântica pelos monocarpídios estreitamente elipsóides a cilíndricos.

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### INTRODUCTION

*Guatteria* Ruiz & Pav. is the largest genus of the family *Annonaceae*, comprising c. 300 species (Erkens et al. 2008) distributed from SE Mexico to Bolivia and S Brazil (Barringer 1984), with centres of diversity in the Amazon basin and Guianas. The genus is characterized by an impressed primary vein on the upper side of the leaves, axillary flowers, pedicel with a distinct suprabasal articulation, imbricate petals and an apocarpous fruit with numerous 1-seeded indehiscent monocarps.

The last revision of *Guatteria* dates back to Fries (1939) and after him not much work was done on the genus for many years. However, recently the genus has attracted renewed attention leading to phylogenetic studies (Erkens et al. 2007a, b, 2009) as well as taxonomic work (Mello-Silva & Pirani 1988, 1994, Scharf et al. 2005, 2006, 2008, Erkens et al. 2006, 2008, Lobão & Mello-Silva 2007, Erkens & Maas 2008).

*Guatteria* is taxonomically problematic because of the uniformity of the flower and fruit characters (Van Heusden 1992) together with the variability of the vegetative characters that can overlap among species. Furthermore, the immature flowers (open bud) look very different from the mature ones, leading to frequent confusion in delimitation of species. Because of the problematic interpretation of these characters, the number of species could have been overestimated (Lobão & Mello-Silva 2007). Nevertheless, the two species described here are unique in their characteristics, and they both inhabit the Atlantic Forest of Brazil. This forest originally covered 1 400 000 km<sup>2</sup> of the Brazilian coastal mountains (Rizzini 1997) and is today reduced to less than 100 000 km<sup>2</sup> (Galindo-Leal & Gusmão Câmara

2003). For its high amount of biodiversity and endemism, this biome has been classified as one of the 25 world hotspots for conservation (Myers et al. 2000). The discovering of these two new species strengthens both the need for more systematic studies in *Guatteria* and the importance of the Atlantic Forest for conservational purposes.

### DESCRIPTION OF THE SPECIES

***Guatteria emarginata*** Lobão, Maas & Mello-Silva, *sp. nov.*  
— Fig. 1a–f

Ab omnibus speciebus generis *Guatteriae* nobis cognitae apice emarginatis differt. — Typus: *R.R. Vervloet et al. 2316* (holo SPF; iso MBML), Brazil, Espírito Santo, Santa Teresa, Nova Lombardia, Reserva Biológica Augusto Ruschi, Goipabo-Açu, Boeirão, linha de divisa (marco 53 e 52), picada, 600–800 m, 29 April 2003.

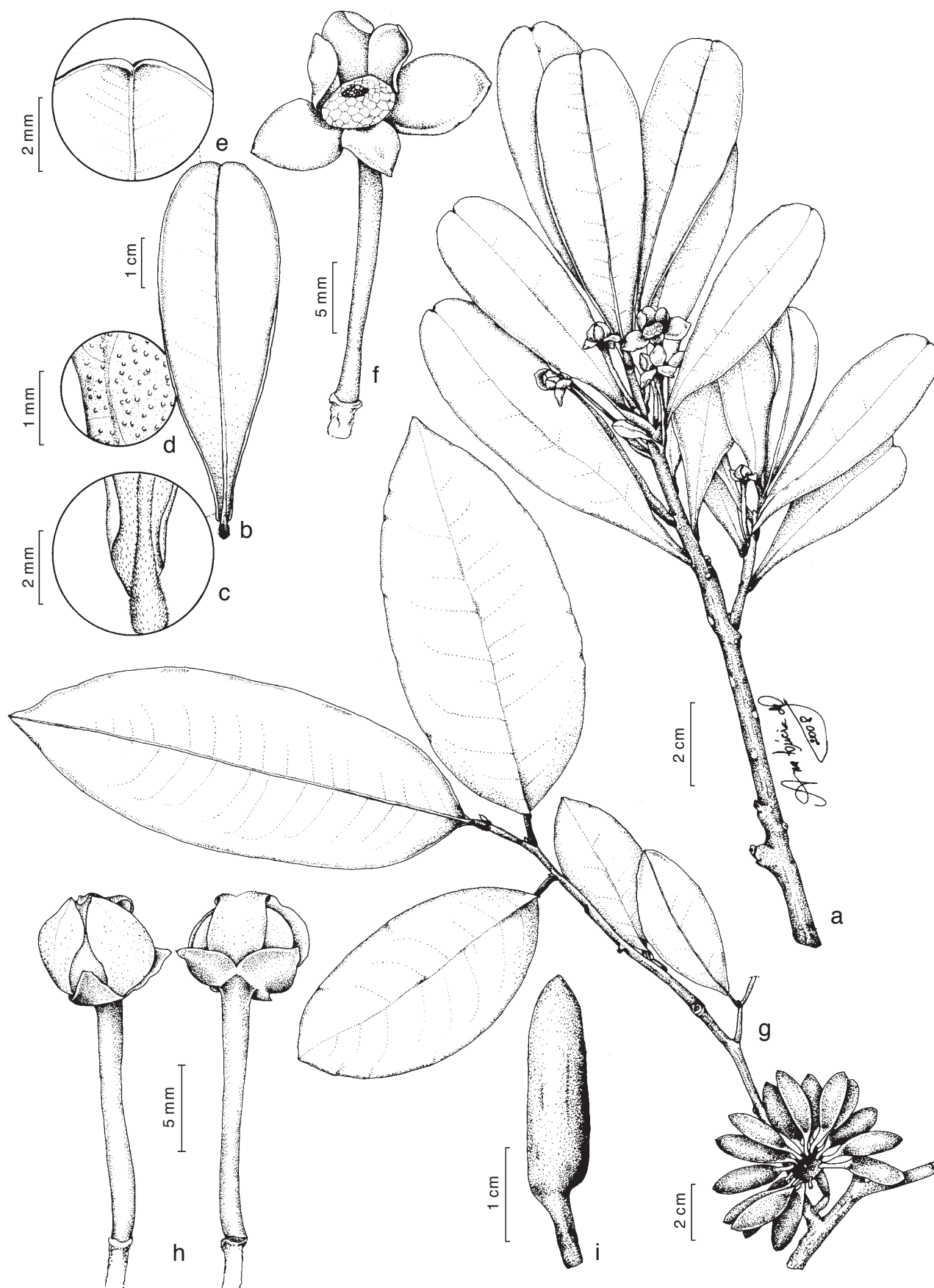
Tree c. 17 m tall; young twig sparsely covered with appressed greyish hairs. *Leaves*: petiole canaliculate, 3–4 mm long, blackish, sparsely to densely covered with appressed greyish hairs; lamina slightly coriaceous, verruculose, narrowly obovate, 5–9.5 by 1.5–3 cm, base attenuate, basal margins rolled inwards, apex emarginate, brown when dry, glabrous above, densely covered with appressed hairs below, primary vein flat on upper side, glabrous, secondary veins distinct, 13–16 pairs, raised on both sides, angles with primary vein 70–80°, tertiary veins reticulate, raised on both sides. *Flowers* solitary, axillary; bracts 2, soon falling off; pedicels 15–30 mm long, blackish, sparsely to densely covered with appressed, greyish hairs, articulation at 1/4 to 1/3 from the base; flower buds broadly ovoid; sepals green in vivo, broadly triangular, c. 4 by 3 mm, densely covered with curly hairs on lower side, reflexed; petals pale red in vivo, broadly ovate, the outer whorl slightly smaller than the inner, 5–9 by 6–7 mm, densely covered with curly hairs on both sides; stamens c. 1.5 mm long, connective shield papillate; carpels c. 2 mm long, ovary densely covered with appressed, golden brown hairs, stigma papillate. *Fruit* not seen.

*Distribution* — Brazil, Espírito Santo; known only from the type locality.

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**Fig. 1** a–f. *Guatteria emarginata* Lobão, Maas & Mello-Silva. a. Flowering twig; b. leaf; c. leaf base; d. leaf surface verruculose; e. leaf apex emarginate; f. flower. — g–i. *Guatteria stenocarpa* Lobão, Maas & Mello-Silva. g. Fruiting twig; h. flower bud; i. monocarp (a–f: Vervloet 2316, g, i: Jardim 3096, h: Thomas 1109).

Habitat & Ecology — Mountain Atlantic Forest; altitude 600–850 m.

Phenology — Flowering: April; fruiting: unknown.

Note — *Guatteria emarginata* is characterized by narrowly obovate, verruculose leaves, which are densely covered with appressed, greyish hairs on the lower side and by an emarginate apex, hence its name. Those features are very rarely seen in Atlantic Forest species of *Guatteria* and make *G. emarginata* an easily recognizable species.

***Guatteria stenocarpa*** Lobão, Maas & Mello-Silva, *sp. nov.*  
— Fig. 1g–i

Proxime affinis est *G. oligocarpae* et *G. pogonopi* sed monocarpiis 22–25 mm longis anguste ellipsoidibus vel cylindricisque facili negotio eas discernere. — Typus: J.G. Jardim *et al.* 3096 (holo RB; iso CEPEC, SPF, U), Brazil, Bahia, Itacaré, loteamento Marambaia, vicinal que leva à fazenda, c. 1 km da rodovia BA 001, 14°19'41"S 39°01'46"W, 29 Oct. 2000.

Tree 5–8 m tall; young twigs glabrous. *Leaves*: petiole shallowly canaliculate, 6–12 mm long, blackish, glabrous; lamina slightly coriaceous to chartaceous, not verruculose, narrowly obovate, 11–22 by 4–8 cm, base slightly attenuate, apex shortly acuminate to acute, green in vivo, slightly green to brown in sicco, glabrous on both sides, primary vein flat on upper side, glabrous, secondary veins distinct, 7–9 pairs, raised on both sides, angles with primary vein 70–90°, tertiary veins reticulate, raised on both sides. *Flowers* solitary, axillary; bracts 4 or 5, soon falling off; pedicels 20–35 mm long, blackish when dry, glabrous, articulation at 1/4 to 1/3 from the base; flower buds broadly ovoid, covered with appressed, golden brown hairs; sepals green in vivo, broadly triangular, 2–6 by 3–6 mm, densely covered with curly hairs on both sides, reflexed; petals greenish to pale yellow in vivo, broadly ovate to elliptic, the outer whorl slightly smaller than the inner, 6–24 by 6–15 mm, densely covered with appressed hairs on both sides, margins reflexed; stamens c. 2 mm long, connective shield papillate, carpels c. 2 mm long, ovary densely covered with appressed, golden brown hairs, stigma papillate. *Fruit* torus broadly obovoid; monocarps narrowly ellipsoid to cylindric, 22–25 by 6–8 mm, green in vivo, blackish when dry, apex shortly apiculate, stipes 5–10 mm long, glabrous. *Seed* narrowly ellipsoid, 20–25 by 6–8 mm, longitudinally ridged, brown when dry.

Distribution — Brazil; Bahia; Taperoá, Itacaré and Uruçuca (these localities are close to each other).

Habitat & Ecology — Southern Bahia, moist Atlantic Forest; altitude sea level to 450 m.

Phenology — Flowering: July; fruiting: October, November and May.

Etymology — The specific epithet refers to the narrowly ellipsoid to cylindric monocarps, an uncommon feature for *Guatteria* and unique in *Guatteria* from south-eastern Brazil.

Notes — *Guatteria stenocarpa* is characterized by slightly coriaceous leaves and narrowly ellipsoid to cylindric monocarps of 22–25 mm long. Among the SE Brazilian species of *Guatteria*, *G. stenocarpa* is vegetatively similar to *G. oligocarpa* and *G. pogonopus* because of the glabrous and slightly coriaceous to chartaceous leaves, which are also of the same length. However, *G. oligocarpa* and *G. pogonopus* have ellipsoid monocarps which are less than 20 mm long.

*Additional specimens examined.* BRAZIL, Bahia: J.G. Jardim *et al.* 4163 (CEPEC, NY, U), Uruçuca, Serra do Cunduru, rodovia Serra Grande/Uruçuca, c. 14 km W do Parque Estadual Serra do Cunduru, 14°28.83'S 39°06.33'W, alt. 450 m, 18 Dec. 2003; J.L. Hage *et al.* 416 (CEPEC, NY, U), Taperoá, rodovia Taperoá-Valença, km 13, ramal em direção ao povoado de Serapei, a 3 km W da entrada do ramal, 10 Dec. 1980; W.W. Thomas *et al.* 6933 (CEPEC, NY, U), Uruçuca, 7.3 km N of Serra Grande on road to Itacaré, fazenda Lagoa do Conjunto, fazenda Santa Cruz, 14°25'24"S 39°03'38"W, 1–12 July 1991; W.W. Thomas *et al.* 9812 (CEPEC, NY, RB), Uruçuca,

7.3 km N of Serra Grande on road to Itacaré, fazenda Lagoa do Conjunto, fazenda Santa Cruz, 14°25'24"S 39°03'38"W, 6 May 1993; W.W. Thomas *et al.* 11009 (CEPEC, NY, RB, SPF), Uruçuca, 7.3 km N of Serra Grande on road to Itacaré, fazenda Lagoa do conjunto fazenda Santa Cruz, 14°25'24"S 39°03'38"W, 15 Nov. 1995.

## CONSERVATION STATUS

The two species occur in the Atlantic Forest of eastern Brazil, a threatened ecosystem. The species are rare and only *G. emarginata* occurs in a legally protected conservation area. The best category of the IUCN Red List (IUCN 2001) for *G. emarginata* would be DD (data deficient) and that for *G. stenocarpa* EN (endangered), fitting them into IUCNs B.1.a.c. criteria.

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