

New species of *Eugenia* sect. *Racemosae* (Myrtaceae) from Brazilian Amazon Rainforest

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Summary. The new species *Eugenia pallidopunctata*, *E. caducibracteata*, *E. tenuiflora* and *E. breviracemosa* from the Brazilian Amazon, all belonging to *Eugenia* sect. *Racemosae* (Myrtaceae), are described, illustrated and compared with their putative close relatives. Data on the geographic distribution and habitat are given for the new taxa, as well as illustrations.

Key Words. Brazilian Amazon, *Eugenia*, *Eugenia* sect. *Racemosae*, Myrtaceae, new species.

Introduction

The largest of the New World *Myrtaceae* genera, *Eugenia* L. is currently estimated to contain 500 (Holst *et al.* 2003) to 2,000 species (Sanchez-Vindas *et al.* 2001), distributed from southern Mexico, Cuba and the Antilles to Uruguay and Argentina, with a small number of species (c. 60) in Africa (van der Merwe *et al.* 2005). Some species have been cultivated in tropical and subtropical regions (e.g., *Eugenia uniflora* L., *E. brasiliensis* Lam.). *Eugenia* is also the genus with the highest number of tree species in the rainforests and semi-deciduous forests of the Brazilian Atlantic Forest region (Oliveira-Filho & Fontes 2000).

According to Holst (2002), *Eugenia* and *Myrcia* are the neotropical genera of *Myrtaceae* most in need of study. Because of its large size, no one has attempted to revise *Eugenia* as a whole since the major publications of Berg (1855, 1856, 1857, 1858a, 1858b, 1859, 1860, 1861).

The species of *Eugenia* have been classified into sections based on inflorescence morphology. According to Mazine (2006), *Eugenia* sect. *Racemosae* O. Berg can be recognised by flowers arranged exclusively in racemes and/or panicles, with a distinctive axis bearing the flowers in which the pedicel internode ratio is 2×1 or less; this group is phylogenetically consistent. During the preparation of a monograph of the Brazilian species of *Eugenia* sect. *Racemosae*, several new species were found. Descriptions of four new species of *Eugenia* sect. *Racemosae* from the Brazilian Amazon are presented here. Distribution data, illustrations and comments on all of the species are also presented.

Description of the New Species

1. *Eugenia pallidopunctata* Mazine sp. nov. *Eugenia inundata* DC. affinis, sed foliis punctationibus indistinctis (nec impressis in pagina adaxiali foliarum), racemo longo, rhachidi 1.2 – 2.5 cm longa (nec brevi, rhachidi 1 – 8 mm longa), hypanthio dense pubescenti (nec lanuginoso) distincta. Typus: Brazil, Pará, Marapi, margem do rio Marapi, terra firme, 20 Oct. 1974, N. A. Rosa 245 (holotypus IAN!; isotypus MICH!).

Tree c. 7 m, branches densely pubescent. *Leaf blade* elliptic, 2.2 – 3.9 cm long, 1 – 1.5 cm wide, membranaceous-chartaceous, sparsely pubescent on the upper surface, pubescent on the lower surface, hairs simple, apex acute or acuminate, base acute or attenuate, midvein sulcate on the upper surface, densely pubescent on both surfaces, lateral veins indistinct or flat, marginal vein c. 0.5 mm from the margin; glandular dots indistinct on the upper surface; petiole 2 – 3 mm long. *Raceme* delicate, with 3 – 4 pairs of flowers, axillary, peduncle 1 – 1.5 cm long, rachis 1.2 – 2.5 cm long, densely pubescent, hairs brownish. *Floral bracts* persistent, c. 1 mm long, pedicel 0.7 – 1.2 cm long, densely pubescent, bracteoles 0.5 – 1 mm long, persistent, connate at the base, apex acute or rounded, subglabrous, pubescent on the midvein, margin ciliate, sepals c. 1 mm long, apex rounded, sparsely pubescent with margin ciliate, persistent; petals c. 3 mm long, oblong, apex obtuse; filaments 3 – 4 mm long, glabrous; hypanthium densely pubescent, much more densely so than the rest of the

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flower and inflorescence, surface not costate, style 4 – 5 mm long, glabrous. *Fruit* not observed. Fig. 1.

DISTRIBUTION. Known only from the type collection from the region of Marapi river, in Pará State, Brazil.

SPECIMEN EXAMINED. BRAZIL. Pará: Marapi, margem do rio Marapi, terra firme, 20 Oct. 1974, *N. A. Rosa* 245 (holotype IAN!; isotype MICH!).

HABITAT. Occurring in unflooded ombrophilous forest — “floresta de terra firme”.

CONSERVATION STATUS. IUCN category: Data deficient (DD).

ETYMOLOGY. The specific epithet refers to the glandular dots of this species, which are indistinct on the upper surface.

NOTES. *Eugenia pallidopunctata* is characterised by the racemes with filiform and delicate axes, similar to those of *E. orbignyana* O. Berg, a shrub from cerrado of the central region of Brazil. The general aspect of the plant is also similar to that of *E. longiracemosa* Kiaersk., which



Fig. 1. *Eugenia pallidopunctata*. A flowering branch; B flower; C medial section of ovary. All from *N. A. Rosa* 245. DRAWN BY MARIA ALICE REZENDE.

occurs in the Brazilian state of Amazonas. However, *E. pallidopunctata* has a very densely pubescent hypanthium, while *E. longiracemosa* has a glabrous hypanthium. *E. pallidopunctata* may also be confused with *E. inundata*, which also occurs in Pará and has generally narrow leaves and bracteoles with a pubescent midvein. *E. inundata* also differs by its shorter racemes, in addition to the usually lanuginose hypanthium with white hairs. Furthermore, *E. inundata* has impressed glandular dots on the upper surface of the leaves.

2. *Eugenia caducibracteata* Mazine, sp. nov. Racemi rachis hypanthiumque sparse ad dense puberulum, trichomata brevissima (velveto similaria), alabastra magna (4 – 7 mm diam) atque globosa, bractee florales magnae (3 – 4 mm longae) atque caducae ante anthesim. Ab *Eugenia brownsbergii* Amshoff racemis cum rachidibus sparse ad dense puberulis (nec dense pubescentibus), cum trichomatibus brunneis albidusve (nec trichomatibus ferrugineis) differt. Typus: Brazil, Pará, Almeirim, Gleba Monte Dourado, floresta secundária de terra firme, 0°52'S 52°33'W, 24 Feb. 1988, *J. M. Pires* & *N. T. Silva* 2015 (holotypus MG!; isotypi KI, NY!).

Tree 6 – 18 m, young branches glabrous to puberulous. *Leaf blade* elliptic, ovate-elliptic or elliptic-oblong, 6.5 – 13.5 cm long, 3.1 – 5.6 cm wide, chartaceous, glabrous to sparsely puberulous on both surfaces, hairs simple; apex acute-acuminate; base acute; midvein sulcate, glabrous to sparsely puberulous on both surfaces; lateral veins flat to slightly prominent, marginal vein 1.5 – 3 mm from the margin; glandular dots indistinct or flat on the upper surface; petiole 4 – 8 mm long. *Raceme* with 4 – 6 (– 9) pairs of flowers, axillary, peduncle (0 –) 3 – 8 mm long; rachis 2.1 – 8.2 cm, sparse to densely puberulous, hairs brownish or whitish. *Flower bud* 4 – 7 mm diam; floral bracts deciduous before anthesis, 3 – 4 mm long; pedicel 5 – 9 mm, sparsely to densely puberulous; bracteoles 1 – 2.5 mm long, connate at the base, apex acute, obtuse or rounded, subglabrous to sparsely puberulous, persistent; sepals 2 – 3.5 mm long, apex rounded, glabrous to sparsely puberulous, persistent; petals 5 – 7 mm long, orbicular, apex rounded; filaments 5 – 6 mm long, glabrous; hypanthium densely puberulous, more densely so than the pedicel and the rachis, not costate, style 1 – 1.2 cm long, glabrous. *Fruit* oblong-ellipsoid, 1.4 – 1.7 cm long, 1.1 – 1.3 cm diam, puberulous, surface smooth. Fig. 2.

DISTRIBUTION. Known from Central and Eastern Amazonia, Brazil.

SPECIMENS EXAMINED. BRAZIL. Amazonas: Manaus, Reserva Florestal Ducke, Manaus-Itacoatiara km 26, 02°53'S 59°57'W, 12 Dec. 1997, *M. A. D. Souza et al.* 518

(INPA, SP). Manaus, Reserva Florestal Ducke, Manaus-Itacoatiara km 26, 02°53'S 59°57'W, 15 Dec. 1997, *C. A. Sothers* & *E. C. Pereira* 1067 (INPA, SP). Manaus, Reserva Florestal Ducke, road Manaus-Itacoatiara km 26, 02°53'S 59°57'W, nearby creek of Tinga, 2 Dec. 1997, *M. A. D. Souza et al.* 470 (INPA, SP). Manaus, road Manaus-Itacoatiara, km 8, Rosa de Maio, 2 Dec. 1975, *C. Mota* & *G. Mota* 238 (INPA). Maranhão: Buriticupu, Reserva Florestal da CVRD, 8 Feb. 1996, *Muniz* 2439 (ESA, HRCB). Buriticupu, Reserva Florestal da CVRD, 8 Feb. 1996, *Muniz* 2378 (ESA, HRCB, SP, UB). Açailândia, between Santa Inês and Açailândia, 04°45'S 47°10'W, 300 m.s.m., 17 Dec. 1978, *J. Jangoux* & *R. P. Bahia* 559 (MG, NY). “Alzilândia” [Açailândia], Pindaré R., 03°45'S 46°05'W, 11 Dec. 1978, *J. Jangoux* & *R. P. Bahia* 304 (MG, NY). Pará: Almeirim, Gleba Monte Dourado, floresta secundária de terra firme, 0°52'S 52°33'W, 24 Feb. 1988, *J. M. Pires* & *N. T. Silva* 2015 (holotype MG!; isotypes KI, NY!). Almeirim, Monte Dourado, Jari R. region, road between Planalto A and Tinguelim km 16, 11 June 1970, *N. T. Silva* 3209 (IAN). Almeirim, Monte Dourado, Jari R. region, road of Munguba, 29 April 1970, *N. T. Silva* 3094 (IAN). Almeirim, Monte Dourado, Jari R. region, road of Munguba, 1 April 1969, *N. T. Silva* 1823 (IAN, MO, NY). Almeirim, Monte Dourado, Jari R., 13 March 1968, *E. Oliveira* 4165 (IAN, NY). Almeirim, Monte Dourado, Jari R., 21 June 1968, *E. Oliveira* 4604 (IAN, NY). Marabá, Serra dos Carajás, 26 Nov. 1988, *N. A. Rosa* & *F. C. Nascimento* 5081 (K). Melgaço, Estação Científica Ferreira Penna, 21 Nov. 1994, *A. S. L. Silva et al.* 3118 (MG).

HABITAT. Occurring in unflooded ombrophilous forest — “floresta de terra firme”.

CONSERVATION STATUS. IUCN category: Data deficient (DD).

ETYMOLOGY. The specific epithet refers to the floral bracts of this species, which are deciduous before anthesis.

NOTES. The indumentum of the rachis and hypanthium of *Eugenia caducibracteata* is similar to velvet, with very short, densely distributed hairs. Also, it has large globose flower buds, as well as large and early deciduous floral bracts. It differs from *E. brownsbergii* Amshoff mainly by the short and brownish or whitish hairs of the inflorescences (instead of longer rusty hairs of *E. brownsbergii*).

3. *Eugenia tenuiflora* Mazine sp. nov. Racemi trichomatibus ferrugineis, hypanthium dense pubescens, alabastra parvula (1 – 1.5 mm diam), tenuia, pedicelli breves (1 – 2 mm longi). Ab *Eugenia pruniformis* Cambess. alabastris parvis (1 – 1.5 mm diam.) delicatis et pedicellis brevibus (1.5 – 2 mm longis) differt. Typus: Brazil, Amazonas, Humaitá, Rio Madeira, road Humaitá to Labrea, km 42, 2 km W of Rio Ipixuna, low forest on terra firme, 23 Nov. 1966, *G. T. Prance*, *B. S.*

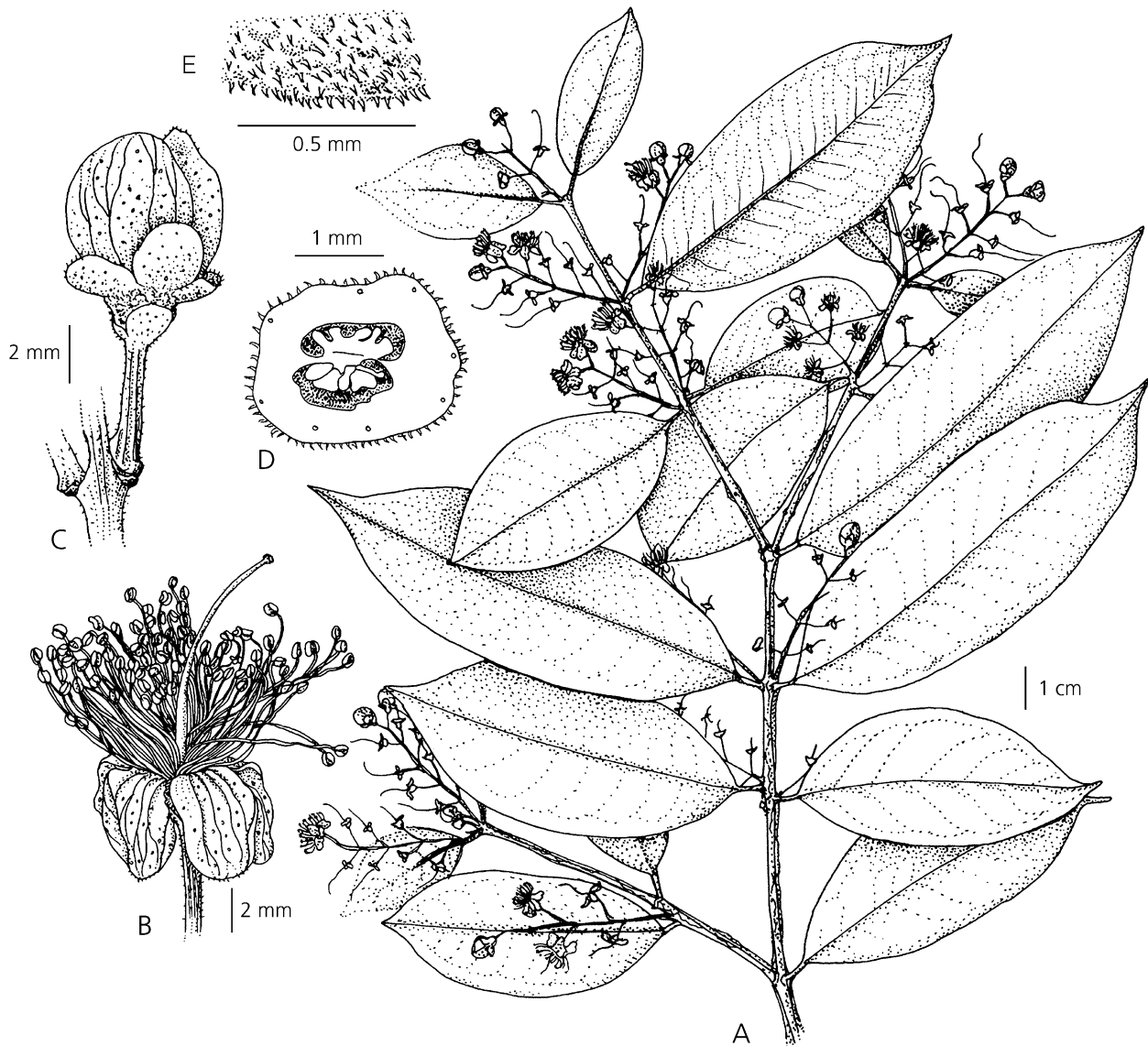


Fig. 2. *Eugenia caducibracteata*. A flowering branch; B flower; C flower bud; D medial section of ovary; E detail of the indumentum of the hypanthium. All from J. M. Pires & N. T. Silva 2015. DRAWN BY MARIA ALICE REZENDE.

Pena & J. F. Ramos 3222 (holotypus MG!; isotypi F!, INPA!, K!, MICH!, NY!, US!).

Tree c. 12 m, young branches moderately pubescent, glabrescent. *Leaf blade* elliptic, 5.2 – 8 cm long, 2.1 – 2.7 cm wide, chartaceous, leaves sparse to moderately pubescent on both surfaces, hairs simple, apex acuminate, base acute, midvein sulcate, densely pubescent on the upper surface, subglabrous to pubescent on the lower surface, lateral veins slightly sulcate, marginal vein 1.5 – 2 mm from the margin; glandular dots impressed on the upper surface; petiole 3 – 4 mm long. *Raceme* with 5 – 7 pairs of flowers, axillary, peduncle 2 – 3 mm long, rachis 1 – 2.2 cm long, densely pubescent, hairs ferruginous. *Flower bud* 1 – 1.5 mm diam, floral bracts persistent, c. 1 mm long,

pedicel 1 – 2 mm long, very densely pubescent, bracteoles c. 0.5 mm long, connate at base, persistent, obtuse, densely pubescent, sepals 0.5 – 1 mm, persistent, rounded, subglabrous, with pubescent midvein; petals c. 2 mm long, orbicular, apex rounded; filaments 2 – 3 mm long, glabrous; hypanthium very densely pubescent, not costate, style 2 – 3 mm long, glabrous. *Fruit* not observed. Fig. 3.

DISTRIBUTION. Known only from the type collection from Humaitá — Amazonas, Brazil.

SPECIMEN EXAMINED. BRAZIL. Amazonas: Humaitá, Rio Madeira, road Humaitá to Labrea km 42, 2 km W of Rio Ipixuna, low forest on terra firme, 23 Nov. 1966, G. T. Prance, B. S. Pena & J. F. Ramos 3222 (holotype MG!; isotypes F!, INPA!, K!, MICH!, NY!, US!).

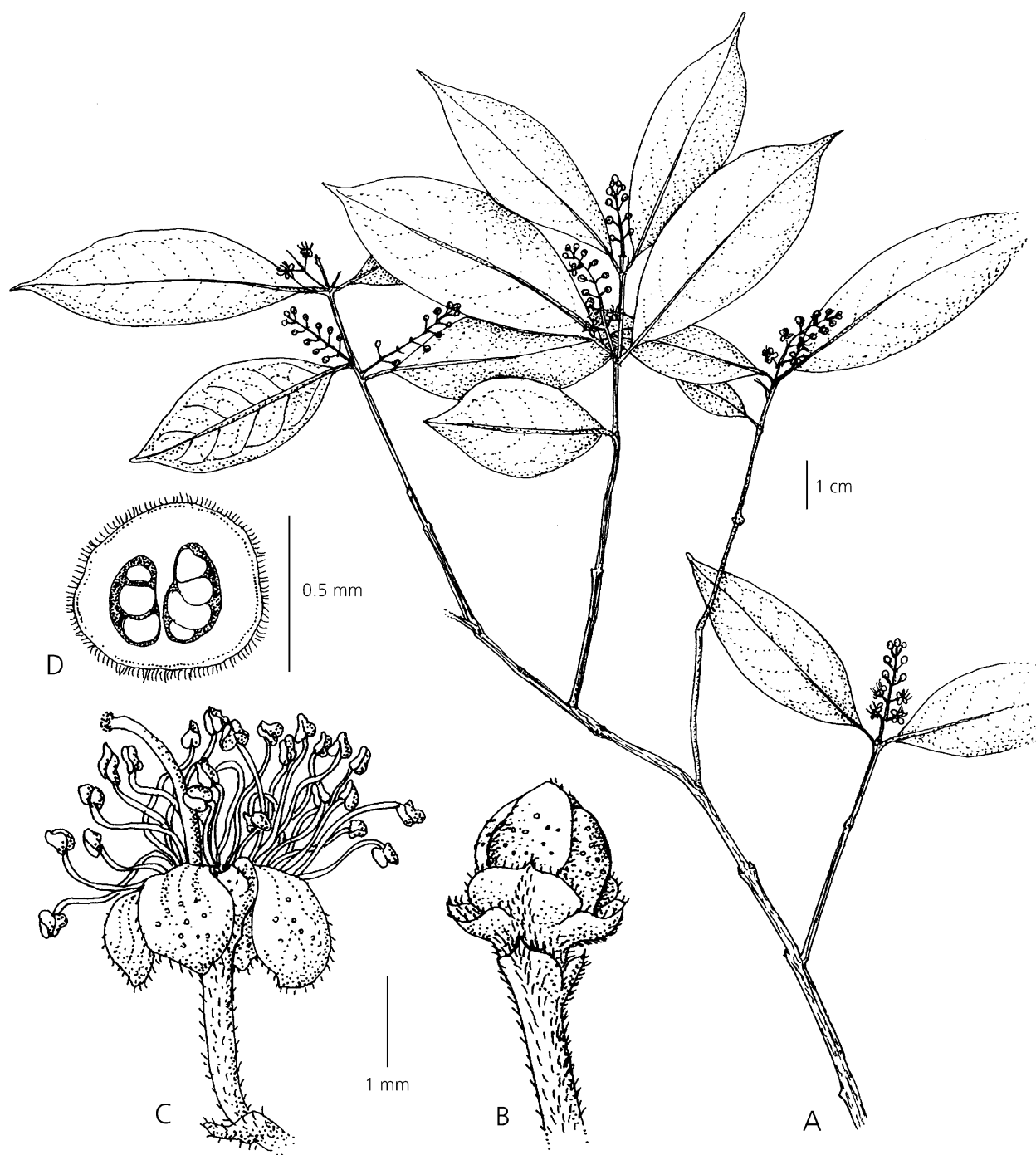


Fig. 3. *Eugenia tenuiflora*. A flowering branch; B flower bud; C flower; D medial section of ovary. All from G. T. Prance et al. 3222. DRAWN BY MARIA ALICE REZENDE.

HABITAT. Occurring in unflooded ombrophilous forest — “floresta de terra firme”.

CONSERVATION STATUS. IUCN category: Data deficient (DD).

ETYMOLOGY. The specific epithet refers to the small and delicate flower buds of this species.

NOTES. *Eugenia tenuiflora* is a member of the group of species characterised by the racemes with the rachis covered with rusty hairs. It also has a densely

pubescent hypanthium. It is closely related to *E. pruniformis* Cambess., a species from Brazilian Mata Atlantica, but it can easily be distinguished by the smaller flower buds and shorter pedicels.

4. *Eugenia breviracemosa* Mazine sp. nov. Ab *Eugenia longiracemosa* Kiaersk. axibus racemorum quam longi-

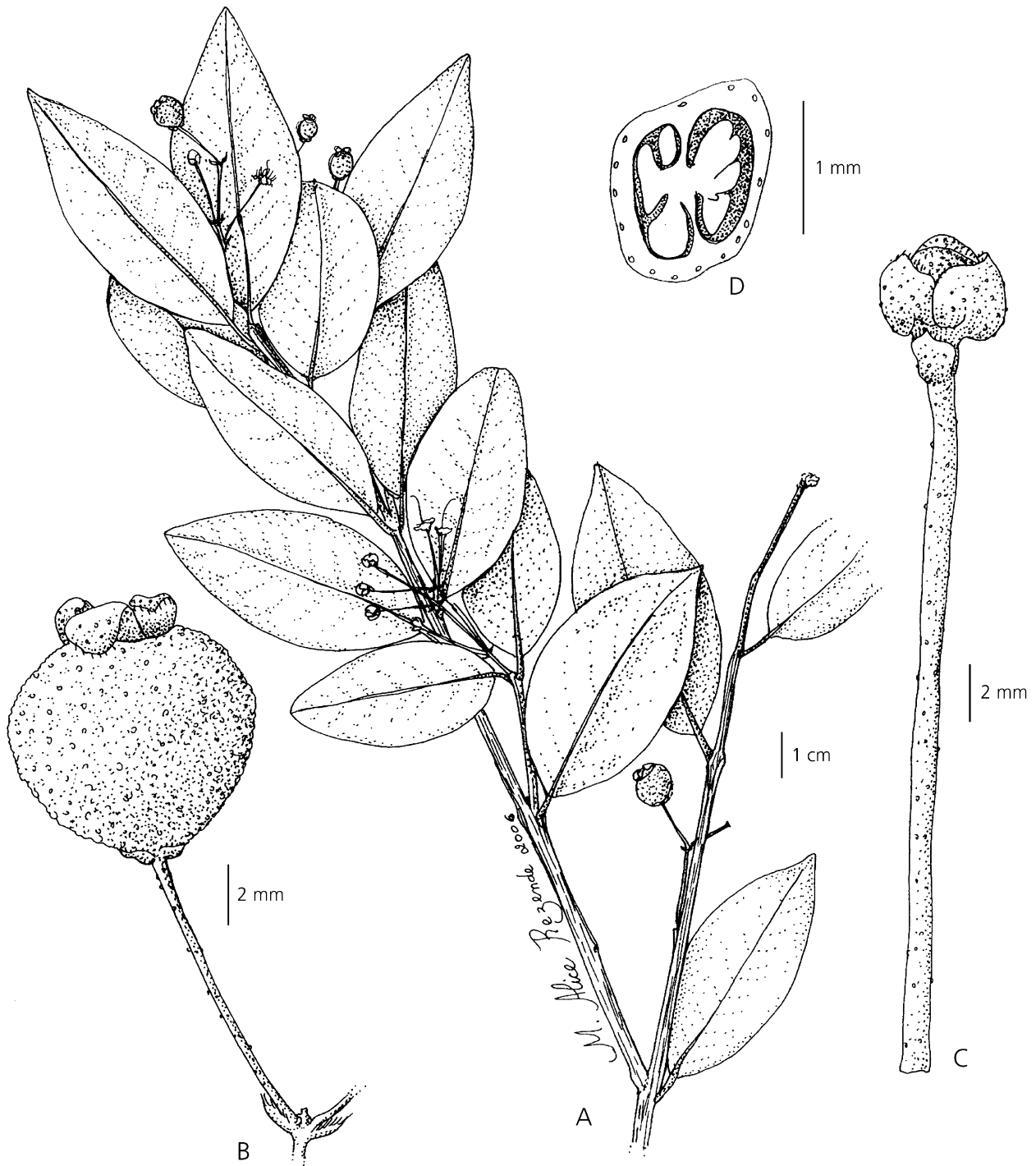


Fig. 4. *Eugenia breviracemosa*. A flowering and fruiting branch; B fruit; C flower bud; D medial section of ovary. All from G. T. Prance et al. 10428. DRAWN BY MARIA ALICE REZENDE.

tudine laminarum foliorum brevioribus, pedunculo inflorescentiae brevi (5 – 7 mm long) differt. Typus: Brazil, Amazonas, Manaus, S bank of Rio Negro, baía de Bucussu, 15 km above Manaus, sandy river beach, 18 March 1969, G. T. Prance, J. F. Ramos, L. G. Farias, J. E. Paula & B. W. Albuquerque 10428 (holotypus R!; isotypi F!, INPA!, K!, M!, MG!, MICH!, NY!, US!).

Shrub to treelet 1 – 1.5 m, branches glabrous to subglabrous. *Leaf blade* elliptic-ovate, 5.3 – 7.3 cm long, 2.2 – 4 cm wide, subcoriaceous, glabrous to subglabrous on both surfaces, hairs simple, apex acute or obtuse, base rounded, midvein sulcate, glabrous to subglabrous on both surfaces, lateral veins indistinct, marginal vein 1 – 2 mm from the margin; glandular

dots impressed or slightly prominent on the upper surface; petiole 4 – 6 mm long. *Raceme* not corymbose, with 3 – 5 pairs of flowers, axillary, sessile or pedunculate, peduncle 5 – 7 mm long, rachis 1.3 – 3.2 cm long, glabrous to subglabrous; axis of the raceme shorter than the length of the leaf blade. *Flower bud* 2 – 3 mm diam., floral bracts persistent, c. 1 mm long, pedicel 1 – 1.5 cm long, glabrous to subglabrous, bracteoles to 1 mm long, connate at the base, apex rounded, glabrous to subglabrous, margin ciliate, persistent, sepals 2.5 – 3 mm long, persistent, apex rounded, glabrous to subglabrous, margin ciliate; petals 4 – 5 mm long, oblong, apex obtuse or rounded; filaments c. 4 mm long, glabrous; hypanthium glabrous to subglabrous, not costate, style c. 6 mm long, subglabrous. *Fruit* globose, 5 – 6 mm long, 6 – 9 mm diam, reddish, glabrous to subglabrous, surface not costate, with glands. Fig. 4.

DISTRIBUTION. Known from the Rio Negro basin, Brazil.

SPECIMENS EXAMINED. BRAZIL. Amazonas: Manaus, S bank of Rio Negro, baia de Bucussu, 15 km above Manaus, sandy river beach, 18 March 1969, G. T. Prance, J. F. Ramos, L. G. Farias, J. E. Paula & B. W. Albuquerque 10428 (holotype R!; isotypes F!, INPA!, K!, M!, MG!, MICH!, NY!, US!). Manaus, Tarumã Grande, 03°02' S 60°08' W, 12 Dec. 1977, S. Keek & J. Guedes 382 (RB). Manaus, Tarumãzinho, 3 km N from the junction of Rio Negro and Igarapé Tarumã, 27 Oct. 1977, S. Keek *et al.* 208 (MO, NY, RB, US). Rio Negro, Praia Grande, 27 March 1978, J. Revilla & A. Webber 4043 (INPA). Manaus, Condomínio T. Loureiro, Sapatão road, 03° 02' 51" S 60° 06' 01" W, 26 March 2000, A. A. Oliveira *et al.* 3592 (ESA). Enseada Grande, Rio Negro, 16 Feb. 1961, W. Rodrigues & L. Coelho 2139 (INPA, MICH).

HABITAT. Occurring in dense flooded ombrophilous forest (“igapó”).

CONSERVATION STATUS. IUCN category: Data deficient (DD).

ETYMOLOGY. The specific epithet refers to the short peduncle of the inflorescences of this species.

NOTES. *Eugenia breviraecosa* is a species of glabrous or subglabrous plants, with leaf blades generally subcoriaceous, generally with a rounded base and indistinct lateral veins on the upper surface. Among other species of *Eugenia* found in Amazon forests, *E. breviraecosa* resembles *E. longiraecosa* Kiaersk., also endemic to the Rio Negro basin and with pedunculate racemes, persistent floral bracts and a glabrous or subglabrous hypanthium. However, *E. breviraecosa* has racemes with the axis shorter than the leaf blade, in addition to the shorter peduncle of the inflorescence.

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