



## Thirteen new species, new records, and a new combination on Colombian Myrtaceae

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### Abstract

Thirteen new species of Myrtaceae from Colombia are described and illustrated; information about the habitats in which these species are growing, the evaluation of its conservation status, and its affinities are included. Besides, five new records of native and introduced Myrtaceae are reported for Colombia. Also, a new combination of a Myrtaceae species previously described as *Calycorectes* is proposed here under the genus *Eugenia*.

### Resumen

Se describen e ilustran trece nuevas especies de Myrtaceae de Colombia; se incluye información acerca de los hábitats en los que crecen estas especies, la evaluación de sus estados de conservación y sus afinidades. Además, se reportan cinco nuevos registros de Myrtaceae nativas e introducidas en Colombia. También se incluye una nueva combinación de una especie de Myrtaceae dentro del género *Eugenia*, que fue descrita originalmente en el género *Calycorectes*.

**Keywords:** Amazonia, Andes, *Marlierea*, *Myrcia*, Myrteae, Neotropics, *Syzygium*.

### Introduction

Of the Colombian native Myrtaceae species known up to date, *Eugenia* Linnaeus (1753: 470) and *Myrcia* De Candolle (1827: 406) *s. str.* are the most diverse genera with *ca.* 50 and 30 species, respectively. Nevertheless, if *Myrcia* is treated in a broad sense (*i.e.*, including *Calypttranthes* Swartz (1788: 79) and *Marlierea* Cambessèdes (1832–1833: 373)) as result of the recent changes in Myrtaceae systematics and taxonomy (Lucas *et al.* 2011; Lucas *et al.* 2016; Wilson *et al.* 2016; Lourenço *et al.* 2018; Lima *et al.* 2020), the number of *Myrcia* species in Colombia increases to 64, becoming the most diverse genus of Myrtaceae in the Country.

During the study of Myrtaceae specimens from various herbaria and from field collections, six species of *Eugenia* and seven species of *Myrcia s.l.* were identified and described as new; also, four new records of native Myrtaceae are recognized for the Country, alongside with a new record of the introduced genus *Syzygium* P. Browne ex Gaertner (Gaertner 1788: 166–167). Besides, a new combination and a redescription of a species previously described as *Calycorectes* O. Berg (1855–1856: 317) is presented.

### Materials & Methods

Field collections were made in Colombian lowland and premontane forest around Albán and Medina (Cundinamarca), and around Santa María (Boyacá) at elevations between 300–2000 m. Herbarium specimens of *Eugenia*, *Myrcia*, and *Syzygium* were examined at AFP, CAS, CAUP, CDMB, CHOCO, COAH, COL, CUVC, FAUC, FMB, HECASA, HORI, HUA, HUAZ, HUC, ICESI, JAUM, JBB, JBGP, K, LLANOS, MA, MEDEL, MO, PSO, SURCO, TOLI, TULV, UDBC, UIS, UPTC, UPMC, and VALLE (herbarium acronyms follow Thiers 2020), and its flowers and fruits were dissected and analysed under a stereomicroscope. Definitions of the morphological characters are based in the

terminology used by the Systematics Association Committee for Descriptive Biological Terminology (1962), McVaugh (1958, 1968), Landrum & Kawasaki (1997), and Beentje (2010). Conservation analysis follow IUCN categories and criteria (IUCN 2019), calculating the Extent of occurrence (EOO) and the Area of occupancy (AAO) through the Geospatial Conservation Assessment Tool (GeoCAT, Bachman *et al.* 2011) online (<http://geocat.kew.org/>).

## Results

### New species

#### 1. *Eugenia buenaventurensis* C. Parra-O., *sp. nov.*

Type:—COLOMBIA. Valle del Cauca: “Bajo Calima, ca. 10 km due N of Buenaventura, Carton de Colombia concession”, 3°56'N, 77°08'W, ca. 50 m, 7 December 1981 (fr.), *A. Gentry 35441* (holotype COL!, isotype MO!). Figure 1.

**Diagnosis:**—This species is most similar to *Eugenia zuchowskiae* Barrie (2005: 47), from which it is distinguished by having simple hairs when present (versus dibrachiate hairs in *E. zuchowskiae*), 18–24 lateral veins on leaf blade (vs. 5–7 lateral veins), petioles 2.5–4 mm (vs. 10–20 mm), and fruit without ribs (vs. partially or wholly 8-ribbed).

**Description:**—Treelet, 4 m tall; hairs when present 0.1–0.2 mm, simple, translucent; young branches compressed, cream or light gray, glabrous; old branches not seen. Leaf blades elliptic or obovate, 4.5–7.5 × 2–3.5 cm, chartaceous or coriaceous, discolorous, the upper surface glabrous, with immersed glandular dots not perceptible, the lower surface glabrous, with slightly raised and darkish glandular dots; apex caudate, the cauda 5–12 mm with the tip obtuse; base cuneate; margin entire and slightly revolute; midvein slightly sulcate to sulcate and glabrous above, convex and usually glabrous below, sometimes scarcely pubescent in the proximal 1/5; lateral veins 18–24 pairs, slightly convex and glabrous above, convex and glabrous below, marginal veins 2, the innermost 0.5–1.8 mm from the margin, the outermost 0.2–0.4 mm from the margin; petioles 2.5–4 mm long, dark brown, moderately rugose, usually glabrous, sometimes scarcely pubescent, slightly canaliculate adaxially. Flowers solitary or inflorescences apparently abbreviate racemes, axillary; bracts and bracteoles not seen, probably deciduous before anthesis; flower buds and open flowers not seen. Fruits elliptic, 3–3.2 × 1.9–2.1 cm, glabrous, orange and turning black when mature (*in sched.*), shortly pedicellate, the pedicel terete, 1.6–2.3 × 3.5–4 mm, glabrous, calyx lobes in fruit 4, ovate, depressed ovate to broadly ovate, 1–1.2 × 0.7–1.2 mm, coriaceous, glabrous outside, glabrous inside, apex obtuse or acute, remnant staminal ring on fruit circular, 2–2.8 mm diameter, scarcely pubescent; seed 1, ellipsoid, 2.8 × 1.5 cm, seed coat smooth and somewhat lustrous; embryo eugenoid with fused cotyledons and partially visible hypocotyl, with minute glands.

**Distribution, habitat and phenology:**—*Eugenia buenaventurensis* is apparently endemic to Colombia and it grows in western tropical humid forests (Chocó Biogeographic Region) of Valle del Cauca Department at ca. 50 m elev. This species has been collected with fruits in December.

**Conservation:**—This species is only known by the type and from just one locality; then, the conservation status of *E. buenaventurensis* is assessed here as Data Deficient, or DD, following IUCN Red List criteria (IUCN 2019).

**Etymology:**—The specific epithet of the new species refers to the municipality of Buenaventura in the Valle del Cauca Department, Colombia, where the type was collected.

**Affinities:**—*Eugenia buenaventurensis* is very distinctive from the other Colombian *Eugenia* species known so far, and seems to be related to some Mesoamerican *Eugenia* like *E. zuchowskiae* from Costa Rica; both species are compared in the diagnosis.

#### 2. *Eugenia cherimolioides* C. Parra-O., *sp. nov.*

Type:—COLOMBIA. Cundinamarca: Albán, “granjas del Padre Luna ‘El Gran Ciudadano’”, 2000 m, 18 May 2002 (fr.), *C. Parra-O. et al. 224* (holotype COL 476976!, isotypes COL 476680!, CUVC!, FMB!, HUA!, JAUM!, JBB!, UDBC!, UIS!). Figures 2, 3 a-b.

**Diagnosis:**—This species is most similar to *Eugenia cupulata* Amshoff (1942: 160), from which it is distinguished by having dibrachiate hairs (versus simple hairs in *E. cupulata*), bracteoles not connate (vs. connate), ovaries with 5–11 ovules per locule (vs. 30–50 ovules), fruits 3.6–5.8 cm in diameter (vs. ca. 1 cm in diameter), these rugose, moderately bullate, and not ribbed or sometimes shallowly ribbed (vs. always smooth).



**FIGURE 1.** *Eugenia buenaventurens*. (A) fruiting branch, (B) fruit, (C) upper view of fruit with remnants of the calyx lobes, (D) seed. A–D from the holotype. Scale bar for B and D = 1 cm, scale bar for C = 1 mm.

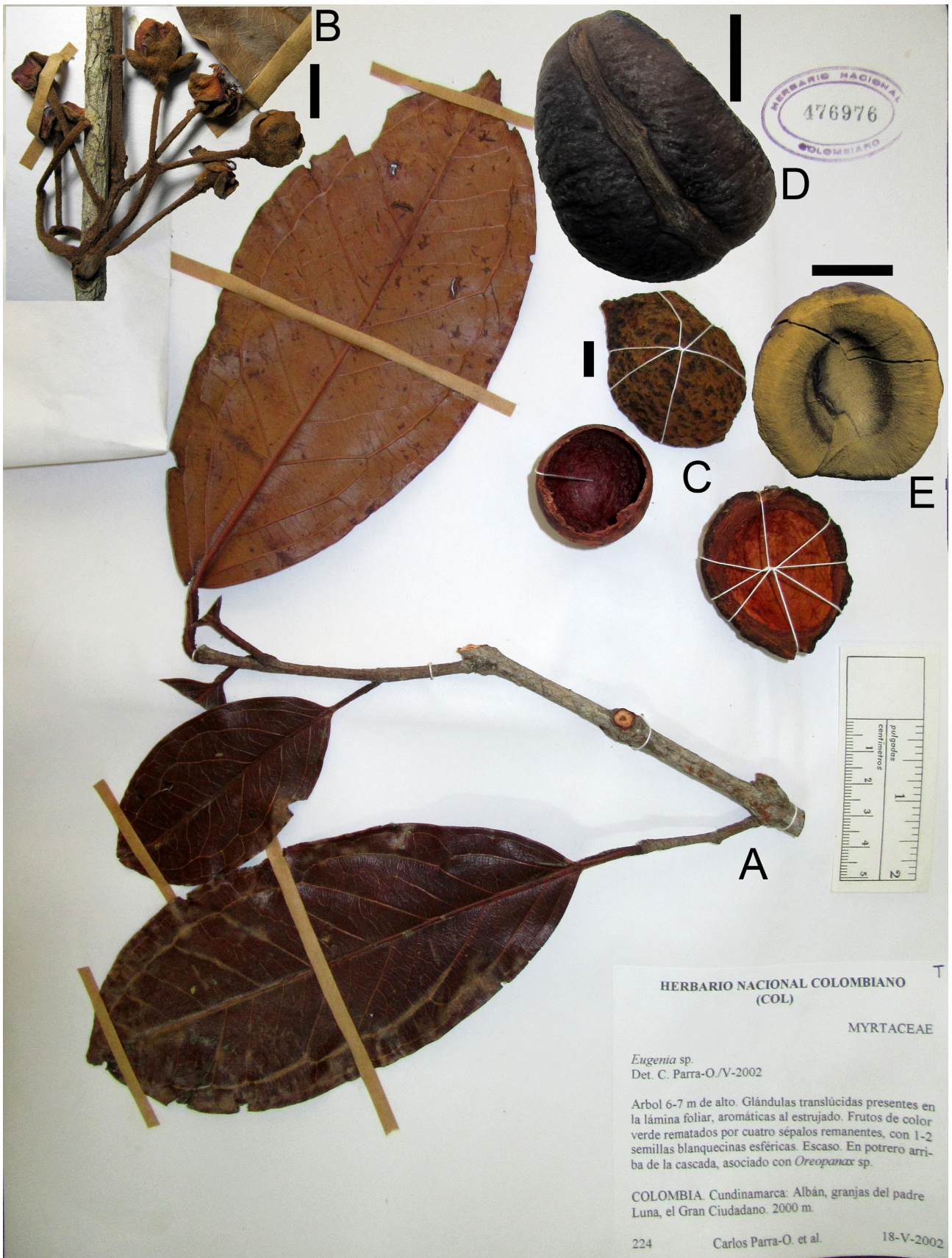
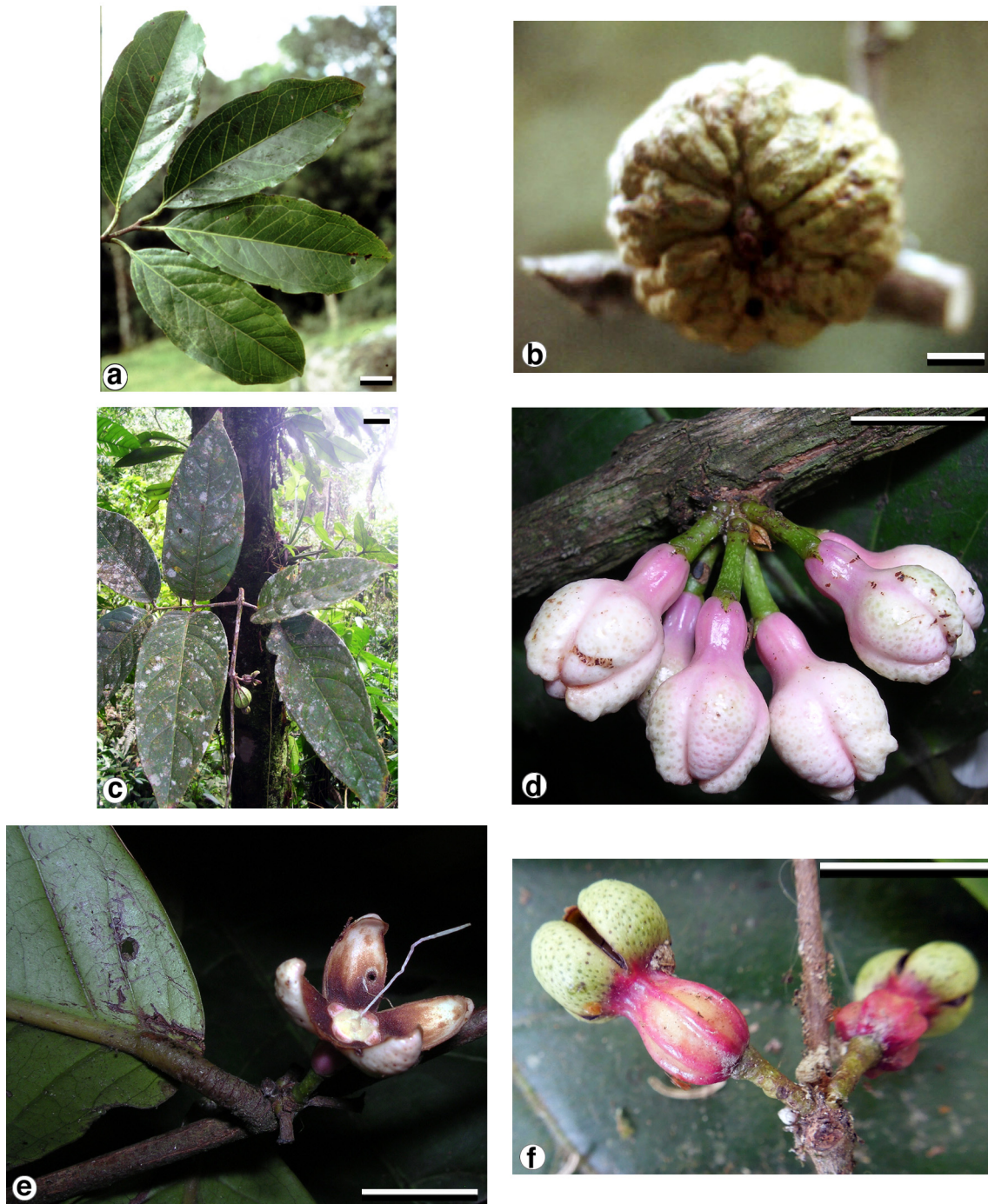


FIGURE 2. *Eugenia cherimolioides*. (A) fruiting branch, (B) inflorescence detail and flower buds, (C) fruit, (D) seed—dorsal view, (E) seed—ventral view. A, C, D, E from the holotype, B from *Mahecha 9610*. Scale bars for B, C, D and E = 1 cm.



**FIGURE 3.** *Eugenia cherimolioides*. (A) Vegetative branch (C. Parra-O. 224), (B) fruit (C. Parra-O. 224). *Eugenia linaresii*. (C) fruiting branch (C. Parra-O. 707), (D) flower buds (C. Parra-O. 720), (E) flower remnants (C. Parra-O. 720), (F) early stages of fruit development (C. Parra-O. 942). Photos: C. Parra-O. Scale bar for A and C = 3 cm; scale bar from B, D–F = 1 cm.



**FIGURE 3 (continued).** *Eugenia linaresii*. (G) fruit (C. Parra-O. 942), (H) immature fruits (C. Parra-O. 707), (I) immature fruits (C. Parra-O. 721), (J) fruit (C. Parra-O. 721). Photos: C. Parra-O. Scale bar from G–J = 1 cm.

**Description:**—Tree, 4–15 m tall; hairs when present 0.1–0.4 mm, T-shaped asymmetric hairs, drying golden brownish; young branches compressed to subcompressed, gray, glabrous; old branches terete, gray, glabrous. Leaf blades elliptic or oblong-elliptic, (8) 13–20 × (4.5) 6–8.7 cm, coriaceous, discolorous, the upper surface glabrous, with impressed glandular dots not perceptible, the lower surface usually glabrous, with impressed glandular dots; apex shortly acuminate, the acumen (2) 5–10 mm; base subobtuse, sometimes acuminate; margin entire; midvein slightly convex to convex and usually glabrous to occasionally slightly puberulous above, markedly convex and usually glabrous or sometimes scarcely pubescent below; lateral veins 10–15 pairs, slightly convex to convex and glabrous above, convex and usually glabrous to occasionally slightly puberulous below, marginal veins 2, the innermost markedly arched, 3–15 mm from the margin, the outermost 0.5–2 mm from the margin; petioles 1.2–2 cm long, brown pinkish above, gray below, rugose, sometimes lenticellate, glabrous, moderately canaliculate adaxially. Inflorescences axillary, abbreviate or well developed racemes, 1.2–5.2 cm long, with 4–8 (12) flowers, the axes compressed, moderately pubescent, brownish orange when dry; peduncles 1–4 × 2–3 mm; bracts narrowly elliptic or depressed ovate, 1.4–3.7 × 1.3–2 mm, moderately pubescent abaxially, glabrous adaxially, truncate in the base, deciduous; bracteoles 2, axillary at base of hypanthium, lanceolate or ovate, 1.5–2.5 × 1–1.8 mm, moderately pubescent, deciduous after anthesis; flower buds globose, 9–11 mm long, 7–10 mm in diameter, moderately pubescent, in a subcompressed pedicel 4–20 × 0.8–1.2 mm, moderately pubescent; calyx lobes 4, in unequal pairs, the outer pair depressed ovate or broadly ovate, 5.5–7.4 × 4.6–6 mm, the inner pair widely ovate, 6.8–9 × 5.4–8 mm, both coriaceous, moderately pubescent outside, glabrous

to scarcely pubescent inside, apex obtuse or subobtuse, brown-reddish outside, greenish inside (*in schedá*); petals usually 4, sometimes 5–6, white (*in schedá*), the commonly found 4 petals elliptic or broadly ovate, 9–12 × 7–8.5 mm, subcoriaceous, glabrous or sometimes scarcely pubescent at margin, apex obtuse, base truncate, the 1–2 additional petals narrowly elliptic, oblong or narrowly obovate, 6.2–7 × 1.8–3.8 mm, subcoriaceous, glabrous or sometimes scarcely pubescent at margin, apex obtuse, base attenuate but truncate in the distal portion; hypanthium 3.3–4 mm in diameter, not prolonged above the ovary, moderately pubescent outside, glabrous inside, disk semi-quadrangular, 3–5 mm, scarcely to moderately pubescent; style 7.8–8.7 mm long, glabrous; stamens 100–150, white (*in schedá*); filaments (1.5) 4.8–8.5 mm, anthers ellipsoid, 1.1–1.7 mm long, with 1 apical gland, 1–2 glands in the medial portion and 1–2 glands in the base; ovary 2.1–2.5 mm in diameter, 2–locular, 5–11 ovules per locule. Fruits globose or ellipsoid, golden brown to light brown when dry, 3.6–5.8 cm in diameter, moderately puberulous, rugose, moderately bullate, sometimes shallowly ribbed; seed 1, globose or ellipsoid, sometimes slightly reniform, 2.5–3 × 2–2.5 cm, seed coat coriaceous, whitish (*in schedá*), slightly bullate; embryo eugenoid with fused cotyledons and no visible hypocotyl, with minute dark brownish glands.

**Distribution, habitat and phenology:**—*Eugenia cherimolioides* seems to be endemic to Colombia; it is known from subandean forest in Cundinamarca and Santander Departments between 1790–2200 m elev. Some trees of this species grow up to 20–25 m, and they produce abundant fruits every two or three years; their seeds are consumed by rodents (G. Morales, personal communication). *Eugenia cherimolioides* has been collected with buds and flowers from September to November, and with fruits in March, May, and September.

**Conservation:**—This species has been found in localities of two Departments in Colombia and such localities are separated by a minimum of 170 km; with an extent of occurrence (EOO) of 4,098.316 km<sup>2</sup> and an area of occupancy (AAO) of 20 km<sup>2</sup>, and known from seven localities, its conservation status is assessed as Least Concern, or LC, following IUCN Red List criteria (IUCN 2019).

**Etymology:**—The specific epithet of the new species refers to the resemblance of its fruits to those of *Annona cherimola* Miller (1768: 5; Annonaceae), who is also known in Colombia as ‘chirimoyo’ o ‘chirimoya’.

**Common name:**—“chirimoyo” (Morales *et al.* 3067).

**Affinities:**—*Eugenia cherimolioides* is apparently related to *E. cupulata*, and both species can be differentiated by the characters mentioned in the diagnosis. After dissecting floral buds of *E. cherimolioides*, it was found that outer petals are sometimes similar in shape to the inner calyx lobes; this character is also found in *E. cupulata* (Amshoff 1942).

In some floral buds of *E. cherimolioides*, particularly those of specimens *Mahecha 9610* (COL) and *Gómez 037* (COL), 5–6 petals have been found. Commonly, in *E. cherimolioides* (and also in many *Eugenia* species) a pair of outer petals and a pair of inner petals can be seen after dissecting floral buds; the additional one or two petals found in *E. cherimolioides* are inside to the inner petals, and it have different shapes and sizes compared to the other four petals (see details in the description).

**Paratypes:**—COLOMBIA. Cundinamarca: Albán, vereda Las Marías, “granjas del Padre Luna ‘El Gran Ciudadano’”, 4°52’N, 74°26’W, 1800–2000 m, 28 October 2002 (buds, fl.), *Y. Figueroa, E. Ocaña, G. Galeano, C. Giraldo & F. Gómez 25* (COL!); *ibidem*, “frente al peaje de Jalisco”, 4°52’N, 74°26’W, 1900–2100 m, 30 September 2002 (buds), *F. Gómez 037* (COL!, HUA!); *ibidem*, 2000–2150 m, 5 September 2000 (buds), *L. Hernández 183* (COL!); Pacho, “vereda de Panamá”, 2200 m, 18 November 2001 (buds, fl.), *G. Mahecha 9610* (COL!); San Francisco, vereda El Peñón, “finca La Cumbre”, 2050 m, 10 October 1997 (fl.), *L. Núñez & A. Guevara 53* (COL!); Silvania, vereda Panamá Alta, 2000–2100 m, 28 October 2008, *G. Morales, M. Quintero & C. González 3067* (JBB!); *ibidem*, 2100 m, 15 March 2010 (fr.), *G. Morales & C. González 3185* (COL!, JBB!, UDBC!). Santander: Charalá, “corregimiento de Virolín”, s.a., 2 May 1983 (fr.), *P. Bernal s.n.* (COL!); Charalá, “corregimiento de Virolín, camino en la parte alta del cerro ubicado al costado occidental del Colegio Ecológico”, 1790 m, 7 September 1995 (fr.), *H. García 2864* (UIS!).

### 3. *Eugenia glorieae* C. Parra-O., *sp. nov.*

Type:—COLOMBIA. Antioquia: Dabeiba, “río Ampurrimadó, alrededores”, 7°01’N, 76°28’W, 200 m, 30 June 2010 (buds, fr.), *J. Pérez-Zabala, M. Zapata & Indígenas Embera 431* (holotype MEDEL!). Figure 4.

**Diagnosis:**—This species is most similar to *Eugenia heterochroma* Diels (1907: 190), from which it is distinguished by having leaf blades with margin markedly revolute in the proximal 1/8 of its length (versus margin not revolute in *E. heterochroma*), leaf blades 38–41 × 13–16.5 cm (vs. 12–24 × 4.5–9 cm), calyx lobes reflexed (vs. erect), and fruits ribbed (vs. smooth).



**FIGURE 4.** *Eugenia glorieae*. (A) Vegetative branch, (B) leaf bases, (C) flower buds, (D) lateral view of flower, (E) fruit. A–E from the holotype. Scale bar for B = 4 cm, scale bar for C and D = 2 mm, scale bar for E = 5 mm.



**Description:**—Tree, 4 m tall; hairs when present 0.1 mm, infundibular and sometimes with irregular edges at the distal portion, drying golden brownish to brownish and becoming lighter with age; young branches subcompressed, brownish orange, slightly pubescent; old branches not seen. Leaf blades elliptic, 38–41 × 13–16.5 cm, coriaceous, discolorous, the upper surface glabrous, with slightly raised glandular dots, the lower surface cinnamon or ochraceous, moderately pubescent, with immersed glandular dots; apex subacute or shortly acuminate, the acumen 1 cm; base subobtusate; margin entire and markedly revolute in the proximal 1/8; midvein convex and glabrous above, markedly convex and densely pubescent below; lateral veins 30–37 pairs, convex and glabrous above, convex and slight to moderately pubescent below, marginal veins 2, the innermost 3–7 mm from the margin, the outermost 0.5–0.8 mm from the margin; petioles 1.6–2 cm long, brownish orange above and below, moderately rugose, moderately pubescent, slightly canaliculate adaxially. Inflorescence axillary, apparently abbreviate racemes; bracts not seen; bracteoles 2 (3), axillary at base of bud, broadly ovate, very broadly ovate or depressed ovate, 0.4–0.7 × 0.5–1 mm, moderate to densely pubescent; immature flower buds obovoid, 1.2–1.8 mm long, 1.5–2 mm in diameter, moderate to densely pubescent, sessile or in a subcompressed pedicel 0.5 × 1 mm, moderate to densely pubescent; calyx lobes 4, reflexed, apparently in unequal pairs, 3–4 × 3.5 mm, ovate to very broadly ovate, slight to moderately pubescent outside, glabrous to scarcely pubescent inside (but hairs inside calyx lobes, when present, are exclusively simple and appressed, 0.1–0.3 mm), apex obtuse; petals not seen; hypanthium 3 mm in diameter, costate, moderately to densely pubescent outside, not seen inside, disk semi-quadrangular, 3.5 mm, glabrous to scarcely pubescent; style, stamens and ovary not seen. Fruits ellipsoid, 2.3 × 1.7 cm, densely pubescent, 13–14-ribbed, pedicellate, the pedicel terete, 2.5 × 2.5 mm, moderately pubescent; seed and embryo not seen.

**Distribution, habitat and phenology:**—*Eugenia gloriae* has been found in western tropical humid forests (Chocó Biogeographic Region) of Antioquia Department at 200 m elev.; this species seems to be endemic to Colombia. *E. gloriae* has been collected with buds and fruits in different states of development in June.

**Conservation:**—*Eugenia gloriae* has been found only in one locality of the Antioquia Department in Colombia and little is known about its distribution range or its natural habitat; for this reason, its conservation status is assessed as Data Deficient, or DD, following IUCN Red List criteria (IUCN 2019).

**Etymology:**—The specific epithet of the new species honors Gloria Galeano Garcés (1958–2016), a Colombian botanist who published numerous and outstanding contributions about taxonomy, systematics, uses, and conservation of native Colombian and Neotropical Palms, in addition to important studies on the composition and structure of the Chocó Biogeographic region flora, and on the common names of the native Colombian flora given by rural and aboriginal communities. Gloria was also an inspiration to several generations of botanical students during her teaching and researching activities for more than 30 years at the herbarium COL and the Instituto de Ciencias Naturales (National University of Colombia).

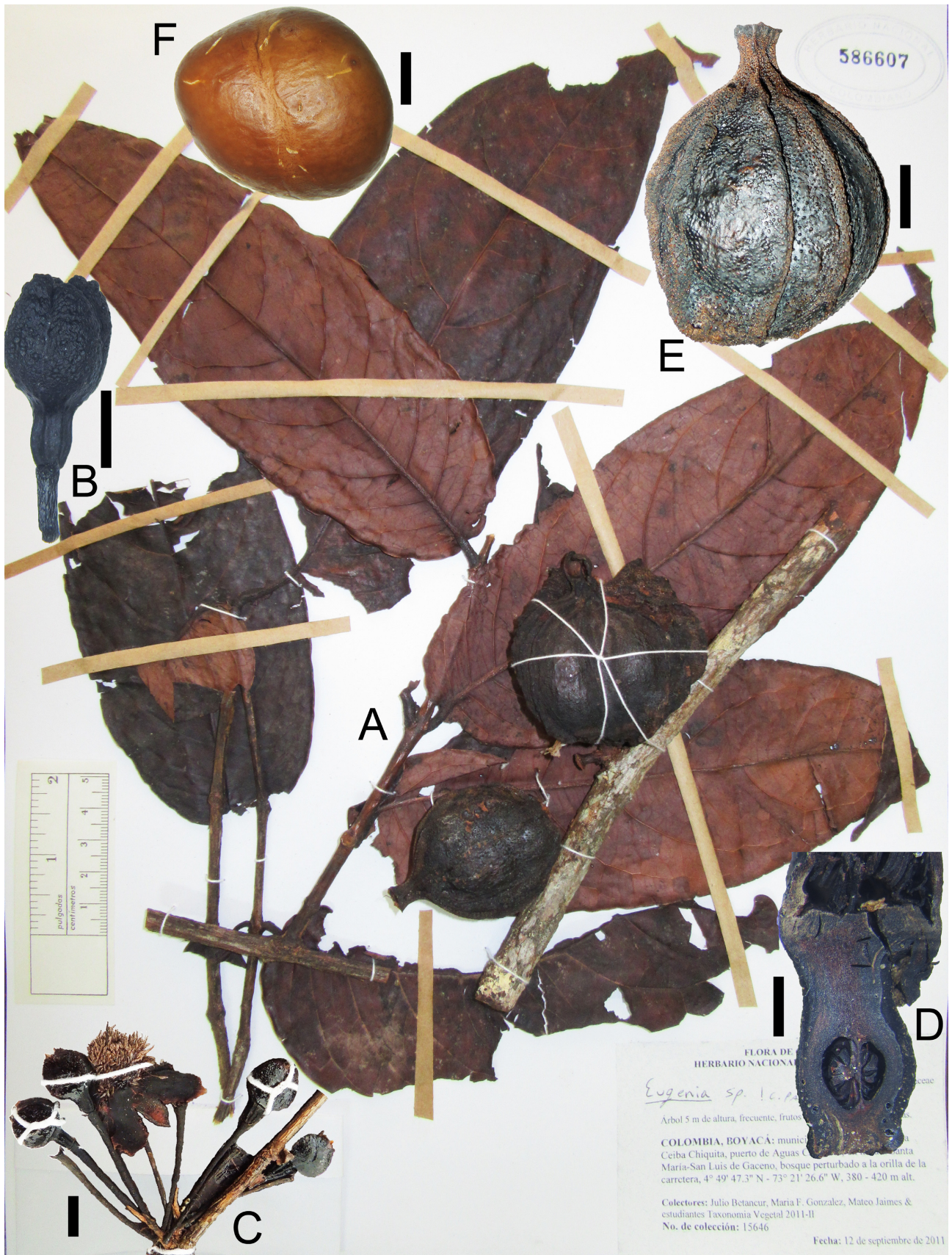
**Affinities:**—*Eugenia gloriae* is apparently related to *E. heterochroma*, and both species can be differentiated by the characters mentioned in the diagnosis. Calyx lobes of *E. gloriae* develop apparently in unequal pairs, but just two calyx lobes remain complete in the only flower that has the holotype. In an immature fruit of the holotype is clear the unequal condition of calyx lobes (calyx lobes as remnants in the fruit apex), but those calyx lobes are larger in this fruit (up to 6 mm) than in the flower; additional flowering specimens are in need to study the calyx lobes variation on this species.

Infundibular hairs are uncommon among Myrtaceae but it has been reported in *Eugenia* (Wilson 2011); Barrie (2005) mentioned a group of Mesoamerican *Eugenia* that has infundibular hairs mixed with dibrachiate and/or simple hairs. *E. gloriae* has infundibular hairs except on the inside of calyx lobes where the hairs are simple and appressed, but these simple hairs were only seen inside the persistent calyx lobes of an immature fruit; the sepals of the only flower of the holotype and the calyx lobes persistent on the only mature fruit are glabrous inside.

#### 4. *Eugenia linaresii* C. Parra-O., *sp. nov.*

Type:—COLOMBIA. Boyacá: Santa María, “vereda Ceiba Chiquita, puerto de Aguas Calientes, en la ruta Santa María-San Luis de Gaceno”, 4°49'47.3"N, 73°21'26.6"W, 380–420 m, 12 September 2011 (fr.), J. Betancur, M. González, M. Jaimes & estudiantes *Taxonomía Vegetal 15646* (holotype COL!, isotypes CUVCI!, HUA!). Figures 3 c-j, 5.

**Diagnosis:**—This species is most similar to *Eugenia feijoi* O.Berg (1857–1859: 283), from which it is distinguished by its petals 10–12 × 6.5–7.5 mm (versus 1.5–8 × 1.2–5 mm in *E. feijoi*), hypanthium ribbed and prolonged above the ovary (vs. smooth and not prolonged), and fruits 3.8–5.7 × 2.8–4 cm (vs. 2–3.5 × 1.5–2.5 cm), these longitudinally ribbed (vs. smooth).



**FIGURE 5.** *Eugenia linaresii*. (A) fruiting branch, (B) flower bud, (C) inflorescence with flower buds and flower, (D) hypanthium and ovary, (E) fruit, (F) seed. A, E from the holotype, B from *C. Parra-O.* 720, C from *C. Parra-O.* 908, D from *J. Betancur* 11502, F from *C. Parra-O.* 721. Scale bars for B, C, and F = 5 mm, scale bar for D = 1 mm, scale bar for E = 1 cm.

**Description:**—Treelet or tree, 3–8 m tall; hairs when present 0.1–0.5 mm, simple, appressed, drying golden yellow; young branches compressed to subcompressed, yellowish brown, glabrous, occasionally slightly pubescent; old branches terete, yellowish gray, glabrous. Leaf blades ovate or elliptic, 9.5–29 × 3–10 cm, coriaceous, discolorous, the upper surface glabrous and darkish, with slightly raised and blackish glandular dots, the lower surface glabrous, with raised and blackish glandular dots; apex attenuate or acuminate, the acumen 10–15 mm; base obtuse or subrounded; margin entire and lighter than the leaf blade; midvein elevated into a narrow line and usually glabrous to occasionally slightly puberulous above, markedly convex and usually glabrous to sometimes slightly pubescent below; lateral veins 12–17 pairs, slightly convex to convex and glabrous above, convex and usually glabrous, occasionally slightly pubescent below, venation joining in a not well defined inframarginal vein at 1.5–11 mm from margin; petioles 5–8 mm long, blackish above and below, rugose, usually glabrous, sometimes slightly pubescent, slight to moderately canaliculate adaxially. Inflorescence axillary, abbreviate racemes (sometimes flowers solitary), 1–3 cm long, with 3–11 flowers, the axes compressed, glabrous to slightly pubescent, brownish orange to light brownish when dry; peduncles extremely reduced or shortly developed, when present 1.5–3.5 × 1.5 mm; bracts ovate, narrowly ovate or depressed ovate, 0.5–3 × 0.3–0.8 mm, almost glabrous to scarcely pubescent abaxially, glabrous to scarcely pubescent adaxially, truncate in the base, deciduous; bracteoles 2, axillary at base of hypanthium, ovate, 0.3–1 × 0.4–1 mm, glabrous to scarcely pubescent (especially at the margin), deciduous after anthesis; flower buds globose or ellipsoid, 8.5–13 mm long, 4.5–7.5 mm in diameter, glabrous, in a subcompressed to terete pedicel 5–15 × 0.5–1.5 mm, glabrous; calyx lobes 4, connate in bud except 1–2 mm at tip, hooded, ovate or broadly ovate, 4.5–6.5 × 3.5–5 mm, coriaceous, glabrous and slightly bullate outside, glabrous inside, apex obtuse or subobtuse, whitish outside, brownish inside (*in schedá*); petals 4, white (*in schedá*), ovate or ovate-oblong, 10–12 × 6.5–7.5 mm, subcoriaceous, glabrous, apex obtuse, base truncate; hypanthium 3–4 mm in diameter, 8-ribbed, prolonged 2 mm above the ovary, glabrous outside, glabrous inside, disk semi-quadrangular, 3–4 mm, almost glabrous to slightly pubescent; style 5.5–8.5 mm long, glabrous; stamens 150–170, white (*in schedá*); filaments 4–7.5 mm, anthers oblong, ocher with black connective when dry, 1–1.5 mm long, sometimes with 1 gland in the base; ovary 1.5–2.5 mm in diameter, 2-locular, 4–10 ovules per locule. Fruits globose or ellipsoid, blackish when dry, 3.8–5.7 × 2.8–4 cm, glabrous, 8-ribbed, with a neck 1.5–6 (12) mm long beneath the persistent calyx; seed 1–2, suboblate or ellipsoid, 2–2.2 × 2 cm, seed coat subcoriaceous; embryo eugenioid with fused cotyledons and partially visible hypocotyl, with minute dark brownish glands.

**Distribution, habitat and phenology:**—*Eugenia linaresii* is apparently endemic to Colombia and it grows in lowland and subandean forests of Boyacá, Cundinamarca and Meta Departments between 327–1320 m elev. *Eugenia linaresii* has been collected with buds and flowers in March, April, and October, and with fruits in March, April, and September.

**Conservation:**—*Eugenia linaresii* has been found in different localities of three Departments in Colombia and such localities are separated by a minimum of 110 km; with an extent of occurrence (EOO) of 156.052 km<sup>2</sup> and an area of occupancy (AAO) of 28 km<sup>2</sup>, and known from five localities, its conservation status is assessed as Least Concern, or LC, following IUCN Red List criteria (IUCN 2019).

**Etymology:**—The specific epithet of the new species honors my colleague and friend Edgar Linares, a Colombian botanist based at the herbarium COL and the Instituto de Ciencias Naturales (National University of Colombia) where he is a Botany Professor and Curator of the Herbarium. Edgar has published outstanding and numerous contributions about taxonomy, ecology and diversity of Colombian bryophytes (specially mosses), as well as in other botanical fields such as floristics, ethnobotany, and economic botany; he is also the most prominent Colombian malacologist. Edgar has inspired during his prolific career of more than 30 years to many generations of botanical and zoological students for study, understand and appreciate the impressive Colombian biodiversity.

**Affinities:**—*Eugenia linaresii* is apparently related to *E. feijoi*, and both species can be differentiated by the characters mentioned in the diagnosis. *Eugenia linaresii* could be related also to the *Eugenia feijoi* complex, a group of species characterized by having dibrachiate or laterally attached hairs, the midvein of leaf blades elevated into a narrow line above, partially connate calyx-lobes, and elongate and gray anthers (McVaugh 1956; Holst 2002; Barrie *et al.* 2016); its members have also dark blades, and the blade margins have a lighter color than the blade when the specimens are dry (R. Flores, personal communication). Recently, Giaretta *et al.* (2019) found that members of this complex, informally called as the “*Eugenia feijoi* group” also have a membranous tissue in the sepals; in *E. linaresii* a membranous tissue is seen at the tip of the sepals, but not as described by Giaretta *et al.* (2019). *Eugenia linaresii* has most of the characters of the *Eugenia feijoi* complex mentioned above, but neither dibrachiate or laterally attached hairs nor elongate and grey anthers.

Fruits of *Eugenia linaresii* have a neck beneath the persistent calyx, which is also reported by McVaugh (1969) for *E. feijoi*. In one specimen (*Parra-O. 721*, Figure 3 J) this neck is almost 12 mm, but such long necks have seen

only in two specimens (*Parra-O. 707, 721*) from Santa María (Boyacá), where the type was also collected. Additional flowering and fruiting specimens are in need to study the variation of this structure in *E. linaresii*, and to analyze its possible size correlation with the prolonged hypanthium on its flowers.

**Paratypes:**—COLOMBIA. Boyacá: Santa María, “vereda Arrayanes, Puerto de Aguas Calientes, en la ruta a San Luis de Gaceno, cercanías del río Lengupá”, 4°50’N, 73°12’W, 350–450 m, 23 April 2005 (buds, fl.), *J. Betancur, A. Zuluaga, Estudiantes sistemática vegetal 11502* (COL!); Santa María, “desviación a mano izquierda en la ruta de Santa María a Mámbita antes del puente sobre el río Garagoa, veredas Ceiba Grande y Charco Largo, poco antes del alto Ceiba Grande”, 4°46.4’N, 73°16.1’W, 600–750 m, 28 September 2009 (fr.), *C. Parra-O. 707* (COL!); Santa María, “desviación a mano derecha en la ruta de Santa María a San Luis de Gaceno, puerto de Aguas Calientes, vereda Ceiba Chiquita, caño Las Mollas”, 4°49.2’N, 73°12.4’W, 400–450 m, 16 March 2010 (buds, fl.), *C. Parra-O. 720* (COL!, HUA!); *ibidem*, 4°49.2’N, 73°12.4’W, 400–450 m, 16 March 2010 (fr.), *C. Parra-O. 721* (COL!). Cundinamarca: Medina, vereda Guichiral, “carretera Medina-Mesa de Cura, carreteable Medina-Chorrerán”, 560 m, 22 October 2016 (buds, fl.), *C. Parra-O. 908* (COL!); Medina, vereda Palmichal, “carretable aledaño a la finca ‘Puerto Rico’”, 4°26’43.4”N, 73°20’05.8”W, 465 m, 4 April 2017 (fl., fr.), *C. Parra-O. 942* (COL!); Medina, “límite entre las veredas Gazamumo y Gazatavena, 11 km a Medina desde la carretera que va hacia Bogotá”, 04.42777N, 073.31259W, 327 m, 4 April 2017 (fr.), *C. Parra-O. 943* (COL!). Meta: Villavicencio, “Corregimiento 1, Buenavista, finca ‘La Gloria’”, 4°09’36.2”N, 75°41’22”W, 1320 m, 18 April 2011 (fl.), *F. Quevedo & O. Perengües 1738* (COL!).

##### 5. *Eugenia melocactoides* C. Parra-O., *sp. nov.*

Type:—COLOMBIA. Cundinamarca: Medina, “vereda San Cristóbal Bajo, carretera que va a San Juanito o a Gazatavena, trocha a mano derecha de esa carretera ubicada a aproximadamente tres minutos a pie desde el comienzo de esa carretera”, 4°25’03.3”N, 73°18’41.8”W, 393 m, 15 May 2016 (fr.), *C. Parra-O. 883* (holotype COL 611696!, isotypes COL 612316!, CUVCI!, HUA!). Figures 6, 7a-c.

**Diagnosis:**—This species is most similar to *Eugenia multicostata* D. Legrand (1961: 309), from which it is distinguished by having broadly ovate or elliptic to broadly elliptic leaves (versus obovate leaves in *E. multicostata*), inflorescences axillary (vs. terminal), inflorescences abbreviate racemes with the main axis inconspicuous (vs. pseudoracemes *sensu* Lorenzi *et al.* 2015), pedicel terete (vs. compressed), and calyx lobes in fruit 1.5–3 mm (vs. 6–7 mm).

**Description:**—Tree, 6–14 m tall; hairs when present 0.1 mm, simple, drying golden brownish; young branches compressed, light brown, glabrous; old branches terete, pale gray, glabrous. Leaf blades broadly ovate or elliptic to broadly elliptic, 9–16 × 5.3–9.5 cm, slightly coriaceous, discolorous, the upper surface glabrous, with slightly raised glandular dots perceptible (using hand lens) and darkish, the lower surface glabrous, with slightly raised glandular dots; apex attenuate to acuminate, the acumen (0.7) 1.2–2 cm; base rounded or cuneate; margin entire; midvein slightly sulcate or sulcate to flat (at least in distal 1/3–2/3) and glabrous above, markedly convex and glabrous below; lateral veins 7–13 pairs, convex and glabrous above, convex and glabrous below, marginal veins 2, the innermost markedly arched, 2.5–14 mm from the margin, the outermost 0.8–3 mm from the margin; petioles 0.9–1.2 cm long, blackish above and below, moderately rugose, glabrous, canaliculate adaxially. Inflorescences apparently at leafless nodes, axillary, abbreviate racemes with the main axis inconspicuous; bracts ovate, 1.4 × 1 mm, glabrous, persistent after anthesis; bracteoles not seen; flower buds and open flowers not seen. Fruits globose-depressed, (2.6) 3.1–4.2 × (2.4) 3–4 cm, glabrous, 15–18-ribbed, pedicellate, the pedicel terete, 4–6 × 2–7 mm, glabrous, calyx lobes in fruit 4, depressed ovate to broadly ovate, 1.5–3 × 2.5–4 mm, coriaceous, glabrous outside, not seen inside, apex obtuse or subobtuse, light greenish outside and sometimes with reddish spots; seed 1–2, ellipsoid or globose, 1.6–2.4 × 1.2–2.1 cm, seed coat smooth and somewhat lustrous, cream (*in schedá*); embryo eugenoid with fused cotyledons and no visible hypocotyl, with minute glands.

**Distribution, habitat and phenology:**—*Eugenia melocactoides* grows in tropical lowland forests of Casanare and Cundinamarca Departments between 393–471 m elev. and apparently is endemic to Colombia. This species has been collected with fruits in May and June.

**Conservation:**—Although this species has been collected in two different Colombian Departments, it is only known for two specimens and no additional collections have been found; then, the conservation status of *E. melocactoides* is assessed here as Data Deficient, or DD, following IUCN Red List criteria (IUCN 2019).



**FIGURE 6.** *Eugenia melocactoides*. (A) fruiting branch, (B) fruit, (C) embryo—lateral view. A, C from the holotype, B from the isotype. Scale bars for B and C = 1 cm.



**FIGURE 7.** *Eugenia melocactoides*. (A) leaves (C. Parra-O. 883), (B) immature fruit—lateral view (C. Parra-O. 883), (C) immature fruit—upper view with remnants of the calyx (C. Parra-O. 833). *Eugenia vallecaucana*. (D) leaves (Méndez 6978), (E) fruiting branch (Méndez 6978), (F) fruit variation (Méndez 6978). Photos: C. Parra-O. (A, B, and C); E. Méndez (D, E, and F). Scale bar for A, D and E = 3 cm; scale bar from B, C, and F = 1 cm.

**Etymology:**—The specific epithet of the new species refers to the resemblance of its fruits to some species of *Melocactus* Link & Otto (1827: 417; Cactaceae), particularly to young individuals of *Melocactus guanensis* Xhonneux & Fern. Alonso (in Fernández-Alonso & Xhonneux 2002: 359) and *Melocactus pescaderensis* Xhonneux & Fern. Alonso (in Fernández-Alonso & Xhonneux 2002: 362).

**Affinities:**—*Eugenia melocactoides* is apparently related to *E. multicostata* from Brazil, specially to *E. multicostata* var. *multicostata*; both species are compared in the diagnosis.

**Paratypes:**—COLOMBIA. Casanare: Aguazul, “vereda Cupiagua, predio El Englobe en inmediaciones del

Centro de Producción de Fluidos (CPF-Cupiagua)", 5°13'02.27"N, 72°35'57.00"W, 471 m, 23 June 2017 (fr.), C. Díaz-Pérez, P. Gil-L., J. Gil-N., J. Olaya-A., W. Bravo-P., N. Camargo, D. Hernández, V. Alvarado-F., D. Moreno & D. Caro 2186 (UPTC!).

6. *Eugenia vallecaucana* C. Parra-O., *sp. nov.*

Type:—COLOMBIA. Valle del Cauca: Tuluá, "vereda San Antonio, corregimiento de Monte Loro, parcelación San Antonio", 3°52'55.7"N, 76°06'11.6"W, 2132 m, 16-30 July 2013 (fr.), E. Méndez 6978 (holotype COL 570559!, isotypes COL 570560!, CUVC!). Figures 7d–f, 8.

**Diagnosis:**—This species is most similar to *Eugenia fernandez-alonsoi* Parra-O. (2011: 407), from which it is distinguished by having infundibular hairs (versus simple hairs in *E. fernandez-alonsoi*), petioles 0.8–1.2 mm (vs. 1.4–2.2 mm), lower surface of leaf blade slightly to moderately pubescent (vs. glabrous or glabrescent), midvein of leaf blade convex above (vs. sulcate), and fruits moderately pubescent with hairs appressed in all surface (versus fruits glabrous except for the moderately pubescent apex).

**Description:**—Tree, 4–10 m tall; hairs when present ca. 0.1 mm, infundibular and sometimes with irregular edges at the distal portion, drying golden yellow; young branches compressed, ochraceous, moderately pubescent; old branches terete, light ochraceous, almost glabrous to slightly pubescent. Leaf blades obovate, oblong or elliptic, 11–17 × 3–6 cm, coriaceous, discolorous, the upper surface usually glabrous, sometimes slightly pubescent, with immersed glandular dots, the lower surface ochraceous, slight to moderately pubescent, with immersed glandular dots not perceptible; apex acute or shortly acuminate, the acumen 2.5–5 mm; base acute; margin entire; midvein convex and glabrous to slightly pubescent above, markedly convex and slight to moderately pubescent below; lateral veins 15–20 pairs, convex and usually glabrous or sometimes slightly pubescent above, convex and moderately pubescent below, marginal veins 2, the innermost 2–5 mm from the margin, the outermost 1–2 mm from the margin; petioles 0.8–1.2 cm long, ochraceous or blackish above and below, smooth or slightly rugose, scarcely to moderately pubescent, not or slightly canaliculate adaxially. Inflorescences axillary, well developed racemes, 1.5–4 cm long, with 3–7 flowers, the axes compressed or subcompressed, slightly to moderately pubescent, brownish orange to brownish when dry; peduncles 1.5–5 × 2.5–4 mm; bracts and bracteoles not seen; flower buds and open flowers not seen. Fruits globose, ovoid or ellipsoid, orangish brown to light brown when dry, 2.8–4.6 × 1.8–3.7 cm, moderately pubescent with hairs appressed, verrucose, pedicellate, the pedicel subcompressed or terete, 4.5–10 × 2.5–3.5 mm, slight to moderately pubescent, calyx lobes in fruit 4, ovate to broadly ovate, 5.5–7.5 × 5–6.5 mm, coriaceous, moderate to densely pubescent outside and inside (but infundibular hairs mixed with simple and appressed hairs 0.1–0.3 mm, golden brownish), apex obtuse; seed 1, ellipsoid, 2 × 1 cm, seed coat smooth and somewhat lustrous; embryo eugenoid with fused cotyledons and no visible hypocotyl, with minute glands.

**Distribution, habitat and phenology:**—*Eugenia vallecaucana* seems to be endemic to Colombia; it is known from Andean forest of Valle del Cauca Department between 2132–2140 m elev. This species has been collected with fruits in July and November.

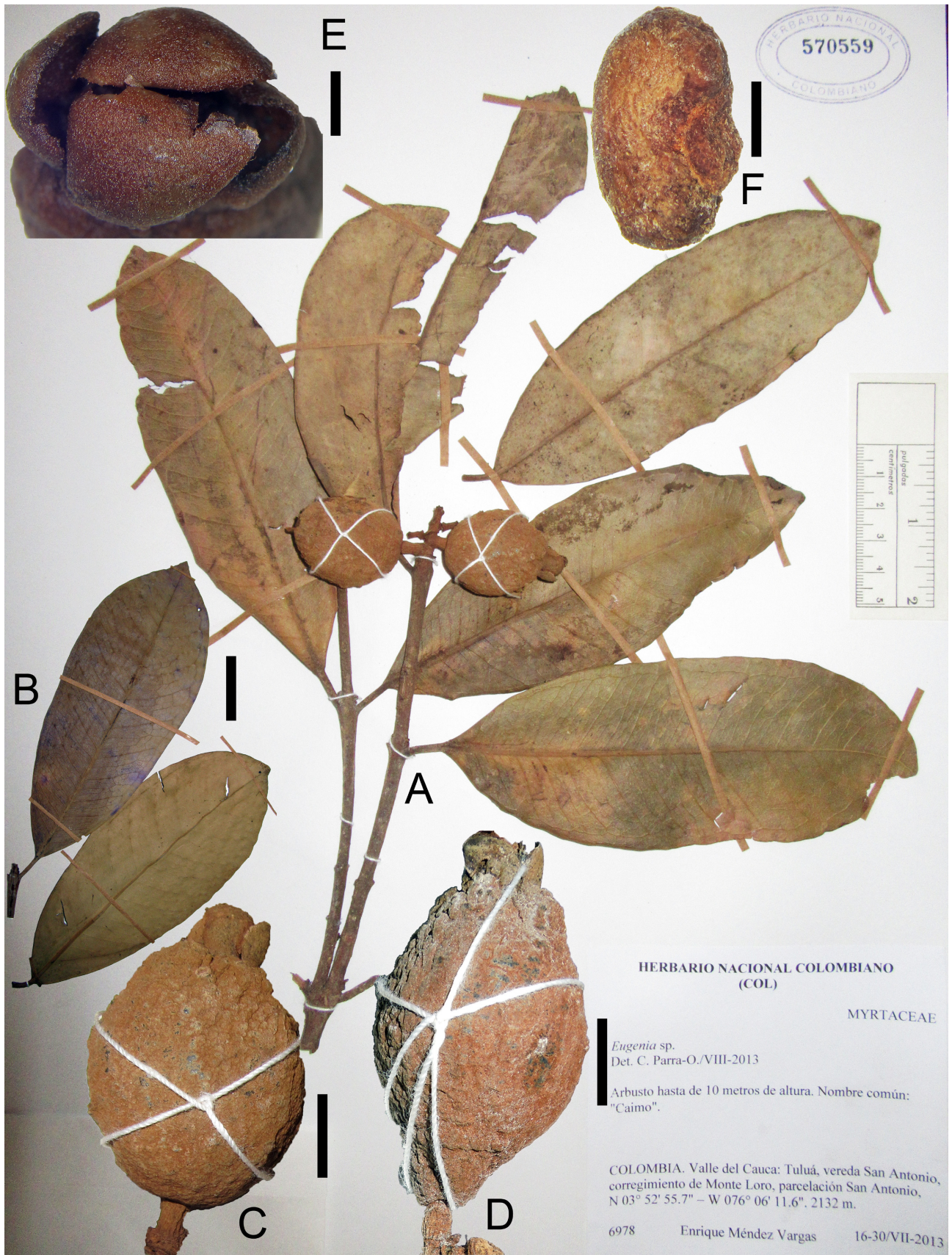
**Conservation:**—Because this species has been found in only one locality of one Department in Colombia and little is known about its natural distribution, its conservation status is assessed as Data Deficient, or DD, following IUCN Red List criteria (IUCN 2019).

**Etymology:**—The specific epithet of the new species refers to the Department of Valle del Cauca, Colombia, where the type was collected.

**Common name:**—"caimo" (Méndez 6978).

**Affinities:**—*Eugenia vallecaucana* is apparently related to *E. fernandez-alonsoi*; both species can be differentiated by the characters mentioned in the diagnosis.

**Paratypes:**—COLOMBIA. Valle del Cauca: Tuluá, "vereda San Antonio, finca El Edén", 2140 m, 23 November 2011 (fr.), E. Méndez 6507 (CUVC!, ICESI!).



**FIGURE 8.** *Eugenia vallecaucana*. (A) fructing branch, (B) leaves, (C)–(D) fruits, (E) upper view of fruit with remnants of the calyx lobes, (F) seed. A, C from the holotype, B, D, F from the isotype, E from Méndez 6507. Scale bar for B = 3 cm, scale bar for C and D = 1 cm, scale bar for E = 2 mm, scale bar for F = 5 mm.



7. *Myrcia cabreræ* C. Parra-O., sp. nov.

Type:—COLOMBIA. Valle del Cauca: “cuenca del río Cali, cercanías de Peñas Blancas”, s.a., 23 January 1963 (buds, fr.), López-Figueiras 8277 (holotype VALLE!, isotype VALLE!). Figure 9.

**Diagnosis:**—This species is most similar to *Myrcia fasciata* McVaugh (1956: 192), from which it is distinguished by having leaf blade not bullate above (versus leaf blade bullate above in *M. fasciata*), inflorescences with 40–100 flowers (vs. with ca. 25 flowers), and calyx lobes incurved in fruit (vs. erect).

**Description:**—Tree, 8–12 m tall; hairs when present 0.1–0.4 mm, simple, drying whitish to light yellowish; young branches compressed to subcompressed, brown to reddish brown, scarcely to moderately pubescent; old branches terete, yellowish gray, glabrous. Leaf blades elliptic, ovate or broadly ovate, (3.5) 8.5–14.5 × (2) 5.5–8.5 cm, coriaceous, slightly discoloured to discoloured, the upper surface usually glabrous, occasionally slightly pubescent, with impressed glandular dots, the lower surface glabrous to slightly pubescent, with darkish and slightly raised glandular dots; apex obtuse or acuminate, the acumen 4–11 mm; base obtuse or rounded, sometimes truncate; margin entire; midvein flat to convex and glabrous to moderately pubescent above, markedly convex and glabrous to slightly pubescent below; lateral veins 11–17 pairs, flat to slightly convex and usually glabrous (sometimes slightly pubescent) above, convex and glabrous to slightly pubescent below, venation joining in an inframarginal vein at 13–50 mm from margin; petioles 7–20 mm long, brownish to light blackish above and below, slightly rugose, scarcely to densely pubescent, moderately canalliculate adaxially. Inflorescences axillary, paniculate, 9–16 cm long, with 40–100 flowers per panicle, axes compressed to subcompressed, scarcely to densely pubescent, brownish orange to blackish when dry; peduncles 45–90 × 2–3 mm; bracts narrowly ovate or oblong, 2–9 × 0.5–1.7 mm, moderate to densely pubescent abaxially and adaxially, truncate in the base, deciduous; bracteoles 3–4, axillary at base of hypanthium, lanceolate or ovate, 0.2–1 × 0.1–0.5 mm, moderate to densely pubescent, deciduous after anthesis; immature flower buds obovate, 1–1.2 mm long, 1–1.2 mm in diameter, densely pubescent, sessile; open flowers not seen. Fruits globose, sometimes obovate, blackish when dry, 7–11 mm in diameter, usually scarcely pubescent, sometimes slightly pubescent, sessile, occasionally pedicellate, the pedicel subcompressed to terete, 0.4 × 0.4–1 mm, glabrous to slightly pubescent, calyx lobes 5, persistent in fruit, incurved, depressed ovate, 0.8–1.1 × 1.1–1.4 mm, coriaceous, glabrous to scarcely pubescent outside, scarcely to moderately pubescent inside, apex obtuse or subobtuse; seed 1–4, globose to slightly reniform, 7.2–9 × 6.3–6.5 mm, seed coat smooth and somewhat lustrous; embryo myrcioid, with minute blackish glands.

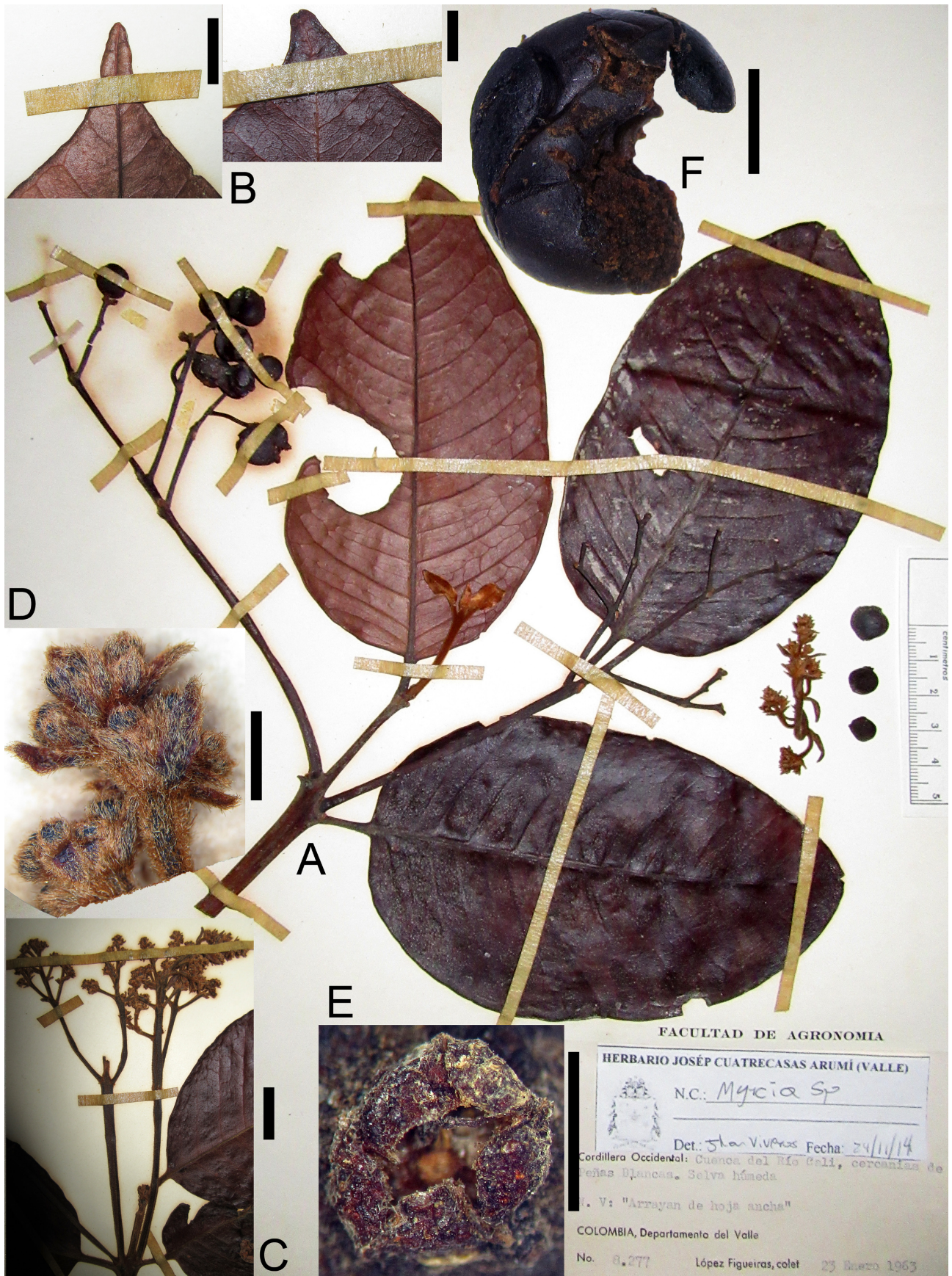
**Distribution, habitat and phenology:**—*Myrcia cabreræ* grows in montane forests of Cauca and Valle del Cauca Departments between 1600–2000 m elev.; this species seems to be endemic to Colombia. There is a report (Cabrera 6437 at CUVC) that fruits of *M. cabreræ* are eaten by birds and other wild animals; this same source reports that its wood is used as fuel, as construction material for houses and for making tool handles. *Myrcia cabreræ* has been collected with buds in January and with fruits in January, September, and December.

**Conservation:**—Despite that this species has been found in different localities of two Departments in Colombia, it is only known for three collections where two of them were collected in almost the same locality; also, these specimens were collected between 40–57 years ago. Based on the information provided above and the lack of additional information about this species, the conservation status of *Myrcia cabreræ* is assessed as Data Deficient (DD) following IUCN Red List criteria (IUCN 2019).

**Etymology:**—*Myrcia cabreræ* is dedicated to Isidoro Cabrera, a Colombian botanist based at Universidad del Valle and the herbarium CUVC where he was a Botany Professor. Isidoro explored extensively the Colombian territory and he collected more than 22,000 specimens, apart from ca. 10,000 additional collections made in the Orinoco and Amazonian region together with W. R. Philipson, R. E. Schultes, H. García-Barriga, A. F. Pérez and R. Jaramillo-Mejía. He also published studies on the native flora of San Andrés, Providencia and Santa Catalina islands (Colombian Caribbean) and its uses.

**Affinities:**—*Myrcia cabreræ* is somewhat similar to *Myrcia fasciata* from Ecuador; the characters that differentiate both species are mentioned in the diagnosis.

**Paratypes:**—COLOMBIA. Cauca: “carretera entre Piendamó y Popayán”, 1600–2000 m, 6 December 1980 (fr.), I. Cabrera 6437 (CUVC!). Valle del Cauca: Peñas Blancas, “cuenca del río Pichindé”, 1700–1900 m, 18 September 1977 (fr.), C. Benalcázar & F. Silva 84 (COL!).



**FIGURE 9.** *Myrcia cabrerana*. (A) fruiting branch (holotype), (B) leaf apex variation, (C) inflorescence, (D) immature buds, (E) upper view of fruit with remnants of the calyx lobes, (F) embryo. A, E–F from the holotype, B–D from the isotype. Scale bar for B = 1 cm (left) and 5 mm (right), scale bar for C = 2 cm, scale bar for D and E = 2 mm, scale bar for F = 3 mm.



FIGURE 10. *Myrcia chocoensis*. (A) fruiting branch, (B) leaf base, (C) upper view of fruit with remnants of the calyx lobes. A–C from the holotype. Scale bar for B and C = 2 mm.

8. *Myrcia chocoensis* C. Parra-O., *sp. nov.*

Type:—COLOMBIA. Chocó: Quibdó, “Carretera Yuto-Lloró”, ca. 80 m, 30 June 1983 (fr.), *E. Forero, R. Jaramillo, J. Espina & L. Quiñones 9639* (holotype COL!, isotype MO!). Figure 10.

**Diagnosis:**—This species is most similar to *Myrcia aliena* McVaugh (1958: 627), from which it is distinguished by having whitish hairs (versus yellowish or pale reddish hairs in *M. aliena*), leaf blade base with the tissue decurrent down to the first  $\frac{1}{4}$  of the petiole’s length (vs. not decurrent), peduncles of the inflorescences 4.5–7 cm (vs. 1–3 cm), and calyx lobes spreading in fruit (vs. erect).

**Description:**—Tree; hairs when present 0.2–0.3 mm, simple, whitish; young branches compressed, yellowish brown, glabrous to slightly pubescent; old branches not seen. Leaf blades obovate to broadly obovate, sometimes elliptic, 4–7 × 2.7–4 cm, coriaceous, discolorous, the upper surface glabrous, with impressed glandular dots not perceptible, the lower surface glabrous, with slightly raised glandular dots; apex obtuse or rounded, the tip itself acuminate in 2–5 mm; base cuneate or obtuse with the leaf blade tissue decurrent down to the first  $\frac{1}{4}$  of the petiole; margin entire; midvein markedly sulcate and slightly pubescent above, markedly convex and almost glabrous to slightly pubescent below; lateral veins 14–20 pairs, flat to slightly convex and glabrous above, slightly convex and glabrous below, venation joining in an inframarginal vein at 1–2 mm from margin; petioles 4–8 mm long, blackish above and below, moderately rugose, scarcely to moderately pubescent, canaliculate adaxially. Inflorescences axillary, paniculate, 7–10 cm long, flowers per panicle unknown, axes subcompressed, almost glabrous to slightly pubescent, yellowish brown to brown when dry; peduncles 45–70 × 1.5–1.8 mm; bracts and bracteoles not seen; flower buds and open flowers not seen. Fruits globose, yellowish brown to dark brown when dry, 6–7.5 mm in diameter, glabrous, sessile, occasionally pedicellate, the pedicel subcompressed, 0.5 × 0.5–0.8 mm, glabrous, calyx lobes five, persistent in fruit, in some fruits two lobes are larger than the other three, lobes very broadly ovate or depressed ovate, 0.3–0.7 × 0.5–1 mm, coriaceous, glabrous to scarcely pubescent outside, slight to moderately pubescent inside, apex obtuse, remnant staminal ring on fruit circular, 1.7–2 mm diameter, glabrous, apparently swollen and the central portion appears sunken; mature seeds not seen.

**Distribution, habitat and phenology:**—*Myrcia chocoensis* grows in tropical humid forests of the Chocó Biogeographic Region located at the Chocó Department, at ca. 80 m; it seems to be endemic to Colombia. This species has been collected with fruits in June.

**Conservation:**—The conservation status of *Myrcia chocoensis* is assessed as Data Deficient (DD) following IUCN Red List criteria (IUCN 2019), because this species is currently known from only one location at the municipality of Quibdó.

**Etymology:**—The specific epithet of the new species refers to the department of Chocó, Colombia, where the type was collected.

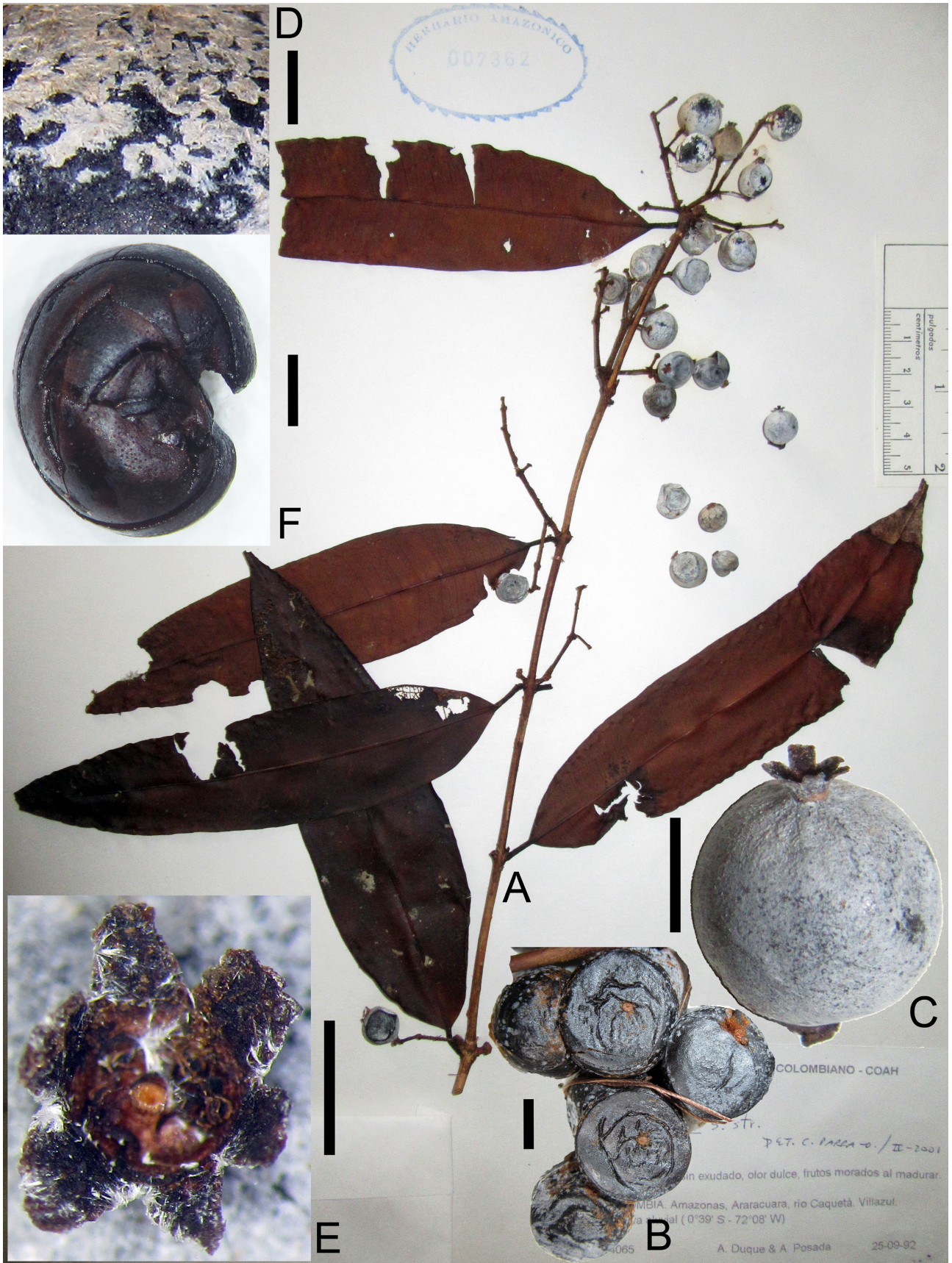
**Affinities:**—*Myrcia chocoensis* is apparently related to *Myrcia aliena*, and both species can be separated using the characters provided in the diagnosis. In most of the fruits of the type specimens of *M. chocoensis* the remnant staminal ring is apparently swollen and the central portion appears sunken (Figure 10 C), and in the dissected fruits the seeds were deformed. Flowering specimens and additional fruiting specimens are in need to evaluate if the characters of the staminal ring observed here are constant for this species, or if is a particular variation in the fruits of the holotype.

9. *Myrcia glaucocarpa* C. Parra-O., *sp. nov.*

Type:—COLOMBIA. Amazonas: Araracuara, “río Caquetá, Villazul”, 0°39’S, 72°08’W, 25 September 1992 (fr.), *A. Duque & A. Posada 4065* (holotype COAH!). Figure 11.

**Diagnosis:**—This species is most similar to *Myrcia neoobscura* E. Lucas & C. E. Wilson (in Lucas *et al.* 2016: 680), from which it is distinguished by having the midvein of leaf blade glabrous below (versus strigose in *M. neoobscura*), glaucous fruits (vs. blackish), and 5–6 calyx lobes (vs. 4 in *M. neoobscura*).

**Description:**—Shrub or tree, 1.3–6 m tall; hairs when present 0.1–0.7 mm, simple, straight to curled, drying light brownish to golden brownish; young branches teretes, light brown, glabrous to sparsely puberulous; old branches not seen. Leaf blades oblong or ovate to narrowly ovate, 15–21 × 3.5–6.7 cm, coriaceous, discolorous, the upper surface glabrous, with impressed blackish glandular dots, the lower surface glabrous, with impressed blackish glandular dots; apex acute to shortly acuminate, the acumen 7–9 mm; base cuneate, sometimes obtuse; margin entire; midvein convex and glabrous above, convex and glabrous below; lateral veins 18–24 pairs, convex and glabrous above, convex and



**FIGURE 11.** *Myrcia glaucocarpa*. (A) fruiting branch, (B) galls, (C) fruit, (D) surface of fruit, (E) upper view of fruit with remnants of the calyx lobes, (F) embryo. A, C–F from the holotype, B from *Marín et al. 1786*. Scale bar for B and C = 5 mm, scale bar for D and E = 1 mm, scale bar for F = 2 mm.

glabrous below, marginal veins 2, the innermost 1.5–3.5 mm from the margin, the outermost 0.2–0.5 mm from the margin; petioles 0.8–1 cm long, black when dry, rugose, generally glabrous, sometimes slightly puberulous, moderately canaliculate adaxially. Inflorescences mostly axillary, sometimes subterminal, paniculate, 2.2–4.5 cm long, flowers per panicle unknown, axes compressed, moderate to densely pubescent, vinaceous when dry; peduncles 7–21 × 1–1.5 mm; bracts not seen; bracteoles 1–2, axillary at base of hypanthium, ovate, 1–2 × 0.8–1 mm, slight to moderately pubescent, deciduous after anthesis; flower buds and open flowers not seen. Fruits globose, exocarp glaucous when dry, 0.7–1 cm in diameter, glabrous, sessile, calyx lobes persistent in fruit 5–6, irregular in shape and size, ovate to broadly ovate, depressed ovate or oblong, 0.7–1.2 × 0.5–1 mm, coriaceous, scarcely to densely pubescent outside, generally glabrous, sometimes scarcely pubescent inside, apex obtuse or subobtuse, sometimes truncate, remnant staminal ring on fruit circular, 1.4–1.7 mm, glabrous; seed 1, globose, sometimes slightly reniform, 7.5–8 × 6.5 mm, seed coat smooth and somewhat lustrous, with minute orangish glands; embryo myrcioid, with minute blackish glands.

**Distribution, habitat and phenology:**—*Myrcia glaucocarpa* grows in seasonal flooded Amazonian forests in Amazonas Department between 200–250 m elev.; this species seems to be endemic to Colombia. *Myrcia glaucocarpa* has been collected with fruits in September.

**Conservation:**—Although *Myrcia glaucocarpa* is known from three different localities in the Amazonas department in Colombia, the Amazonian region is still undersampled and it is difficult to evaluate its conservation status; at the moment, I assess its conservation status as Data Deficient, or DD, following IUCN Red List criteria (IUCN 2019).

**Etymology:**—The specific epithet of the new species refers to its glaucous fruits, an uncommon character among species of *Myrcia*.

**Affinities:**—*Myrcia glaucocarpa* is apparently related to *M. neoobscura* from Brazil, and both species can be differentiated by the characters mentioned in the diagnosis. Calyx remnants in some fruits of *Myrcia glaucocarpa* have 5–6 irregular lobes, but such lobe numbers are not constant in all fruits of the holotype; in some fruits there seems to be remnants of only four lobes, but it is difficult to be sure due to the poor shape of the remnants. Due to its irregular calyx lobes, it is possible that *Myrcia glaucocarpa* is related to the species formerly assigned to genus *Marlierea*; such species are placed today into three different monophyletic clades within *Myrcia* (Lucas *et al.* 2011). Flowering specimens are in need to establish *Myrcia glaucocarpa* affinities within *Myrcia*.

*Myrcia glaucocarpa* fruits are covered with a glaucous layer that cracks in small patches (Fig. 11 D); the nature of this layer is not known yet, but fungus or another organism growing on the surface of the fruit are discarded. All cited paratypes of *Myrcia glaucocarpa* do not have flowers or fruits, but they present globose galls (Figure 11 B) that are similar in shape to the holotype's fruits.

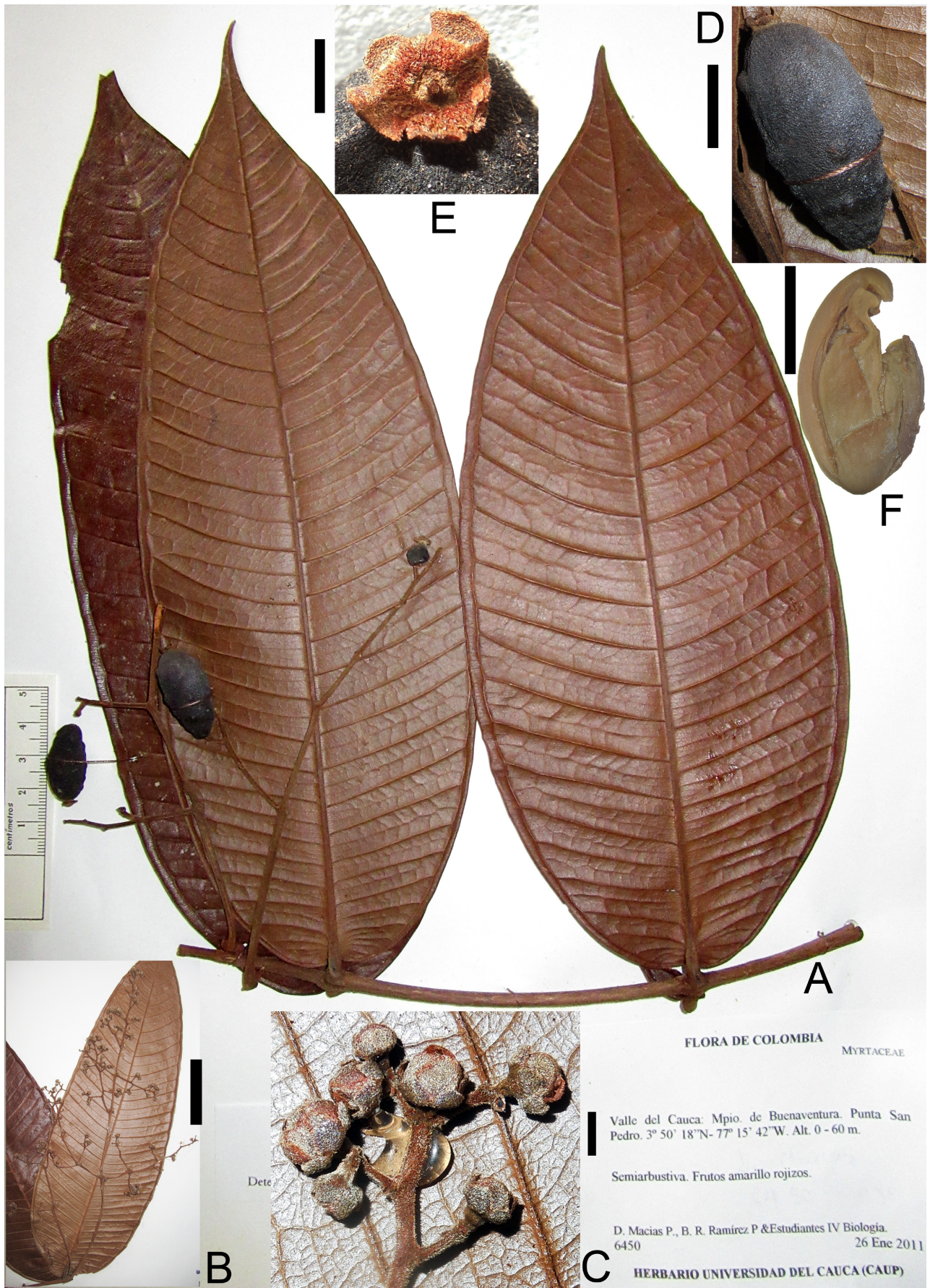
The innermost marginal vein of the holotype of *Myrcia glaucocarpa* is less arched than the same structure on the paratypes cited here, but I consider that this minor difference is part of the existing variation among this species.

**Paratypes:**—COLOMBIA. Amazonas: Leticia, Parque Nacional Natural Amacayacu, sector Lorena, 03°04'06.2"S, 69°59'43.2"W, 70–100 m, 22 November 2019, *J. Acosta, M. Ríos, W. Rodríguez, L. Torres & C. Vriesendorp 1190* (COAH!); Tarapacá, río Putumayo, 2°34'S, 70°13'W, 200–250 m, 18 March 1999, *D. Cárdenas, R. López, C. Marín, C. Ruiz & Y. Martínez 11497* (COAH!); *ibidem*, 18 March 1999, *C. Marín, D. Cárdenas, R. López, C. Ruiz & Y. Martínez 1786* (COAH!).

#### 10. *Myrcia ramirezii* C. Parra-O., *sp. nov.*

Type:—COLOMBIA. Valle del Cauca: Buenaventura, “Punta San Pedro”, 3°50'18"N, 77°15'42"W, 0–60 m, 26 January 2011 (fr.), *D. Macías, B. Ramírez & Estudiantes IV Biología 6450* (holotype CAUP!). Figure 12.

**Diagnosis:**—This species is most similar to *Myrcia maarana* Sobral & M.A.D.Souza (2015: 222), from which it is distinguished by having leaf blades with one marginal vein (versus two marginal veins in *M. maarana*), inflorescence moderately pubescent with light golden trichomes (vs. glabrous or with sparse reddish trichomes), flowers pentamerous (vs. tetramerous), and fruits ellipsoid (vs. obovate).



**FIGURE 12.** *Myrcia ramirezii*. (A) fruiting branch, (B) inflorescence, (C) flower buds, (D) fruit, (E) upper view of fruit with remnants of the calyx lobes, (F) embryo. A, D, E from the holotype, B and C from *Durán & Macías 05*, F from *Jaramillo-Martínez 12*. Scale bar for B = 5 cm, scale bar for C and E = 2 mm, scale bar for D and F = 1 cm.

**Description:**—Shrub to tree, 4–8 m tall; hairs when present 0.1–0.5 mm, simple, drying light golden; young branches subcompressed to terete, brownish orange, moderately pubescent; old branches not seen. Leaf blades narrowly ovate or lanceolate, (21) 26–28.5 × (6.3) 9.5–11 cm, coriaceous, slightly bullate, discolorous, the upper surface glabrous, with impressed glandular dots not perceptible, moderately lustrous, the lower surface glabrous to slightly pubescent, with impressed glandular dots; apex acuminate, the acumen 1.5–2.5 cm; base subcordate; margin entire; midvein convex and glabrous to moderately pubescent above, convex and slight to moderately pubescent below; lateral veins 24–28 pairs, convex and glabrous to moderately pubescent above, convex and slightly pubescent below, venation joining in an inframarginal vein at 1.5–4 mm from margin; petioles 3.2–5 mm long, dark brown or blackish and moderate to densely pubescent abaxially and adaxially. Inflorescences subterminal, paniculate, 15–26 cm long, with 50–100 flowers per panicle, axes compressed, moderately pubescent, brownish orange when dry; peduncles 48–85 × 1.7–2 mm; bracts not seen, probably deciduous before anthesis; bracteoles 1–2, axillary at base of hypanthium, ovate, 0.4–0.6 × 0.3–0.4 mm, densely pubescent, deciduous before anthesis; flower buds globose, 2.5–3.7 mm long, 2.3–3.4 mm in diameter, moderate to densely pubescent, sessile or in a subcompressed pedicel 0.5–1 × 0.3–0.6 mm, moderately pubescent; open flowers not seen. Fruits ellipsoid, blackish when dry, 1.5–2.7 cm long, scarcely pubescent, sessile or pedicellate, the pedicel terete, 0.8–1 × 1.5–2 mm, moderately pubescent, calyx lobes 5, persistent in fruit, depressed ovate to broadly ovate, 1.2–1.5 × 1.4–1.7 mm, moderate to densely pubescent outside, slight to moderately pubescent inside, apex subobtusate or subacute, remnant staminal ring on fruit circular, 2–3 mm, moderate to densely pubescent; seed 1, ellipsoid, 2 × 1 cm, seed coat smooth and striate; embryo myrcioid with minute glands, with hairs on the margin of some portions of the cotyledons.

**Distribution, habitat and phenology:**—*Myrcia ramirezii* grows in western tropical humid forests (Chocó Biogeographic Region) of Valle del Cauca Department between 0–60 m elev.; this species seems to be endemic to Colombia. *Myrcia ramirezii* has been collected with buds in August and with fruits in January and October.

**Conservation:**—The conservation status of *Myrcia ramirezii* is assessed as Data Deficient (DD) following IUCN Red List criteria (IUCN 2019), because this species is currently known from only two close locations at the municipality of Buenaventura.

**Etymology:**—*Myrcia ramirezii* is named to honor Bernardo Ramírez Padilla, a Colombian botanist based at Universidad del Cauca and the herbarium CAUP where he was a Botany Professor and Curator of the Herbarium. Bernardo has contributed extensively to the knowledge of the southwestern Colombian flora, specially at Nariño and Cauca Departments, and he has published several contributions on floristics, diversity and ecology of Colombian Bryophytes and Angiosperms.

**Affinities:**—Of the Colombian species of *Myrcia*, *Myrcia ramirezii* is somewhat similar to *Myrcia maarana*; the characters that differentiate both species are mentioned in the diagnosis.

**Paratypes:**—COLOMBIA. Valle del Cauca: Buenaventura, “Punta San Pedro-Maguipi”, 3°50’18”N, 77°15’34.9”W, 46 m, 3 August 2008 (buds), *C. Durán & D. Macías 05* (CAUP!); Buenaventura, “Playa Chucheros, Ensenada El Tigre, Bahía Málaga”, 3°55’17.5”N, 77°18’53.3”W, 27 m, 16 October 2012 (fr.), *A. Jaramillo-Martínez 12* (CUVC!).

#### 11. *Myrcia samanensis* C. Parra-O., *sp. nov.*

Type:—COLOMBIA. Antioquia: San Luis, “desembocadura de la quebrada San Miguel en la margen izquierda del río Samaná Norte”, 6°2’34.69”N, 74°55’9.59”W, 415 m, 18 December 2016 (buds, fl., fr.), *S. Hoyos-Gómez, R. Bernal, F. Manrique, S. Bernal & J. Domínguez 3117* (holotype COL!, isotype HUA!). Figure 13.

**Diagnosis:**—This species is similar to *Myrcia guianensis* (Aublet 1775: 506–507) De Candolle (1828: 245), from which it is distinguished by having translucent or whitish hairs (versus usually red hairs in *M. guianensis*), blades with 36–48 lateral veins at each side (vs. 15–20), calyx lobes glabrous inside (vs. pubescent), hypanthium not prolonged above the ovary (vs. prolonged), flower disk moderately pubescent (vs. glabrous), and ovary 2-locular (vs. 3-locular).

**Description:**—Shrub, 1.5–2 m tall; hairs when present 0.1–0.2 mm, simple, drying translucent or whitish; young branches compressed to subcompressed, vinaceous gray to gray, moderately pubescent; old branches terete, yellowish gray to gray, glabrous. Leaf blades narrowly ovate, narrowly oblong or linear, 2.5–7.5 × 0.4–0.8 cm, coriaceous, discolorous, the upper surface glabrous, with slightly raised glandular dots, the lower surface usually scarcely pubescent, sometimes slightly pubescent, with slightly raised glandular dots; apex longly attenuate; base obtuse, sometimes subobtusate; margin entire; midvein flat to slightly convex and slight to moderately pubescent above, markedly convex and scarcely to moderately pubescent below; lateral veins 36–48 pairs, convex and glabrous above, convex and usually



glabrous to occasionally scarcely pubescent below, venation joining in an inframarginal vein at 0.1–0.4 mm from margin; petioles 0.5–1.5 mm long, dark vinaceous to blackish above and below, moderately rugose, slight to moderately pubescent, moderate to deeply canaliculate adaxially, axils of petiole with stipule-like, linear or filiform colleters (0.2) 0.5–1.2 (1.5) × 0.1 mm, glabrous. Inflorescences axillary, occasionally terminal, paniculate, 1–2.8 cm long, with 5–13 flowers per panicle, axes compressed, slight to moderately pubescent, vinaceous brown when dry; peduncles 5–12 × 0.3–0.7 mm; bracts elliptic to narrowly elliptic, 2.1–4.2 × 0.7–1 mm, slight to moderately pubescent abaxially, glabrous adaxially, truncate in the base, deciduous after anthesis; bracteoles 1–2, axillary at base of hypanthium, lanceolate, ovate or oblong, 0.5–1.5 × 0.2–0.6 mm, scarcely to moderately pubescent, deciduous after anthesis; flower buds globose, 1.7–2 mm long, 1–1.8 mm in diameter, glabrous to scarcely pubescent, in a subcompressed pedicel 0.5–1.2 × 0.2–0.3 mm, moderately pubescent; calyx lobes 5, depressed ovate to broadly ovate, 0.5–1 × 0.8–1.4 mm, coriaceous, almost glabrous to slightly pubescent outside, glabrous inside, apex obtuse or subobtuse; petals usually 4, white (*in schedula*), elliptic, broadly ovate or depressed ovate, 1.8–3 × 2.5–3 mm, subcoriaceous, almost glabrous to slightly pubescent outside, glabrous inside, apex obtuse, base truncate, hypanthium 1.3–1.5 mm in diameter, not prolonged above the ovary, moderately pubescent outside, glabrous inside, disk semi-quadrangular, 1.8–2.7 mm, moderately pubescent; style 3.3–3.8 mm long, slight to moderately pubescent at base and half of its extension, scarcely pubescent at the top; stamens 50–60, white (*in schedula*); filaments 1.8–3.2 mm, anthers globose, 0.1–0.2 mm long, cream (*in schedula*), with 1 apical gland; ovary 0.8–1 mm in diameter, 2–locular, 1–3 ovules per locule. Fruits ellipsoid, purple (*in schedula*), blackish when dry, 4–4.5 × 2.5–3 mm, slight to moderately puberulous; seed 1, ellipsoid, 5 × 3 mm, seed coat smooth and somewhat lustrous; embryo myrcioid, with minute light brownish glands.

**Distribution, habitat and phenology:**—*Myrcia samanensis* grows in the Samaná Norte river basin in Antioquia Department, and it is part of the rheophytic flora growing in tropical forests associated to such river between 200–800 m elev.; Hoyos-Gómez & Bernal (2018) reported that this species grows specially on rocks at the margins of the Samaná Norte river, in low to moderate flooded areas. *Myrcia samanensis* seems to be endemic to Colombia. *Myrcia samanensis* has been collected with buds and flowers in May, June, and December, and with fruits in December.

**Conservation:**—The conservation status of *Myrcia samanensis* was assessed by Hoyos-Gómez & Bernal (2018; treated by them as *Myrcia sp. nov.*) as Critically Endangered (CR) following IUCN Red List criteria (IUCN 2019). This species has been found only in the basin of the Samaná Norte River, and this natural area is going to be heavily destroyed if a dam for the hydroelectrical plant Porvenir II is built. Hoyos-Gómez & Bernal (2018) estimated the area of occupancy of *Myrcia samanensis* in the Samaná Norte river basin by 0.61 km<sup>2</sup>, and they found that 68% of such area would be flooded if the hydroelectric project is developed. Due to the extremely restricted area of occupancy of *Myrcia samanensis* and the imminent threat to the natural ecosystem in which it grows, I agree with the conservation status assessing by Hoyos-Gómez & Bernal (2018) for this species according to the IUCN (2019) criteria B2ab(ii, iv).

**Etymology:**—*Myrcia samanensis* refers from the type locality in the Samaná Norte River (Antioquia Department) in Colombia, a river with a particular rheophytic ecosystem that has nine exclusive species growing in its basin, where seven of them were recently discovered as new to science (Bernal *et al.* 2017; Hoyos-Gómez & Bernal 2018; Posada-Herrera & Almeda 2018).

**Affinities:**—*Myrcia samanensis* is very different to all native Colombian species of *Myrcia* known to date, and it is more similar to Brazilian narrowed leaf forms of *Myrcia guianensis* that were previously recognized as a separate species of *Myrcia guianensis* (*i.e.*, *Myrcia angustifolia* (Berg 1857–1859: 135) Niedenzu (1893: 76)); *Myrcia angustifolia* is considered now as a synonym of *Myrcia guianensis* (Lima *et al.* 2018). The characters that differentiate both species are mentioned in the diagnosis.

**Paratypes:**—COLOMBIA. Antioquia: San Luis, “vereda San Pablo, río Calderitas, margen izquierda”, 6°2’40”N, 75°5’14”W, 800 m, 31 May 2017 (buds, fl.), *A. Cogollo, M. Montoya, A. Camargo, J. Correa & L. Zapata 13306* (COL!, JAUM!); San Carlos, “corregimiento Puerto Garza (Narices), vereda Puerto Garza, río Samaná Norte, margen izquierda, a 15 m aguas debajo de la desembocadura de la quebrada Urón, cerca al Puente de Narices”, 6°12’22”N, 74°45’34”W, 200 m, 13 June 2017 (buds), *A. Cogollo, M. Montoya, A. Camargo & F. Giraldo 13345* (COL!, JAUM!); San Francisco, “río Melcocho y río San Francisco”, 5°56’12.05”N, 75°6’76”W, s.a., 12 June 2017 (fl.), *S. Hoyos-Gómez, J. Domine, R. Bernal & F. Mesa 3196* (COL!, HUA!).

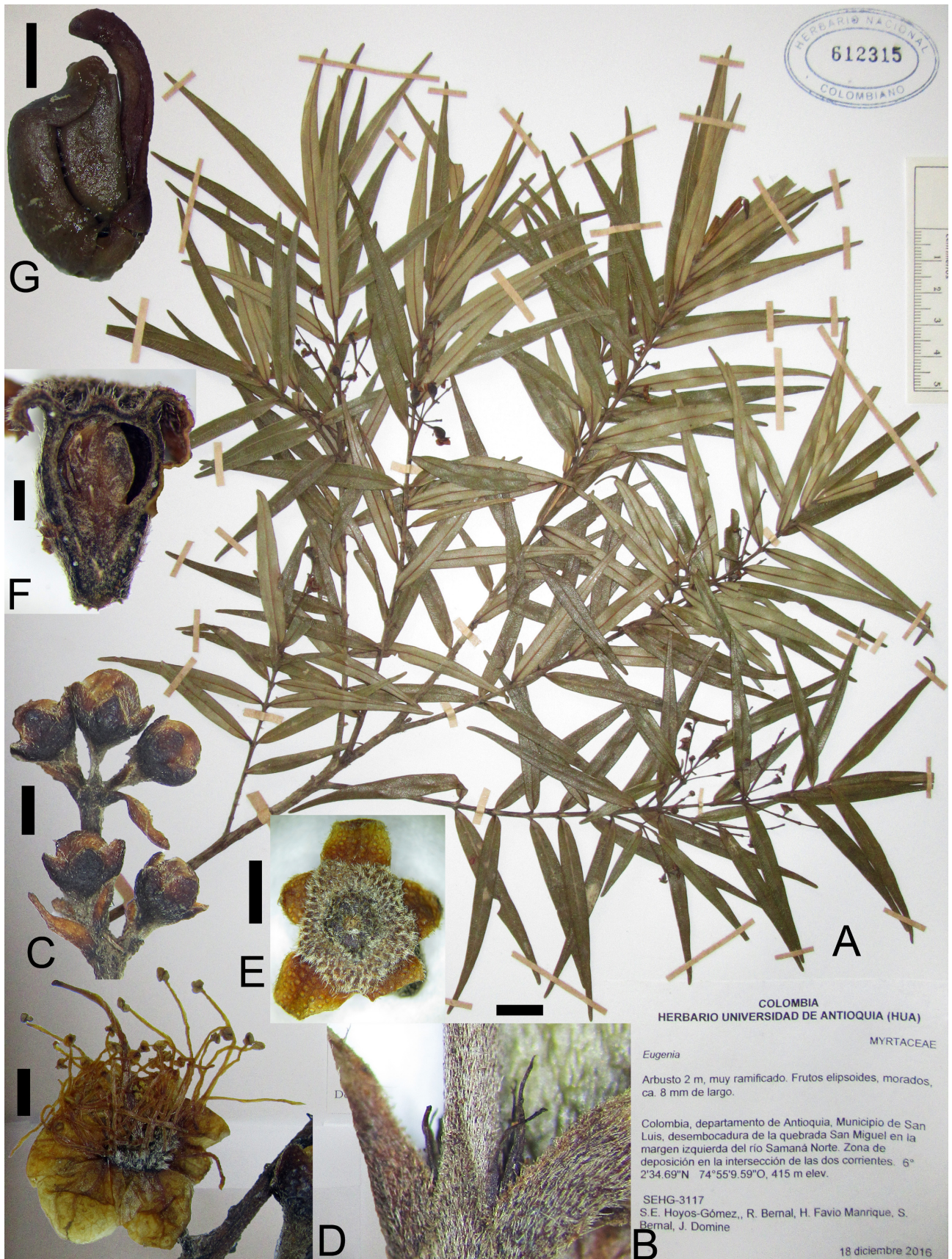
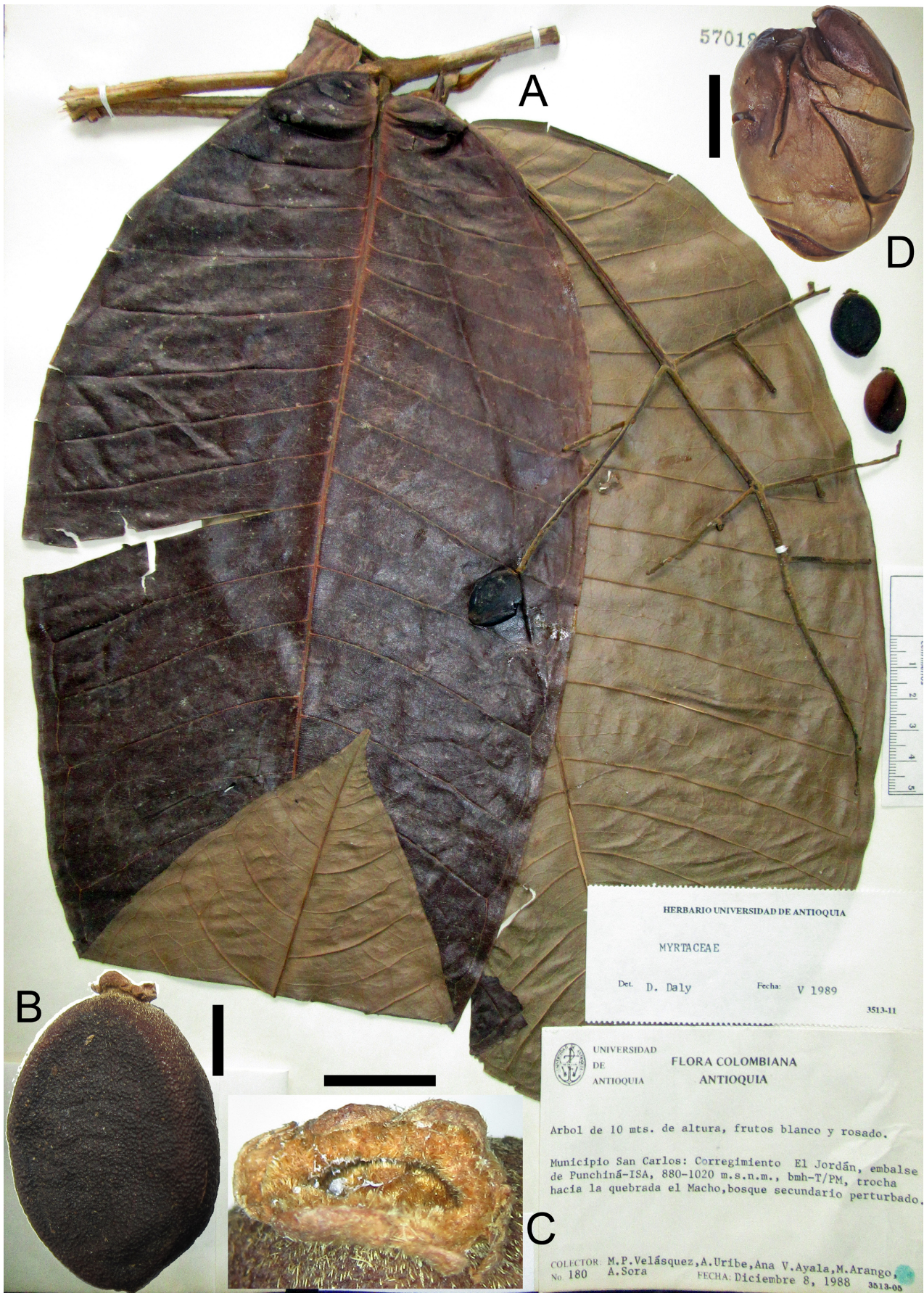


FIGURE 13. *Myrcia samanensis*. (A) fruiting branch, (B) filiform colleters, (C) flower buds, (D) flower, (E) flower disk with calyx lobes (stamens and petals removed), (F) longitudinal section of hypanthium, (G) embryo. A, B, E–G from the holotype, C from *Cogollo et al. 13345*, D from *Cogollo et al. 13306*. Scale bar for B = 0.5 mm, scale bar for C, D, E = 1 mm, scale bar for F = 0.5 mm, scale bar for G = 1 mm.



**FIGURE 14.** *Myrcia sancarlosiana*. (A) fruiting branch, (B) fruit, (C) upper view of fruit with remnants of the calyx lobes, (D) embryo. A–D from the holotype. Scale bar for B and D = 5 mm, scale bar for C = 2 mm.

### 12. *Myrcia sancarlosiana* C. Parra-O., *sp. nov.*

Type:—COLOMBIA. Antioquia: San Carlos, “Corregimiento El Jordán, embalse de Punchiná-ISA, trocha hacia la quebrada el Macho”, 880-1020 m, 08 December 1988 (fr.), *M. Velásquez, A. Uribe, A. Ayala, M. Arango & A. Sora 180* (holotype HUA!, isotype MO!).  
Figure 14.

**Diagnosis:**—This species is most similar to *Myrcia icnii* Parra-O. (2015: 439), from which it is distinguished by having pale yellowish to whitish hairs (versus light golden hairs in *M. icnii*), leaf base subcordate to cordate (vs. cuneate), lower surface of the leaf blade not bullate (vs. slightly bullate), apex of the leaf blade shortly acuminate (vs. apiculate), seeds ellipsoid (vs. slightly reniform), these ca.  $18 \times 12$  mm (vs.  $5.6\text{--}7 \times 3.5\text{--}4.3$  mm).

**Description:**—Tree, 10 m tall; hairs when present 0.1–0.6 mm, simple, pale yellowish to whitish; young branches compressed to subcompressed, light yellowish brown, slight to moderately pubescent; old branches not seen. Leaf blades elliptic to broadly elliptic,  $31.5\text{--}36.5 \times 17.5\text{--}20.5$  cm, coriaceous, slightly bullate, discolorous, the upper surface glabrous, with impressed glandular dots not perceptible, the lower surface slightly pubescent, with slightly raised glandular dots; apex shortly acuminate, the acumen 10–12 mm; base subcordate to cordate; margin entire; midvein slightly sulcate to slightly raised (at least in distal half) and glabrous to slightly pubescent above, markedly convex and slight to moderately pubescent below; lateral veins 22–23 pairs, flat to slightly convex and glabrous above, convex and slight to moderately pubescent below, marginal veins 2, the innermost 1.5–8.5 mm from margin, the outermost 0.3–1.5 mm from margin; petioles 5.5–7.5 mm long, yellowish brown above and below, moderately pubescent, slightly canaliculate adaxially. Inflorescences axillary, paniculate, to 26 cm long, flowers per panicle unknown, axes subcompressed, moderately pubescent, yellowish brown when dry; peduncles  $115 \times 2.5\text{--}3$  mm; bracts and bracteoles not seen; flower buds and open flowers not seen. Fruits ellipsoid, white or pink (*in schedá*), light brown to blackish when dry,  $17\text{--}20 \times 13\text{--}15$  mm, almost glabrous to slightly pubescent, sessile, calyx lobes persistent in fruit 5, depressed ovate,  $0.5\text{--}1 \times 1.5\text{--}2.5$  mm, coriaceous, scarcely to moderately pubescent outside, glabrous to slightly pubescent inside, apex obtuse, remnant staminal ring on fruit circular, 3.4–3.8 mm, densely pubescent; seed 1, ellipsoid, to  $18 \times 12$  mm, seed coat smooth and somewhat lustrous; embryo myrcioid, with minute blackish glands.

**Distribution, habitat and phenology:**—*Myrcia sancarlosiana* grows in secondary forests located between the limits of the lowland and subandean tropical forests of the Eastern slopes of Central Cordillera, at the Antioquia Department, between 880–1020 m; it seems to be endemic to Colombia. This species has been collected with fruits in December.

**Conservation:**—As *Myrcia sancarlosiana* is currently known from only one location at the municipality of San Carlos (Antioquia Department), its conservation status is assessed for the moment as Data Deficient (DD), following IUCN Red List criteria (IUCN 2019).

**Etymology:**—The specific epithet of the new species refers to the municipality of San Carlos in the Antioquia Department, Colombia, where the type was collected.

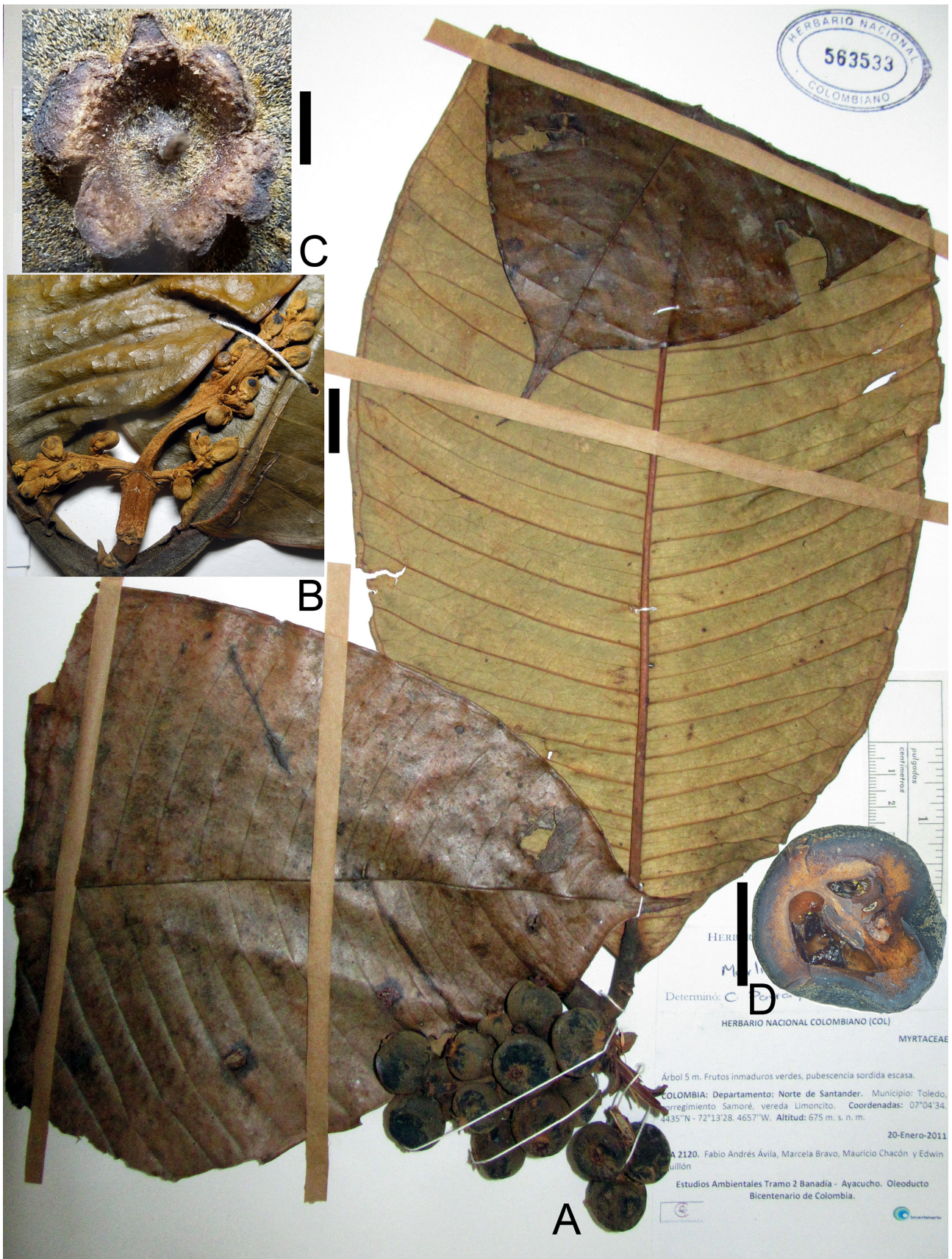
**Affinities:**—*Myrcia sancarlosiana* is somewhat similar to *Myrcia icnii*; both species can be separated using the characters mentioned in the diagnosis.

### 13. *Myrcia toledoana* C. Parra-O., *sp. nov.*

Type:—COLOMBIA. Norte de Santander: Toledo, “corregimiento Samoré, vereda Limoncito”,  $7^{\circ}04'34.4435''\text{N}$ ,  $72^{\circ}13'28.4657''\text{W}$ , 675 m, 28 January 2011 (buds, fr.), *F. Avila, M. Bravo, M. Chacón & E. Aguillón 2120* (holotype COL 563533!, isotype COL 563534!).  
Figure 15.

**Diagnosis:**—This species is most similar to *Myrcia insignis* McVaugh (1956: 176) E. Lucas & C. E. Wilson (2016: 669), from which it is distinguished by having dibrachiate hairs (versus simple hairs in *M. insignis*), leaf apex caudate, 32–42 mm (vs. short acuminate, 5–15 mm), 32–34 lateral veins (vs. 12–15), and fruits slight to moderately pubescent (vs. densely velutinous).

**Description:**—Tree, 5 m tall; hairs when present 0.1–0.4 mm, T-shaped asymmetric hairs, drying golden brownish; young branches compressed, light brown, slight to moderately pubescent; old branches not seen. Leaf blades elliptic to broadly elliptic,  $34\text{--}38 \times 17.5\text{--}18.5$  cm, coriaceous, discolorous, the upper surface glabrous, with slightly raised glandular dots not perceptible, the lower surface usually glabrous, sometimes scarcely pubescent, with slightly raised glandular dots; apex caudate, the cauda 32–42 mm; base rounded or obtuse; margin entire; midvein markedly concave and glabrous above, markedly convex and scarcely to moderately pubescent below; lateral veins 32–34 pairs, flat to



**FIGURE 15.** *Myrcia toledoana*. (A) fruiting branch, (B) inflorescence and flower buds, (C) upper view of fruit with remnants of the irregular calyx lobes, (D) cross section of fruit showing two locules and abnormally developed seeds. A, C, D from the holotype, B from the isotype. Scale bars for B and D = 1 cm, scale bar for C = 2 mm.

slightly concave and glabrous above, convex and glabrous to slightly pubescent below, venation joining in an inframarginal vein at 1.5–3.5 mm from margin; petioles 1.2–1.4 cm long, dark brown above and below, moderately pubescent, canaliculate adaxially. Inflorescences terminal, paniculate, 5 cm long, with 15–20 flowers per panicle, axes compressed, moderately pubescent, brownish orange when dry; peduncles 1 × 0.5 cm; bracts depressed ovate, 1.5 × 2 mm, moderately pubescent abaxially, slight to moderate pubescent adaxially, truncate in the base, persistent; bracteoles 2–3, axillary at base of hypanthium, lanceolate or ovate to broadly ovate, 1–4.5 × 0.6–2.2 mm, moderately pubescent; flower buds obovoid, 3.7–4.5 mm long, 2.3–3 mm in diameter, moderately pubescent, sessile or in a subcompressed pedicel 0.5–0.7 × 0.8–1.2 mm, moderately pubescent; calyx lobes fused on bud, tearing at anthesis in irregular lobes; open flowers not seen. Fruits globose, dark brown to blackish when dry, 1.2–1.7 cm in diameter, slight to moderately pubescent, sessile or pedicellate, the pedicel subcompressed, 1–1.5 × 2–2.3 mm, moderately pubescent, calyx lobes persistent in fruit 6–7, irregular in shape and size, oblong, ovate or depressed ovate, 1.2–2 × 1–3.3 mm, coriaceous, moderately pubescent outside, glabrous to scarcely pubescent inside, apex obtuse or acute, remnant staminal ring on fruit circular, 2.5–3.8 mm, scarcely to moderately pubescent; seed not seen.

**Distribution, habitat and phenology:**—*Myrcia toledoana* grows in tropical lowland forests on the eastern slopes of the Eastern Colombian cordillera at 675 m elev., in the Norte de Santander Department; it seems to be endemic to Colombia. This species has been collected with buds and fruits in January.

**Conservation:**—As *Myrcia toledoana* is only known by the type and its sole locality, I can only assessed its conservation status for now as Data Deficient, or DD, following IUCN Red List criteria (IUCN 2019).

**Etymology:**—The specific epithet of the new species refers from the type locality in the municipality of Toledo, Department of Norte de Santander, Colombia.

**Affinities:**—*Myrcia toledoana* is apparently related to *Myrcia insignis*, and the characters that differentiate both species are mentioned in the diagnosis. Although flowering specimens of *M. toledoana* were not found, characters as its T-shaped asymmetric hairs, its closed floral buds and its irregular calyx lobes on the fruit are common to a group of species formerly belonging to the genus *Marlierea*. Of the *Myrcia* species that have a close calyx that tears in irregular lobes of different sizes, it is commonly found that the number of such lobes ranges between 4–5; in *M. toledoana* the calyx tears in 6–7 irregular lobes which is uncommon among the genus.

## New combination

***Eugenia rogersiana*** (Mattos) C. Parra-O., *comb. nov.* Basionym: *Calycorectes rogersianus* Mattos, *Loefgrenia* 112: 2 (1998)

Type:—COLOMBIA. Chocó: ‘Vic. of Camp Curiche, S. of Boca Curiche’, 26 May 1967 (buds, fl.), *J. A. Duke 11678* (holotype MICH-photo!). Figure 16.

**Description:**—Shrub or tree, 2–10 m tall; hairs when present 0.2–0.8 mm, simple, straight or curly, drying golden yellow or golden brownish; young branches compressed to subcompressed, yellowish gray or vinaceous gray, slight to densely pubescent; old branches terete, yellowish gray, glabrous. Leaf blades elliptic or oblong-elliptic, 7–13 (24.5) × 3–5.5 (7.5) cm, subcoriaceous to coriaceous, usually discoloured, the upper surface glabrous, with impressed and darkish glandular dots, the lower surface usually glabrous, sometimes almost glabrous to slightly pubescent at base (young primordial leaves densely pubescent), with slightly raised and black glandular dots; apex shortly acuminate, the acumen 2.5–7 mm; base cuneate or obtuse; margin entire, sometimes moderately pubescent; midvein convex (sometimes flat in the distal 1/4) or elevated into a narrow line and glabrous above, markedly convex and usually glabrous (sometimes slight to densely pubescent in the proximal 1/5) below; lateral veins 12–17 pairs, slightly convex to convex and glabrous above, convex and glabrous below, marginal veins 2, the innermost 3–7 mm from the margin, the outermost 0.4–1 mm from the margin; petiole 8–15 mm long, light brown to blackish above and below, rugose, usually slight to densely pubescent, sometimes scarcely pubescent, slight to deeply canaliculate adaxially. Inflorescence axillary, abbreviate racemes, 0.5–1.3 cm long, with 2–5 flowers, the axes subcompressed, moderate to densely pubescent; peduncles 1–1.5 × 2–3.5 mm; bracts ovate, 1–2 × 0.8–1.2 mm, slight to moderately pubescent abaxially, glabrous to scarcely pubescent adaxially, truncate in the base, deciduous; bracteoles 1–2, axillary at base of hypanthium, oblong or broadly ovate, 1.5–2.2 × 0.5–2 mm, densely pubescent, deciduous after anthesis; flower buds obovoid, 9–13 mm long, 6–10 mm in diameter, densely pubescent, apiculate, sessile or in a subcompressed pedicel

2.5–3 × 2–2.5 mm, densely pubescent; calyx fused and tearing at anthesis in two regular lobes, the lobes widely ovate, 7–10 × 9–11 mm, subcoriaceous, densely pubescent outside, scarcely pubescent inside, apex obtuse or subobtuse, golden yellow or golden brownish outside, greenish inside (*in schedá*), the two internal calyx lobes free, ovate, ovate-oblong or oblong, 7–10 × 5–6 mm, subcoriaceous, densely pubescent outside, scarcely pubescent inside, apex obtuse or subobtuse; petals 8–10, white (*in schedá*), obovate to narrowly obovate, 9–15 × 5–8 mm, subcoriaceous, glabrous or sometimes scarcely pubescent at margin, apex obtuse, base truncate; hypanthium 4.5 mm in diameter, not prolonged above the ovary, densely pubescent outside, glabrous inside, disk semi-quadrangular, 4–6 mm, glabrous to scarcely pubescent; style 10–15 mm long, glabrous, white (*in schedá*); stamens 100–200; filaments 5–8 mm, white (*in schedá*), anthers ellipsoid, white (*in schedá*), 0.8–1.5 mm long, with 1 apical gland, 1–4 glands in the medial portion and 2–4 glands in the base; ovary 1.3 mm in diameter, 2-locular, 3–6 ovules per locule. Fruits obovoid, globose-depressed or globose, sometimes asymmetric, golden brown to brown when dry, 4–5.5 × 3.8–5.7 cm, moderate to densely pubescent; seed 2–4, globose-depressed or reniform, 1.5–2.5 × 1.5–2 cm, seed coat subcoriaceous; embryo eugenioid with minute darkish glands, with fused cotyledons and no visible hypocotyl.

**Distribution, habitat and phenology:**—*Eugenia rogersiana* seems to be endemic to Colombia; it is known from dry tropical forest, western tropical humid forests (Chocó Biogeographic Region), and montane tropical forest of Antioquia, Bolívar, Cesar, Chocó, and Santander Departments between 160–2200 m elev. *Eugenia rogersiana* has been collected with buds and flowers in February, May, July, and September, and with fruits in January, May, and from July to September.

**Conservation:**—This species has been found in different localities of five Departments in Colombia and such localities are separated by a minimum of 500 km; with an extent of occurrence (EOO) of 129,729.661 km<sup>2</sup> and an area of occupancy (AAO) of 48 km<sup>2</sup>, and known from ten localities, its conservation status is assessed as Least Concern, or LC, following IUCN Red List criteria (IUCN 2019).

**Affinities:**—The type of *Eugenia rogersiana* has the calyx closed in bud that tears at anthesis in apparently four equal lobes; such character surely led Mattos (1998) to describe this species under *Calycorectes*. Calyx closed in buds altogether with having an embryo as a solid mass have been traditionally used as diagnostic characters of the genus *Calycorectes*. Nevertheless, phylogenetic analyses have shown that this genus is nested within *Eugenia* (Mazine *et al.* 2014; Giaretta *et al.* 2019) and currently is considered as a synonym of *Eugenia* (Giaretta *et al.* 2018). *Eugenia rogersiana* was described only from the type and such specimen does not have fruits; fruiting specimens examined here have embryos as a solid mass, which allowed me to confirm its placement into *Eugenia* and to provide a redescription for this species. *Eugenia rogersiana* could be placed into *Eugenia* section *Schizocalomyrtus* (Kausel, 1966: 367) Mattos (2005: 3), a replaced name for *Eugenia* section *Calycorectes* (O. Berg) Mattos (2005: 3) *sensu* Mazine *et al.* (2016); this section has 28 accepted species (Mazine *et al.* 2016).

The type specimen of *E. rogersiana* and the specimen *Juncosa 643*, both from the western tropical humid forests, have moderate to deeply canaliculate and scarcely pubescent petioles, compared to the slightly canaliculate and slight to densely pubescent petioles of the specimens from dry and montane tropical forests of Antioquia, Bolívar, and Santander Departments. Hairs density on this species varies frequently in young leaves (usually moderate to densely pubescent) vs. its adult leaves (almost glabrous to slightly pubescent). As few (and possible continuous) differences have been seen between the populations of the dry and montane tropical forests against the populations of the western tropical humid forests, and the sampling of the western tropical humid forest populations is scarce, I consider that there are not enough differences for separating these populations into two different taxonomic entities.

Floral buds of *E. rogersiana* are completely fused (Figure 16 A) and they tear in two regular lobes (two external calyx lobes, Figure 16 B); the other two calyx lobes are internal, free, and they are evident after the opening of the bud (Figure 16 B–C). If floral buds at tearing state are not available in a specimen and only its mature flowers can be examined, it looks like the initial tearing of the flower bud produced four calyx lobes (Figure 16 D), which is not the case. Floral buds opening patterns where tearing from two lobes have been described in *Eugenia* by Giaretta *et al.* (2019) and floral buds of *E. rogersiana* seems to follow their ‘Petaloid’ pattern, although in this species the floral bud seems to be completely closed and there are not evident remains of vestigial lobes at the apex, at least in the examined specimens.

Petals in *E. rogersiana* could be eight (Figure 16 B–C) or up to 10 as I found after dissecting mature buds of *Zapata 87* (COL). It has been found that other undescribed *Eugenia* species from Colombia seems to have more than the usual four petals that are common in *Eugenia* (R. Flores, personal communication). Also, McVaugh (1969) reported at least three *Calycorectes* species with six petals among the Myrtaceae that grows on the Guayana Highland. A new species described in this paper (*Eugenia cherimolioides*) has also, in some flowers, 5–6 petals.



**FIGURE 16.** *Eugenia rogersiana*. (A) floral buds (*L. Buelvas, Antioquia, without voucher*), (B) floral bud and flower (*D. Zapata-C. & W. Ariza-C. 2348*), (C) floral bud and flower (*L. Buelvas, Antioquia, without voucher*), (D) flower after anthesis without petals and stamens (*Sánchez-Gómez et al. 661*), (E) fruiting branch with immature fruits (*J. Jiménez & V. Guzmán 1929*), (F) fruit (*Sánchez-Gómez et al. 661*). Photos: *L. Buelvas* (A and C); *D. Zapata-C.* (B); *J. Vélez* (D and F); *J. Jiménez* (E). Scale bar for A–D = 5 mm; scale bar from E = 5 cm, scale bar from F = 2 cm.

**Specimens examined:**—COLOMBIA. Antioquia: Ituango, vereda San Juan de Rodas, 7.153187N, 75.6922W, 1386 m, 14 May 2015 (fr.), *A. Caro, J. Giraldo, E. Arroyave, G. Holguín, Y. Sierra & M. Piedrahita 289* (MEDEL!); Sabanalarga, “cerca al valle de Niquía”, 6.85938N, 75.83758W, 523 m, 23 August 2017 (fr.), *J. Jiménez et al. 1880* (COL!, HUA!); Sabanalarga, “bajando al río Cauca, cerca al valle de Niquía”, 6.85938N, 75.83758W, 523 m, 30 September 2017 (fr.), *J. Jiménez & V. Guzmán 1929* (COL!, HUA!); Sabanalarga, “Llanos de Niquía”, 6°51'33.7"N, 75°50'15.3"W, 523 m, 30 September 2017 (fr.), *J. Jiménez & V. Guzmán 2073* (HUA!); Santa Fé de Antioquia, vereda La Noque, “finca El Morro”, 6,25149N, 75,51521W, 544-1200 m, July 2011 (fl., fr.), *J. Sánchez-Gómez, J.*



*Restrepo-Cañola*, M. Peña & C. Palacios 658 (MEDEL!), *ibidem*, 544-1200 m, July 2011 (fl., fr.), J. Sánchez-Gómez, J. Restrepo-Cañola, M. Peña & C. Palacios 661 (COL!, MEDEL!); Santafé de Antioquia, vereda Obregón, “km 60-62 vía que conduce de Santafé de Antioquia a Bolombolo, quebrada La Barahona”, 6°25'07.55"N, 75°49'22.31"W, 594 m, 6 May 2013 (buds, fl.), D. Zapata 87 (COL!, JAUM!); Santafé de Antioquia, vereda Obregón, “km 1 vía que conduce de Santafé de Antioquia a Caicedo”, 6°27'07.10"N, 75°50'01.29"W, 673 m, 31 August 2013 (fr.), D. Zapata 147 (COL!, JAUM!); *ibidem*; “quebrada La Juanes”, 6°28'16.32"N, 75°50'51.10"W, 585 m, 28 February 2014 (fl.), D. Zapata 394 (JAUM!); Santafé de Antioquia, vereda Cañaveral, “sector La Barahona”, 6°26'0.94"N, 75°49'21.26"W, 543 m, 12 July 2020 (buds, fl.), D. Zapata-C. & W. Ariza-C. 2348 (COL!, JAUM, FMB, UDBC); Concordia, Puente Piedra, 6°02'N, 75°55', 2200 m, 19 September 2007 (buds, fl.), *estudiantes herbario MEDEL* 946 (MEDEL!). Bolívar: San Pablo, vereda Cañabraval Bajo, “bosque de los Barriles”, 7°26'09"N, 73°58'28.9"W, 160 m, 15 September 2010 (fl.), A. Cogollo, N. López, C. Alcázar & W. Ramírez 12641 (JAUM!). Cesar: La Jagua de Ibirico, “corregimiento La Victoria de San Isidro, caño Canime”, 9°34'22.1"N, 73°16'45.75"W, 180 m, 5 September 2007 (fr.), C. Velásquez-Rua & D. López 5544 (HUA!). Chocó: “East side of Serrania del Darien, approached from Acandí”, 8°30'N, 77°20'W, 350 m, 14 January 1983 (fr.), A. Juncosa 643 (CHOCO!, JAUM!, MO!). Santander: Rionegro, corregimiento de Bocas, “antigua vía férrea, desembocadura de la quebrada de la Honda en el Río de Oro”, 07°14'10.2"N, 73°14'10.2"W, 371 m, 29 September 2013 (fr.), A. Dueñas, M. González & S. Medina 3275 (COL!, FMB!).

## New records

*Calyptanthes orientalis* B. Holst & M. L. Kawasaki (in Kawasaki *et al.* 2019: 43)

Recently described of eastern lowlands of Ecuador (Kawasaki *et al.* 2019), one of the northernmost localities reported for this species in Ecuador is in Sucumbíos (*Andrade* 33045 (AAU, QCA)), which is very close to the border between Ecuador and Colombia. To date, in Colombia this species has been found only in Amazonian forests of the Caquetá Department, near to the Caquetá river.

Specimens examined:—COLOMBIA. Caquetá: Solano, “vereda Potreros, laguna Potreros, caño La Magiña”, 0°50'37.7"N, 75°15'26.1"W, 210 m, 12 September 2007 (buds, fl.), W. Trujillo-C. & G. Vásquez 616 (COAH!, HUAZ!).

*Eugenia pachystachya* McVaugh (1969: 197)

Native to Venezuela (Holst 2003a) and Brasil (Sobral *et al.* 2010), in Colombia this species grows in forests associated to blackwater rivers in the border with Venezuela.

Specimens examined:—COLOMBIA. Vichada: Cumaribo, “Inspección de Policía de Amanavén, caño Jota”, 4°10'0.6"N, 67°47'1.5"W, s.a., 07 July 2008 (fl.), D. Cárdenas *et al.* 21574 (COAH!).

*Myrcia amazonica* De Candolle (1828: 250)

Native to Mesoamerica, Antilles, Venezuela, Guyana, Suriname, Brazil, and Bolivia (Holst 2003b; Holst & Kawasaki 2009), this species grows in natural white-sand savannas of the Guainía Department in Colombia.

Specimens examined:—COLOMBIA. Guainía: Inírida, “cuenca del río Inírida, caserío de Huesito, carretera Huesito El pato, Km 5 hasta el Km 7”, 3°51'15.0"N, 67°53'28"W, s.a., 24 March 2005 (buds, fl.), R. López & F. Arenas 10223 (COL!, UDBC!).

*Myrcia maraana* Sobral & M. A. D. Souza (2015: 222)

Previously known only from Brazil (Sobral & Souza 2015), this specimen represents a new record for Colombian Amazonia; it grows in seasonally flooded forests near Caquetá, Vaupés and Inírida rivers, in the Araracuara region and in the Alto Vaupés region.

Specimens examined:—COLOMBIA. Amazonas: “río Caquetá, Araracuara, Villazul, margen derecho del río Caquetá, frente a Villazul”, 29 January 1992 (fr.), J. Murillo & R. Paki 37 (COAH!). Vaupés: “Río Vaupés, alto Vaupés, alrededores de Miraflores”, 300 m, 3 January 1944 (fr.), G. Gutiérrez & R. Schultes 492 (MEDEL!), *ibidem*, 6 January 1944 (fl.), G. Gutiérrez & R. Schultes 526 (MEDEL!); “riberas del río Inírida, alrededores del sitio llamado ‘Morichal’, cerca de la boca del río Papunáua”, 200 m, 14 February 1953 (fr.), A. Fernández 2258 (COL!).

*Syzygium samarangense* (Blume 1826: 1084) Merrill & L. M. Perry (1938: 115)

Native from Southeast Asia (Barrie 2009), this species has been widely cultivated in the tropics (Chantaranotai & Parnell 1994). In Colombia *S. samarangense* is cultivated as ornamental tree mainly in cities of the Caribbean region, between 28–1475 m elev., and it has been misidentified as *Eugenia uvalha* Cambessèdes (Cambessèdes 1832–1833: 367) (= *Eugenia pyriformis* Cambessèdes, 1832–1833: 336), a species widely cultivated in southern Brazil (Lorenzi *et al.* 2015).

Specimens examined:—COLOMBIA. Antioquia: Itagüí, “parque recreativo Ditaires”, 1670 m, Mar 1999 (fr.), *A. Ospina 6* (MEDEL!); Medellín, “El Poblado”, 1475 m, 04 Jul 1983 (buds, fr.), *A. Pérez 118* (HUA!). Atlántico: Barranquilla, “barrio José Antonio Galán”, 50 m, 8 October 2012 (buds, fl.), *G. Yaruro & A. Fonseca 1* (COL!). Córdoba: Montería, “Universidad de Córdoba, campus central de la Universidad de Córdoba”, 8°47’32,9” N; 75°51’47,0” W; 28 m, 21 May 2015 (buds, fl.), *C. Parra-O. & H. Saab 845* (COL!, HUA!, HUC!, UTMCI!). Magdalena: Ciénaga, 01 October 1949 (fl.), *M. de Romero 118* (COL!), *ibidem*, 2 Sep 1949 (fr.), *M. de Romero 48* (MEDEL!). Santander: Floridablanca, “Jardín Botánico Eloy Valenzuela”, s.a., 28 Sep 1987 (buds), *J. Brand & A. Pérez 1616* (JAUM!, UIS!); *ibidem*, 980 m, 20 Sep 2011 (fr.), *A. Rojas & E. Almeyda 334* (CDMB!).

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