

## NEW SPECIES OF *CALYPTRANTHES* AND *MYRCIA* (MYRTACEAE) FROM CENTRAL AMERICA

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**ABSTRACT.** In preparation for the treatment of *Calyptranthes* and *Myrcia* (Myrtaceae) for the *Flora Mesoamericana*, nine new species have been recognized and are here described and illustrated: *Calyptranthes elliptica*, *C. jefensis*, *C. longicalyptrata*, *C. macrocarpa*, *C. microphylla*, *Myrcia concinna*, *M. fusca*, *M. lapidulosa*, and *M. panamensis*.

**Key words:** *Calyptranthes*, Central America, Colombia, *Myrcia*, Myrtaceae

### INTRODUCTION

Central American Myrtaceae have been studied relatively poorly, but they form an important ecological component of many forests. The works of G.J.H. Amshoff (1951, 1958) in Panama, C.L. Lundell (1961, 1964, 1968, 1975) in Guatemala and Belize, and Rogers McVaugh (1963a, 1963b) in Guatemala have laid the modern foundation for this and future studies. As a result of the *Flora Mesoamericana* project, the number of known species is being increased dramatically, largely because of more intensive and prolonged exploration in southern Central America, particularly Panama.

The new species of *Myrcia* and *Calyptranthes* described here, and the new species of *Plinia* and *Eugenia* being described by Fred Barrie (Missouri Botanical Garden), increase the number of known species in Mesoamerica by 52 species. Identification keys to all of these species will be published in volume 4 of the *Flora Mesoamericana*.

### NEW SPECIES

#### *Calyptranthes* Sw.

***Calyptranthes elliptica*** B. Holst & Kawasaki, sp. nov. TYPE: Panama. Panamá: Cerro Jefe, 12 km E of Goofy Lake (Cerro Azul Village), 800–1000 m, 5 Jan. 1975 (bud), A. Gentry & S. Mori 13451 (holotype: MO; isotypes: MICH, SEL). FIGURE 1.

*Calyptranthes johnstonii* McVaugh affinis, sed distincta: alabastris obtusiusculis breviter apiculatis (nec cornutis) et inflorescentiis paniculatis (nec spicatis).

**Trees** 4–10 m high, to ca. 25 cm diam., the branchlets terete; trichomes reddish-brown. **Leaf blades** 4–9.4 × 3.1–7 cm, broadly elliptic to elliptic, chartaceous, drying olive-green, the lower surface yellowish-green; upper surface glabrous, the lower surface sparsely pubescent, glabrescent, the trichomes especially on the midvein; glands punctiform, convex on both surfaces; midvein impressed on the upper surface; lateral veins numerous pairs, scarcely evident on both surfaces; marginal vein 1, scarcely evident, almost parallel to the margin, ca. 1 mm from it; base obtuse; apex abruptly acuminate; petioles 4–6 mm long, channeled, tomentose. **Panicles** to 4 cm long, pauciflorous, the branches tomentose; bracts unknown, deciduous; bracteoles ca. 2 mm long, ovate, deciduous; very young buds 2–3 mm long, tomentose; calyptra ca. 1.5 mm wide, shortly apiculate; petals absent; stamens to 2 mm long; style ca. 2 mm long. **Fruits** unknown.

**Distribution.** Roadside and forests, (200–)760–1000 m elevation; Panama.

**Paratypes.** PANAMA. **DARIEN:** Between Paya and Palo de las Letras, 30 Aug. 1967 (imm. fr), J.A. Duke & J.H. Kirkbride 14027 (MO). **PANAMÁ:** Cerro Jefe region, roadside and forest, 200–800 m, 30 Sep. 1978 (bud), B. Hammel 4870 (MO, SEL); Altos del Río Pacora, 760 m, 9 Jun. 1967 (fr), W. Lewis et al. 2308 (MO).

*Calyptranthes elliptica* differs from *Calyptranthes johnstonii* McVaugh by having shortly apiculate calyptra (vs. pronounced and elongate)

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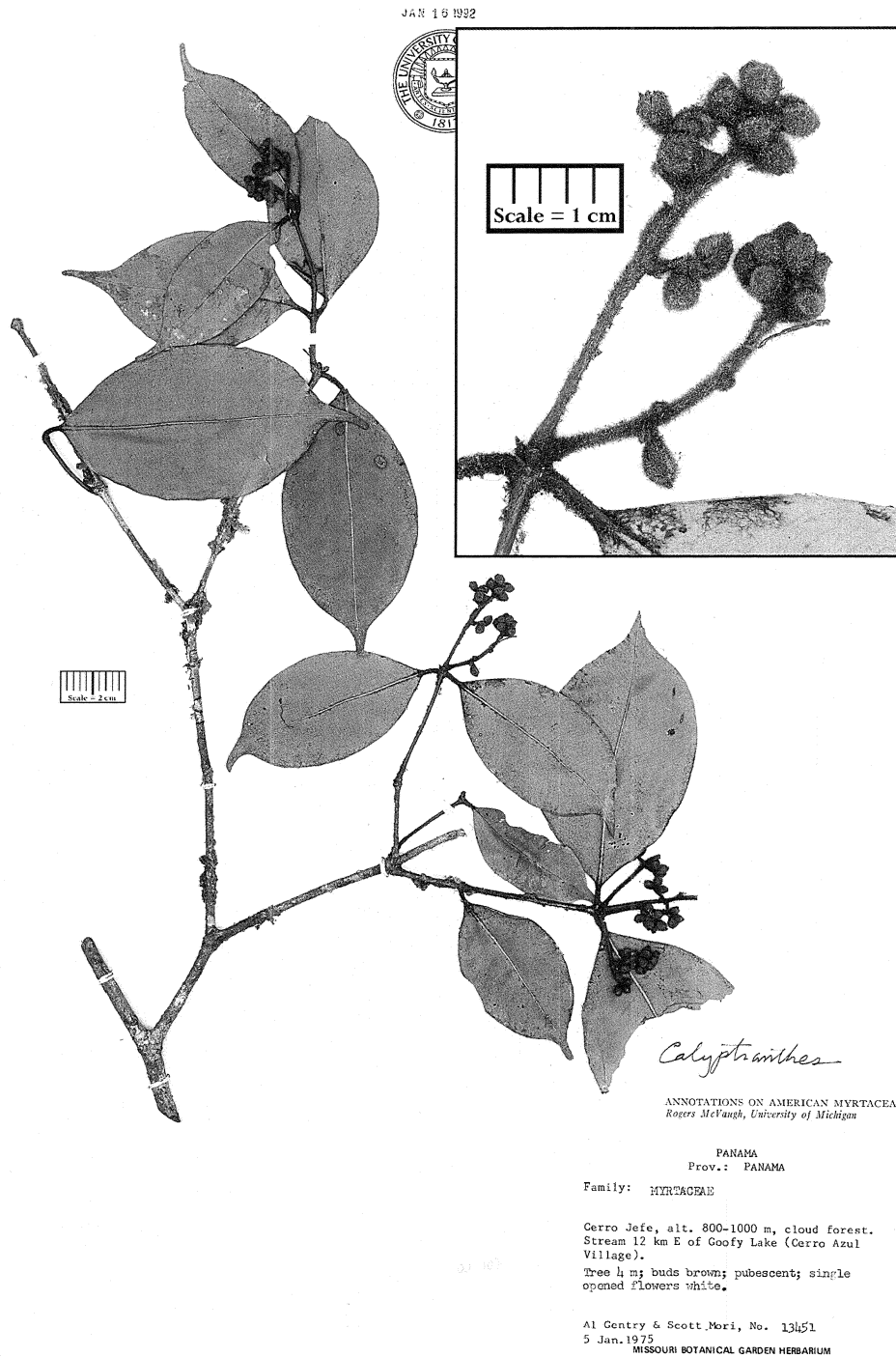


FIGURE 1. *Calypttranthes elliptica*. Habit and flower buds (inset), (digital scan of Gentry & Mori 13451, MICH).

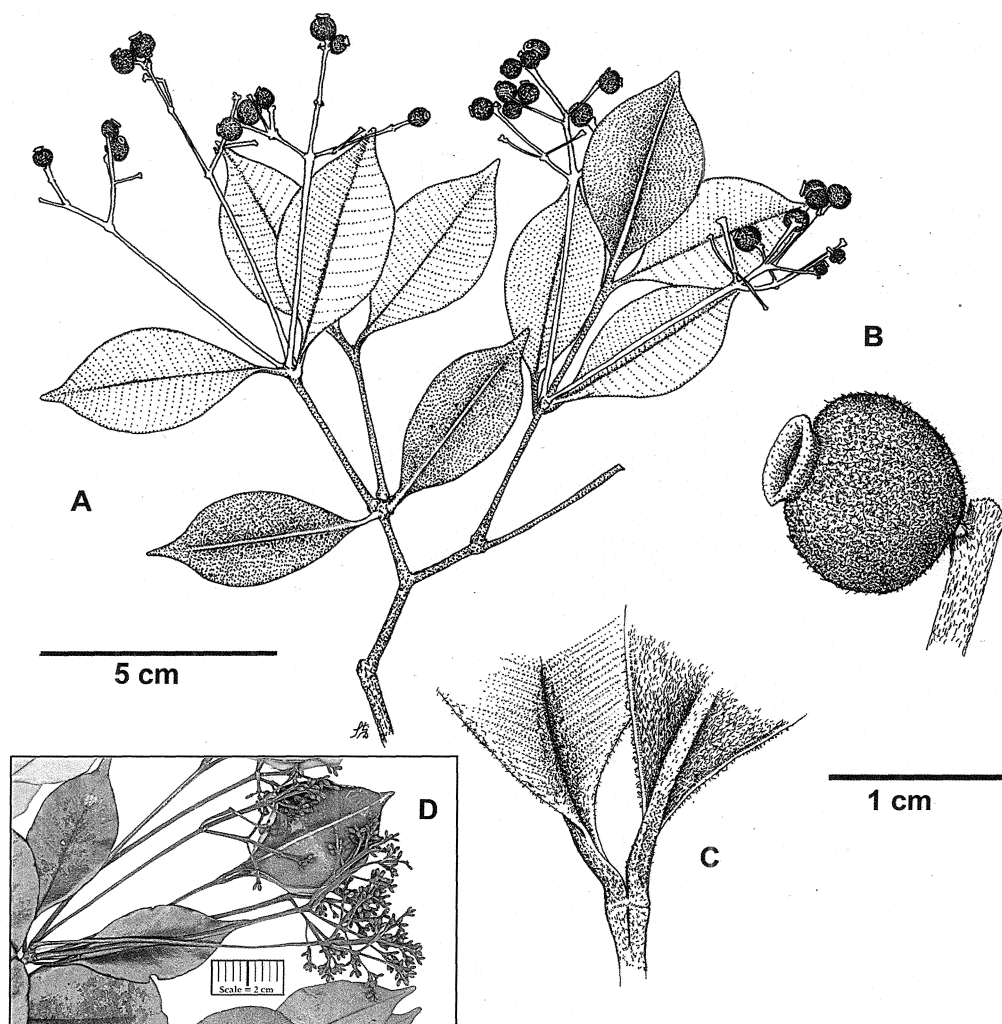


FIGURE 2. *Calyptranthes jefensis*. A. Habit. B. Fruit. C. Detail of leaf bases (drawn from McPherson 9971, MO and 15859, MO). D. Flowers in bud (digital scan from Duke 8157, MO).

and the inflorescences mostly spicate (vs. amply branched).

***Calyptranthes jefensis*** B. Holst & Kawasaki, sp. nov. TYPE: Panama. Panamá: Cerro Jefe, 26 Apr. 1966 (bud), J.A. Duke 8157 (holotype: MO; isotype: PMA). FIGURE 2.

Haec species a congeneris omnibus foliis brevibus coriaceis, adpresso-, ferrugineo-pubescentibus, inflorescentia dense ferrugineo-pubescenti et pedunculis inflorescentia longioribus distinguitur.

**Tree** 5–7 m high, the branchlets terete; trichomes reddish-brown. **Leaf blades** 3–6 × 1.5–3.8 cm, elliptic or obovate, coriaceous, smooth above, drying brownish above, reddish-brown below; upper surface puberulous, the lower sur-

face densely appressed-pubescent, glabrescent; glands indistinct on both surfaces or impressed above; midvein impressed on the upper surface; lateral veins numerous pairs, almost indistinct on both surfaces; marginal vein 1, very slightly salient, parallel to the margin, ca. 1 mm from it; base cuneate; apex acute to shortly and abruptly acuminate; petioles 4–7 mm long, channeled, black, pubescent. **Panicles** to 11 cm long, terminal or subterminal, densely appressed-pubescent, glabrescent; peduncles relatively long, greater than ½ the length of the entire inflorescence; bracts ca. 1 mm long, broadly ovate, bracteoles not known. **Flower buds** 2–3 mm long, obovoid, calyptra evenly rounded; petals, stamens, and style unknown. **Fruits** 8–9 mm

diam., globose to oblate, pubescent to puberulous; seeds ca. 4 mm long, the cotyledons contortuplicate, the hypocotyl elongate.

**Distribution.** Forested slopes, 850–920 m elevation; Panama.

**Paratypes.** PANAMA. PANAMÁ: Cerro Jefe region, ca. 9°15'N, 79°30'W, ca. 850 m, forest near summit, 24 Aug. 1986 (fr), *G. McPherson* 9971 (MO, SEL); Cerro Jefe region, 9°15'N, 79°30'W, 850 m, along new small road S of road to Alto Pacora, forested slopes, 10 Oct. 1992 (fr), *G. McPherson & M. Richardson* 15859 (MO, SEL); Cerro Jefe, in *Clusia* forest, 27 Jan. 1966 (fr), *E. Tyson et al.* 3278 (MO).

*Calyptranthes jefensis* is distinguished by the coriaceous leaves with nearly imperceptible venation, dense ferruginous pubescence on the lower surface of the leaves and inflorescence, and the relatively long peduncles (exceeding the length of the fertile portion of the inflorescence). The species name refers to the mountain, Cerro Jefe, where many new species have been discovered in the past 20 years.

**Calyptranthes longicalyptrata** B. Holst & Kawasaki, sp. nov. TYPE: Panama. San Blas: El Llano-Cartí road, km 26.5, trail to Río Cartí Chico and up ridge on E side, 200 m, along river, 7 Apr. 1985 (fl), *G. de Nevers, G. Schatz, H. Herrera & S. Charnley* 5233 (holotype: MO; isotype: SEL). FIGURE 3.

Haec species a congeneris omnibus foliis relative magnis, inflorescentia laxo-ramosa et calyptra longa, conica distinguitur.

**Trees** 5–10 m high, the branchlets terete; trichomes reddish to yellowish. **Leaf blades** 22–30 × 5.3–9.3 cm, lanceolate, chartaceous, drying brownish above, reddish-brown or olive-green below; both surfaces puberulous, glabrescent; glands indistinct or impressed above, convex below; midvein impressed on the upper surface; lateral veins 20–25 pairs, plane to slightly salient above, salient below; marginal veins 2, similar to the lateral veins, almost parallel to the margin, the innermost 3–7 mm from it; base subcordate to cordate; apex acuminate; petioles 3–5 mm long, channeled, puberulous. **Panicles** 16–27 cm long, pauciflorous, terminal or subterminal, the branches strigose, glabrescent; bracts to 20 mm long, lanceolate, late deciduous; bracteoles ca. 3 mm long, linear, deciduous; buds ca. 8 mm long, strigose, glabrescent; calyptra ca. 3 mm wide, acuminate to rostrate; petals ca. 2 mm long; ovary 2-locular, ovules 2 per locule; stamens ca. 7 mm long; style ca. 7 mm long. **Fruits** ca. 1.3–1.5 cm diam., globose or oblate, glabrescent, glandular; seeds to 10 mm

long, cotyledons contortuplicate, hypocotyl elongate.

**Distribution.** Premontane wet forests, along rivers, 130–350 m elevation; Panama.

**Paratypes.** PANAMA. SAN BLAS: El Llano-Cartí road, 19 km from Inter-American Hwy., 9°19'N, 78°55'W, 130–350 m, ridge down to creek on Atlantic side, 4 Sep. 1984 (fl, fr), *G. de Nevers & R. Herman* 3835 (MO, SEL); El Llano-Cartí road, km 26 at 200 m, premontane wet forest, 9 Mar. 1985 (fl, fr), *G. de Nevers et al.* 5061 (MO, SEL).

*Calyptranthes longicalyptrata* is distinguished by the relatively large leaves and the pronouncedly elongate calyptra, from whence the species name is derived. It can be differentiated from the vegetatively similar *C. chiapensis* Lundell of southern Mexico by its longer inflorescences (16–27 cm long vs. 6.5–13 cm) and elongate flower buds (ca. 8 mm long vs. 3–4 mm) resulting from the tall-conical calyptra.

**Calyptranthes macrocarpa** B. Holst & Kawasaki, sp. nov. TYPE: Panama. San Blas: El Llano-Cartí road, 9.5 km north of Pan-American Highway, along trail west of road, 9°15'N, 79°00'W, 200–300 m, 9 Apr. 1987 (fr), *G. McPherson* 10819 (holotype: MO; isotype: SEL). FIGURE 4.

*Calyptranthes forsteri* O. Berg affinis, sed distincta: fructibus majoribus (3.5–4 cm diam. vs. 1–2 cm diam.).

**Trees** 6–12 m high, the branchlets terete; trichomes yellowish. **Leaf blades** 11–22 × 4.5–9 cm, narrowly elliptic, chartaceous to coriaceous, drying olive- to gray-green, paler below; upper and lower surfaces glabrous; glands barely impressed above, indistinct or convex below; midvein biconvex on the upper surface; lateral veins 15–20 pairs, slightly salient on both surfaces; marginal veins 2, scarcely evident, almost parallel to the margin, the innermost 1–4 mm from it; base cuneate to obtuse; apex acuminate; petioles 5–15 mm long, channeled, black, glabrous. **Panicles** to 8 cm long, the branches strigose; bracts not seen, deciduous; bracteoles ca. 1 mm long, ovate, deciduous; buds ca. 8 mm long, pubescent, glabrescent, the hypanthium strigose; calyptra ca. 5 mm wide, apiculate; petals, ovary, stamens, and style not seen. **Fruits** 3.5–4 cm diam., glabrous; seeds ca. 20 mm long, the cotyledons contortuplicate, the hypocotyl elongate.

**Distribution.** Wet forests, 50–300 m elevation; Panama and Colombia.

**Paratypes.** PANAMA. SAN BLAS: El Llano-Cartí road, km 19.1, tropical wet forest, 18 Jun. 1986 (old fl), *G. de Nevers & H. Herrera* 7934

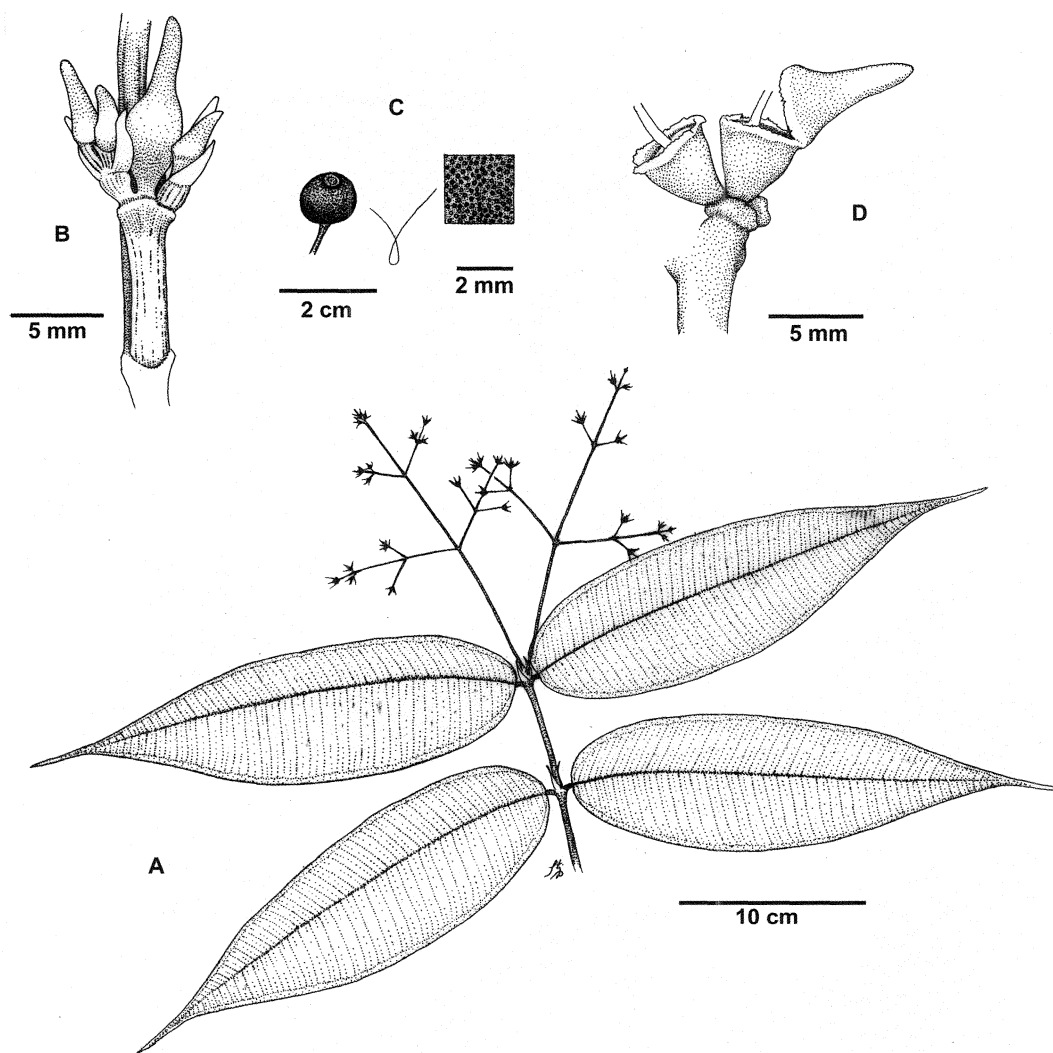


FIGURE 3. *Calypttranthes longicalyptrata*. A. Habit. B. Inflorescence branch. C. Fruit with surface detail. D. Flowers (drawn from *de Nevers et al.* 5233, SEL).

(MO, SEL); El Llano-Cartí road, NW of Nusagandi on Dendero Wedar, 150–250 m, 18 Jun. 1987 (fr), *G. McPherson* 11056 (MO, SEL). COLOMBIA. CHOCÓ: Hoya del Río San Juan, Río Fujiadó, afluente del Río San Juan, 4°36'N, 76°54'W, 7 Apr. 1979 (fr), *E. Forero et al.* 4783 (MO); trail from Tutunendo-Quibdó road to Tubadó, ca. 14 km NE of Quibdó, 90 m, 19 Jan. 1979 (sterile), *A. Gentry & E. Renteria* A. 24468 (MO); Quibdó Road ca. 3 km W of Tutunendo, pluvial forest, 80 m, 5°46'N, 76°35'W, 6 Jan. 1981 (sterile), *A. Gentry et al.* 30224 (MO).

*Calypttranthes macrocarpa*, *C. forsteri* O. Berg, and *C. nigrescens* B. Holst from the Am-

azon and Orinoco River basins have markedly convex, broad midveins and glabrous to strigose, few-flowered inflorescences. *Calypttranthes macrocarpa* can be distinguished by having fruits up to twice as large as the other species.

The following sterile collection from Valle, Colombia may represent this species, but has more heavily coriaceous leaves that are markedly revolute.

Colombia. Valle: Bajo Calima, ca. 10 km due N of Buenaventura, Cartón de Colombia concession, transition between tropical wet and pluvial forest, ca. 50 m, 3°56'N, 77°08'W, 1982 (sterile), *H. Mazuero* 50 (MO).



FIGURE 4. *Calyptranthes macrocarpa*. Habit (digital scan from *McPherson 10819*, SEL).

***Calyptranthes microphylla*** B. Holst & Kawasaki, sp. nov. TYPE: Panama. Panamá: Cerro Jefe, forest along road curling around summit, 09°15'N, 79°30'W, 950 m, 14 Mar. 1987 (bud, fl), *G. McPherson 10628* (holotype: MO; isotype: SEL). FIGURE 5.

Frutex vel arbor. Folia parva, rhombica, elliptica vel obovata; nervo medio supra sulcato; apice obtusiuscule. Inflorescentia 1(–3) flora; alabastra ochraceo-puberula, breviter apiculata. Bacca globosa, glabra.

**Shrub** wiry 1.5–3 m high, the branchlets bicarinate, winged; trichomes reddish-brown. **Leaf blades** 0.8–1.8 × 0.5–1 cm, rhomboidal, broadly elliptic to elliptic, or obovate, chartaceous, drying olive- to gray-green, paler below; upper and lower surfaces glabrous; glands punctiform, impressed above, convex below; midvein impressed on the upper surface; lateral and marginal veins indistinct on both surfaces; base cuneate to obtuse; apex obtuse to acute; petioles ca. 1 mm long, channeled, glabrous. **Panicles** reduced to 1(3) per flower, the peduncle 7 mm long or less, glabrous; bracts and bracteoles not seen, deciduous; buds ca. 1.5–2 mm long, puberulous to glabrous; calyptra ca. 1 mm wide, apiculate; petals absent; ovary 2-locular, ovules 2 per locule; stamens 2–3 mm long; style ca. 2 mm long. **Fruit** ca. 0.5 cm diam., globose, glabrous, glandular, red-orange (fide *Hamilton 596*) but probably maturing to purple-black; seeds not seen.

**Distribution.** Wet forested slopes, 800–1000 m elevation; Panama.

**Paratypes.** PANAMA. PANAMÁ: On the road to Cerro Jefe, ca. 500 m from the top, 6 May 1994 (fl, fr), *M.D. Correa A. et al. 10495* (PMA, SEL); Cerro Jefe, beside radio tower, 900 m, 27 Jun. 1984 (fl), *W.G. D'Arcy et al. 15509* (MO); Cerro Jefe, 21 km north of Pan-American Highway, on road to summit, 7 Jul. 1977 (fl), *J.P. Folsom & H. Butcher 4175* (MO, SEL); Cerro Jefe, 800–1000 m, 9°15'N, 79°20'W, 15 Aug. 1982 (fr), *C. Hamilton & W.G. D'Arcy 596* (MO); Cerro Jefe near radio tower, ca. 950 m, 0°15'N, 79°30'W, 11 Oct. 1985 (bud, fr), *G. McPherson 7136* (MO); near Cerro Jefe, along road towards Alto Pacora, ca. 850 m, 9°15'N, 79°30'W, 27 Dec. 1985 (fr), *G. McPherson 7886* (MO); road to Altos de Pacora, near schoolhouse, 8 Oct. 1974 (fl, fr), *S. Mori & J. Kallunki 2355* (MO, SEL).

One of the smallest-leaved species of *Calyptranthes* known, *C. microphylla* belongs to a group of largely Amazonian/Orinocan and southern Central American species with noticeably winged stems, few-flowered inflorescences, and impressed-punctate glands on the upper sur-

face of the leaf blades (e.g., *C. hylobates* Standl. ex Amshoff, *C. bipennis* O. Berg). The small, rhombic leaves of *C. microphylla* distinguish it from the others in this complex.

### *Myrcia* DC.

***Myrcia concinna*** B. Holst & Kawasaki, sp. nov. TYPE: Panama. Panamá: Cerro Jefe, 850–900 m, 29 Oct. 1980 (fl), *K. Sytsma 1974* (holotype: MO; isotype: SEL). FIGURE 6.

Haec species a congeneris omnibus foliis brevis, breviter petiolatis, cordatis, venis lateralibus paucis, supra impressis; inflorescentiis laxis, hirsutulis et alabastris relative magnis distinguitur.

**Shrub or tree** 3–7 m high; trichomes yellowish to yellowish white. **Leaf blades** 3–7.5 × 1.7–3.5 cm, ovate to narrowly ovate, chartaceous to coriaceous, impressed-reticulate above, drying reddish brown to brown; upper surface puberulous to glabrous, the trichomes especially on the veins, the lower surface pubescent; glands indistinct on both surfaces; midvein impressed on the upper surface; lateral veins 7–10 pairs, strongly impressed above; marginal vein 1, impressed, arched, ca. 1 mm from the margin; base cordate to subcordate; apex abruptly acuminate; petioles 1–2 mm long, nearly terete, densely pubescent. **Inflorescences** panicles 3–7 cm long, axillary or terminal, the branches opposite, hirsute, the bracts deciduous before or at anthesis; bracteoles ca. 2 mm long, ovate, deciduous. **Flowers** 5-merous; buds ca. 3 mm long, densely hirsute on the hypanthium, sessile to shortly pedicellate; calyx-lobes ca. 2 mm long, broadly ovate, obtuse, sericeous; petals ca. 2 mm long, densely sericeous without; disk ca. 3 mm wide, hirsute; ovary 2-locular, ovules 2 per locule; stamens 3–4 mm long; style ca. 4 mm long, densely hirsute in the lower half. **Fruits** ca. 1.5 cm long, ellipsoid, puberulous, glandular; seeds ca. 8 mm long, the cotyledons contortuplicate, the hypocotyl elongate.

**Distribution.** Cloud forests, wooded slopes, 50–1000 m elevation; Panama.

*Myrcia concinna*, a distinct species in *Myrcia* sect. *Myrcia*, is recognized by the small, shortly petiolate, cordate leaves and few secondary veins impressed above, the relatively large flower buds, and the lax, hirsutulous inflorescences.

**Paratypes.** PANAMA. PANAMÁ: Cerro Jefe, 1000 m, 3 Oct. 1969 (bud), *M. Correa et al. 1611* (F, MO); Región de Cerro Jefe, ca. 1000 m, 9°14'35"N, 79°22'30"W, 31 Jan. 1995 (fr), *C. Galdames & C. Guerra 1956* (SEL); slopes of Cerro Jefe beyond Cerro Azul between 4–8 miles, 25 Jan. 1970 (fr), *R.L. Wilbur & R.E.*

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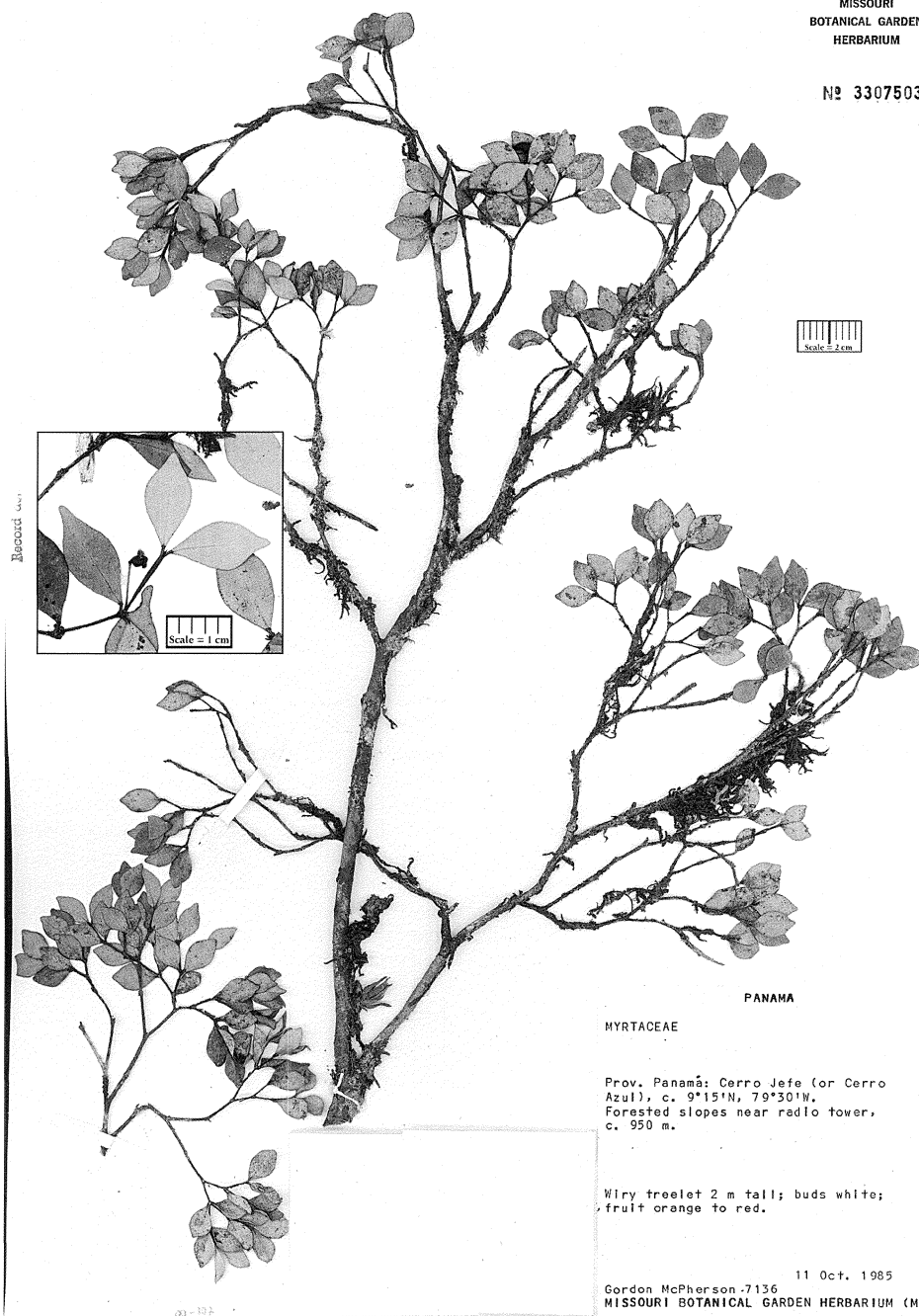


FIGURE 5. *Calyptranthes microphylla*. Habit (digital scan of McPherson 7136, MO) and flower (inset a digital scan from McPherson 7886, MO).

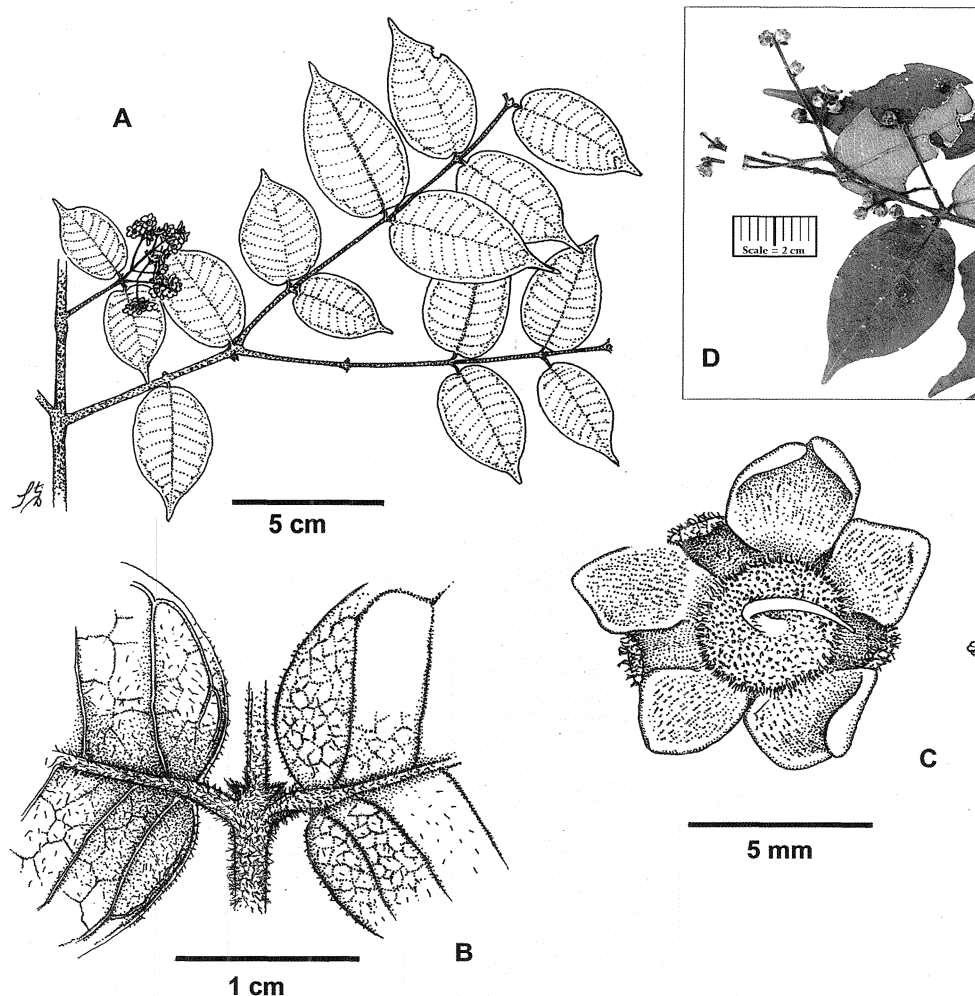


FIGURE 6. *Myrcia concinna*. A. Habit. B. Detail of leaf bases. C. Flower and stamen (drawn from Sytsma 1974, MO). D. Flowering branch (digital scan from Correa et al. 1611, MO).

Weaver 11383 (F, MO). **SAN BLAS:** Caminando por el Río Diablo y luego subiendo por la Quebrada hacia el Sur, hacia la cordillera de Cerro IBEDON (Cerro Ebitan en al mapa), 9°22'N, 78°34'W, 50–200 m, 10 Dec. 1993 (fr), H. Herrera et al. 1463 (MO, SEL).

A collection with fruits from San Blas, Panama (Herrera et al. 1752, MO, SEL) at 0–40 m elevation is similar to this species, but has larger leaves (to 10 × 4.5 cm) with large, translucent glands.

***Myrcia fusca*** B. Holst & Kawasaki, sp. nov.

**TYPE:** Panama. Panamá: El Llano-Cartí Road, 9.6–11 km from Inter-American Hwy., 335–365 m, 4 Dec. 1974 (bud), S. Mori & J. Kallunki 3514 (holotype: MO; isotypes: MICH, PMA, SEL). **FIGURE 7.**

*Marlierea umbraticola* (Kunth) O. Berg et *M. squarrosa* McVaugh affinis, sed distincta foliis subsessilibus et impresso venosis.

**Shrub or tree** 1.5–10 m high; trichomes reddish brown, fading to yellowish brown to whitish. **Leaf blades** 10–17 × 3.5–8.5 cm, ovate, broadly to narrowly elliptic, to obovate, coriaceous, drying dark reddish brown; upper surface puberulous, the lower surface puberulous, pubescent on the veins; glands indistinct above, dark and sparse below; midvein impressed on the upper surface; lateral veins 12–17 pairs, impressed above, salient below; marginal veins 2, the innermost impressed, arched, ca. 2–5 mm from the margin; base cordate to subcordate; apex abruptly acuminate; petioles 1–2 mm long, channeled, coarsely sericeous, older ones thick-

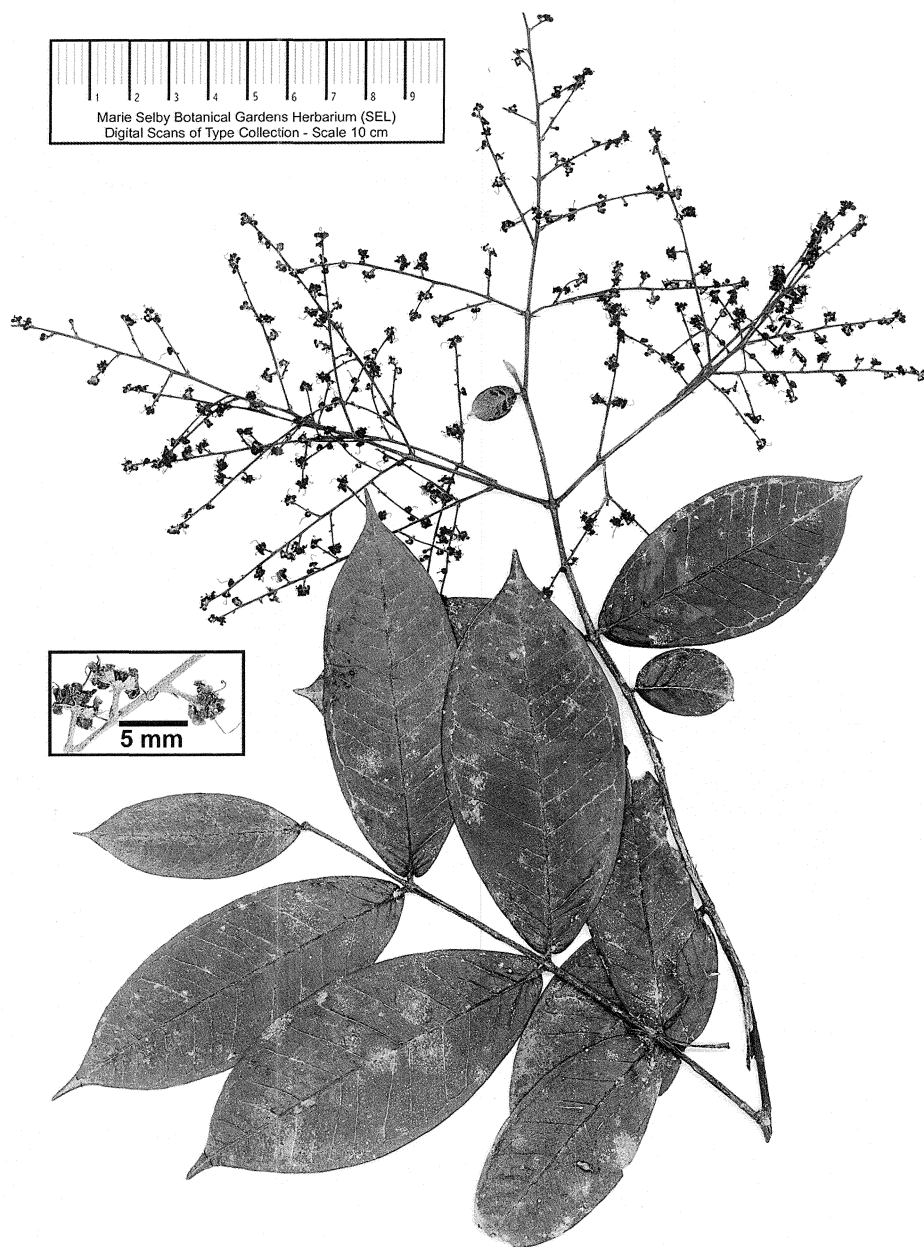


FIGURE 7. *Myrcia fusca*. Habit and flowers (inset), (digital scan of *Mori & Kallunki 3514*, MICH).

ened and corky-rimose. **Inflorescences** panicles 6–15 cm long, axillary or terminal, the branches alternate, to 7 cm long, pubescent, at least some bracts persistent into fruit; bracteoles 2–4 mm long, ovate to lanceolate, persistent. **Flowers** 5-merous; buds ca. 2 mm long, sericeous, especially on the hypanthium, sessile; calyx-lobes ca. 0.5 mm long, somewhat graduated in size, sub-

orbicular, obtuse, puberulous; petals ca. 1 mm long, puberulous without; disk ca. 2 mm wide, glabrous; ovary 2-locular, ovules 2 per locule; stamens ca. 4 mm long; style ca. 4 mm long, glabrous. **Fruits** 0.9–1.6 cm diam., oblate, glabrous, slightly glandular; seeds to 10 mm long, cotyledons contortuplicate, hypocotyl elongate.

**Distribution.** Wet forests, 30–500 m elevation; Panama.

*Myrcia fusca* belongs to a complex of species widespread in the greater Amazon basin and Guayana Shield, characterized by some or many of the inflorescence bracts being persistent, a prolonged hypanthium, 5 unequal calyx lobes, and frequently corky-rimose petioles. The complex includes some species currently recognized in the genus *Marlierea*, e.g., *M. umbraticola* (Kunth) O. Berg and *M. squarrosa* McVaugh. *Myrcia fusca* represents the northern-most species in the complex and is distinguished from all others by the nearly sessile, cordate to subcordate leaves with impressed secondary venation. The species name refers to the darkened color of the dried plant.

**Paratypes.** PANAMA. PANAMÁ: 11–12 km above Pan-American Highway on road from El Llano to Cartí-Tupile, 200–350 m, 23 Mar. 1973 (bud), *H. Kennedy & R.L. Dressler* 2927 (MO); El Llano to Cartí-Tupile road, Continental Divide to 1 mile from divide, 300–500 m, 30 Mar. 1973 (bud, fr), *R. Liesner* 1258 (MO, SEL); El Llano-Cartí road, 8–12 km north of El Llano, 400–450 m, 12 Dec. 1973 (fr), *M. Nee et al.* 8738 (MO); El Llano Cartí road, 16–18.5 km by road N of Pan-American Highway at El Llano, 400–450 m, 28 Mar. 1974 (fr), *M. Nee & Tyson* 10945 (MO); Cangandi, 30 m, 9°24'N, 79°24'W, *G. de Nevers & H. Herrera* 7064 (MO); El Llano-Cartí road, km 28.3, 200 m, 9°19'N, 78°55'W, 2 Mar. 1986 (fl), *G. de Nevers* 7232 (MO, SEL); El Llano-Cartí Road, km 19.1, Sendero Nusgandi to creek 2 km west, 350 m, 9°19'N, 78°55'W, 11 Mar. 1986 (fl), *G. de Nevers et al.* 7345 (MO, SEL). San Blas: Pemasky, carretera Nusagandi-Cartí, ca. 350 m, 9°20'N, 78°58'W, 5 Jul. 1994 (fr), *C. Galdames et al.* 1344 (SEL, US); along newly cut road from El Llano to Cartí-Tupile, Continental Divide to 1 mi from divide, 300–500 m, 30 Mar. 1973 (bud), *R. Liesner* 1258 (MO, SEL).

***Myrcia lapidulosa*** B. Holst & Kawasaki, sp. nov. TYPE: Panama. Panamá: Cerro Jefe, 6 Aug. 1968 (fl), *R.L. Dressler* 3574 (holotype: MO). FIGURE 8.

Ad omnibus speciebus generis regii differt: bracteolis et floribus notabilis magnibus et foliis valde crassis.

**Shrub or tree** 3–7 m high; trichomes ferruginous to yellowish brown. **Leaves** 8–16.5 × 3.5–11 cm, elliptic to narrowly elliptic, or ovate to oblanceolate, strongly coriaceous, densely reticulate, finely bullate, especially on the lower surface, drying brown; upper surface pubescent on veins, glabrescent, the lower sur-

face tomentose; glands indistinct on both surfaces; midvein impressed on the upper surface, pubescent; lateral veins 20–25 pairs, impressed above, salient below; marginal vein 1, impressed, parallel to the margin, 2–3 mm from it; apex rounded or abruptly acuminate; margins revolute to plane; base cuneate and abruptly truncate at the petiole; petioles 6–15 mm long, channeled, tomentose. **Inflorescences** panicles, 5–10 cm long, axillary or terminal, the branches opposite, tomentose, the bracts deciduous before or at anthesis; bracteoles ca. 6 mm long, lanceolate, deciduous. **Flowers** 5-merous; buds 7–9 mm long, the hypanthium tomentose, sessile to shortly pedicellate; calyx lobes 3–4 mm long, triangular, acute, densely appressed-pubescent within and without; petals ca. 7 mm long, sericeous; disk ca. 4 mm wide, hirsute; ovary 2-locular, ovules 2 per locule; stamens 5–8 mm long; style 4–6 mm long, densely hirsute in the lower half. **Fruits** ca. 2.2 cm long, ellipsoid, tomentose; seeds ca. 15 mm long, the cotyledons contortuplicate, the hypocotyl elongate.

**Distribution.** Cloud forests, 730–1000 m elevation; Panama.

The species epithet refers to the small pebbly nature of the lower surface of the leaves. This is one of the most distinct species of this complex, previously thought to be restricted to northern South America and the Antilles. *Myrcia lapidulosa* differs from all others by the huge flowers and bracts and very thick leaves.

**Paratypes.** PANAMA. PANAMÁ: On road near slopes of Cerro Jefe, 730 m, 20 Jan. 1980 (fr), *T. Antonio et al.* 3407 (MO); Cerro Jefe, 21 Jan. 1967 (fr), *J.A. Duke* 9470 (MO); Utivé, región adyacente a Cerro Jefe, 900 m, 31 Jan. 1995 (fr), *C. Galdames & C. Guerra* 1960 (SEL); Altos de Pacora, 31 Jan. 1996 (fr), *C. Galdames et al.* 2447 (MO, SEL); Cerro Jefe, 10.1 miles from Tocumen Circle, 800–1000 m, 7 Dec. 1971 (imm fr), *A. Gentry* 2886 (MO, SEL); Cerro Jefe, near top to 1 mile beyond, 1 Jan. 1972 (fr), *A. Gentry & J. Dwyer* 3472 (MO, SEL); Cerro Jefe, 1000 m, 21 Dec. 1975 (fr), *A. Gentry* 6775 (MO); Cerro Jefe, 800–1000 m, 9°15'N, 79°20'W, 15 Aug. 1982 (bud), *C. Hamilton & W. D'Arcy* 593 (MO); vic. Cerro Jefe, 850 m, 9°15'N, 79°30'W, 24 Jul. 1986 (fl), *G. McPherson* 9799 (MO, SEL); Cerro Jefe, 3 miles past Cerro Azul cloud forest, 945 m, 18 Mar. 1981 (fr), *K. Sytsma & T. Antonio* 3839 (MO).

***Myrcia panamensis*** B. Holst & Kawasaki, sp. nov. TYPE: Panama. Panamá: El Llano-Cartí Road, 18 km from Inter-American Hwy., Atlantic headwaters, 300 m, 29 Sep. 1984

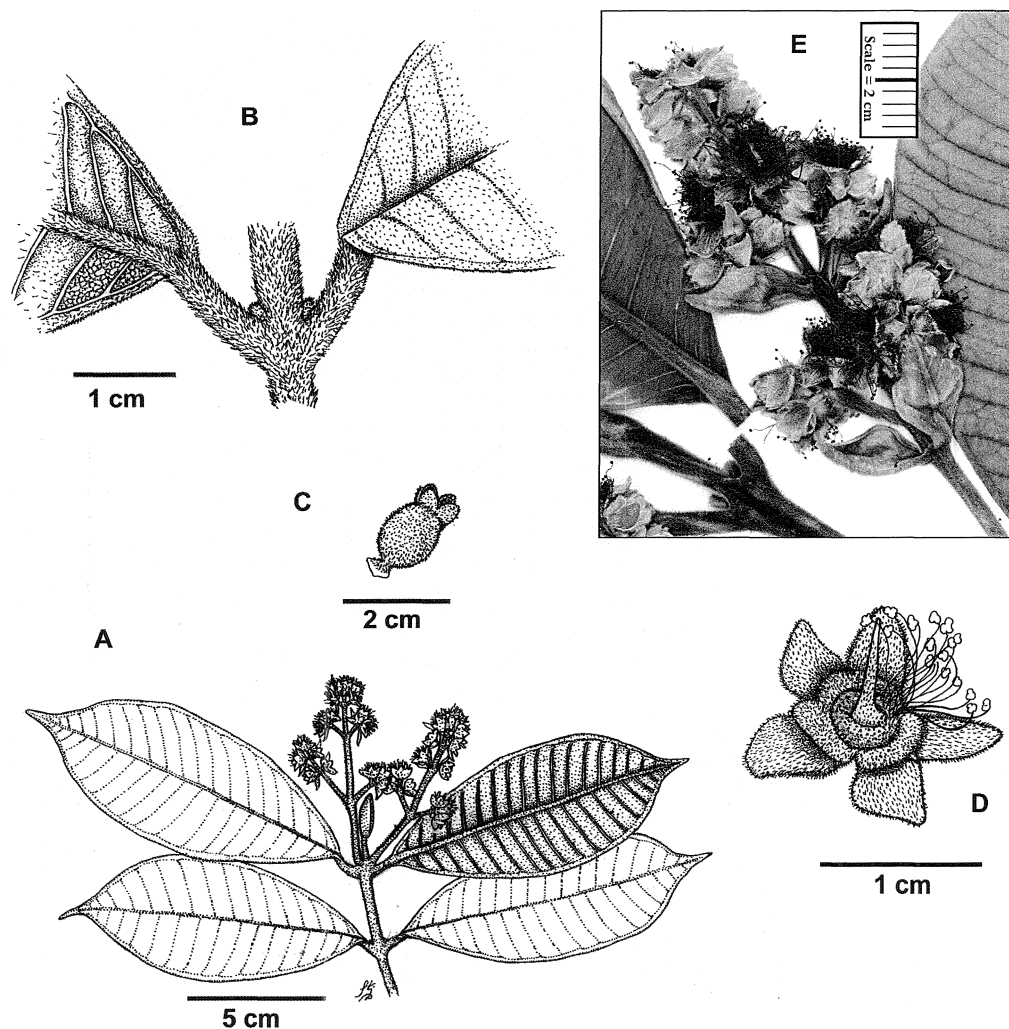


FIGURE 8. *Myrcia lapidulosa*. A. Habit. B. Detail of leaf bases. C. Fruit. D. Flower. E. Flowering branch (A–D drawn from McPherson 9799, MO; E digital scan from same specimen).

(fl), *G. de Nevers* 3957 (holotype: MO).

FIGURE 9.

Haec species a congeneris omnibus foliis mediis ad magnis, sessilibus, subcortatis, dense brunneo-villosis, nervo medio supra convexo, nervis lateralibus supra impressis; paniculis laxis, floribus magnis; fructus calycis lobi erectis distinguitur.

**Shrub or tree** 2–7 m tall; trichomes yellowish brown to yellowish. **Leaf blades** 7.5–20 × 3.5–7.3 cm, ovate to lanceolate, chartaceous to coriaceous, drying reddish brown above, paler below; upper surface puberulous, the lower surface villous, especially on the veins; glands indistinct on both surfaces; midvein salient on the upper surface but mostly obscured by the villous in-

dument; lateral veins 15–19 pairs, strongly impressed above, salient below; marginal vein 1, impressed on upper surface, arched, 1–3 mm from the margin; base cordate to subcordate; apex acuminate; petioles 1–3 mm long, stout, nearly terete, pubescent. **Inflorescences** panicles 6–13 cm long, axillary or subterminal, the branches opposite, villous, the bracts deciduous before or at anthesis; bracteoles 3–7(–9) mm long, lanceolate, deciduous. **Flowers** 5-merous; buds ca. 3 mm long, tomentose to villous, especially on the hypanthium, pedicellate; calyxlobes to 2 mm long, ovate, obtuse, pubescent; petals ca. 3 mm long, sericeous without; disk ca. 3 mm wide, villous; ovary 2-locular, ovules 2

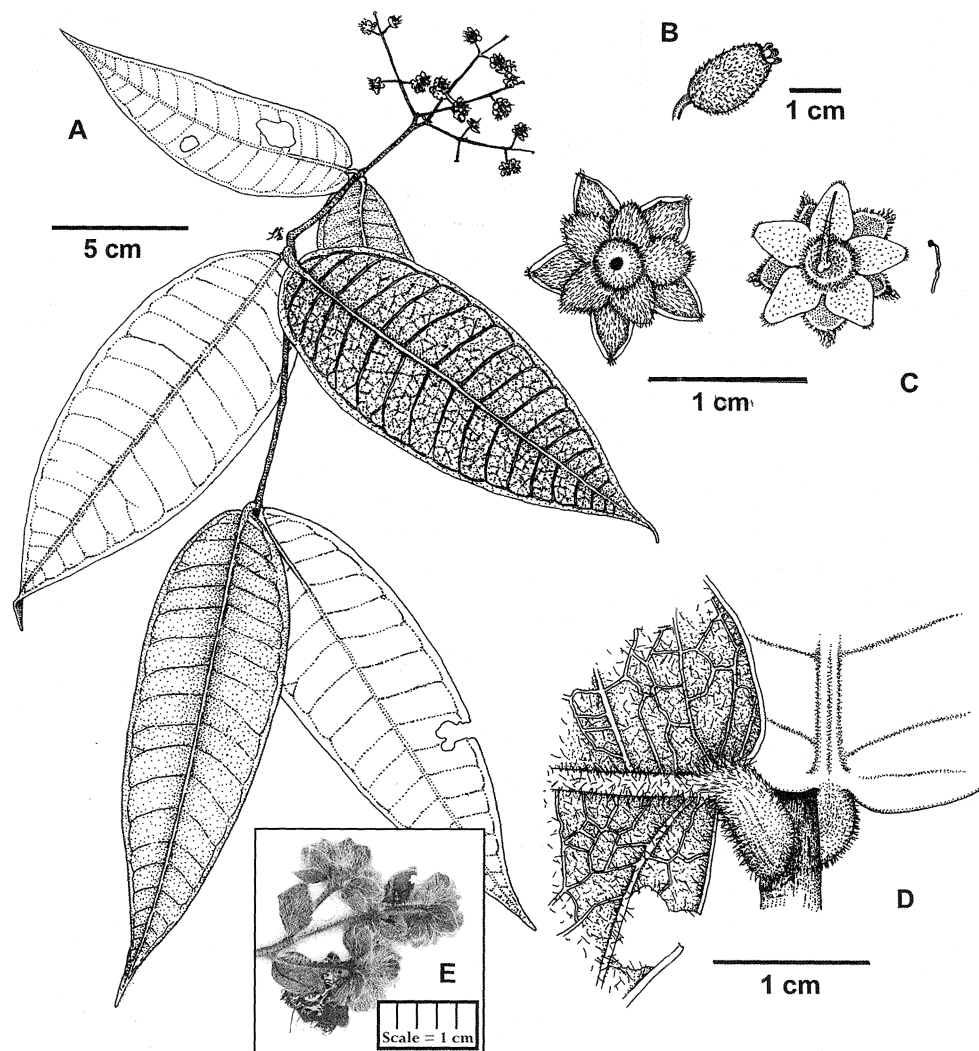


FIGURE 9. *Myrcia panamensis*. A. Habit. B. Fruit. C. Flower, views from below and above, and stamen. D. Detail of leaf bases (drawn from *G. de Nevers* 3957, MO). E. Flowering branch (digital scan from *Mori* 7716, MO).

per locule; stamens 4–5 mm long; style ca. 5 mm long, glabrous. **Fruits** ca. 1.5 cm long, ellipsoid, pubescent, slightly glandular; seeds ca. 6 mm long, the cotyledons contortuplicate, the hypocotyl elongate.

**Distribution.** Wet forests, 275–500 m elevation; Panama.

*Myrcia panamensis* is distinguished from other species in *Myrcia* sect. *Myrcia* by having the leaves medium-large, sessile, and subcordate, trichomes abundant, brown, and erect, the mid-vein convex, pubescent in young leaves, the secondary veins impressed above, prominent below, the flowers large in loose panicles, and

fruits with erect calyx lobes. It is roughly similar in aspect to *Myrcia concinna*, but larger in every aspect.

**Paratypes.** PANAMA. PANAMÁ: Along El Llano-Cartí road, near Nussagandi, 350 m, ca. 9°15'N, 79°00'W, 21 Jul. 1986 (fl), *G. McPherson* 9766 (MO, SEL); El Llano-Cartí road, 5 miles from highway, on trail to west, 350 m, 9°15'N, 79°00'W, 16 Jul. 1987 (bud), *G. McPherson* 11279-A (MO, SEL); El Llano-Cartí Road, 10.8 km from Inter-American Hwy., 335–365 m, 27 Dec. 1974 (fr), *S. Mori et al.* 4128 (MO, SEL, WIS); El Llano-Cartí Road, 8–11 km from Inter-American Hwy., 300–400 m, 13 Aug.

1975 (bud), *S. Mori* 7716 (MO); El Llano-Cartí road, 8–12 km N of El Llano, 400–450 m, 12 Dec. 1973 (fr), *M. Nee et al.* 8770 (MO, SEL); Yar Bired (Cerro San José), continental divide between Cangandi and San José, 400–500 m, 9°20'N, 79°08'W, 5 Feb. 1986 (fr), *G. de Nevers & H. Herrera* 6978 (MO, SEL); El Llano-Cartí Rd., ca. 18 km N of Pan-American Hwy, ca. 400 m, 9°20'N, 79°00'W, 29 Dec. 1982 (fr), *B. Stein* 1054 (MO); El Llano-Cartí Road, 18 km from Pan-American Hwy, 275–305 m, 9°16'N, 78°58'W, 12 Sep. 1980 (fl), *K. Sytsma* 1067 (MO, SEL). San Blas: Sendero Nergan Igar, km 15 of El Llano-Cartí Rd, ca. 350 m, 9°20'N, 78°58'W, 2 Jul. 1994 (fl), *C. Galdames et al.* 1235 (MO, SEL).

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