

## **A revision of Cuban Bunchosia (Malpighiaceae), with description of a new subspecies from Hispaniola**

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## A revision of Cuban *Bunchosia* (*Malpighiaceae*), with description of a new subspecies from Hispaniola

### Abstract

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The Cuban representatives of *Bunchosia* are revised, based on the study of herbarium specimens and observations in the field. Instead of the eight species reported for Cuba in the literature, only four native species of *Bunchosia* grow on Cuba. Two are endemic, one consists of an endemic subspecies and a second one, newly described, replacing it on Hispaniola. For the Cuban taxa, descriptions, synonymies with type citations and a key for identification are provided.

Additional key words: taxonomy, Greater Antilles, lectotypification

### Introduction

*Bunchosia* Rich. ex Kunth comprises 69 species distributed from Mexico to South America (W. R. Anderson, pers. comm.). The species of this genus are characterised by the habit of shrubs or small trees, the presence of glands (two or several) on the lower surface of the leaf, flowers in lateral pseudoracemes, unguiculate and yellow petals, 10 stamens that are equal or nearly so, an ovary with 2–3 carpels and locules, 2–3 styles (but  $\pm$  completely connate in the Cuban species) and a fleshy fruit (a berry) that is yellow, orange or red when ripe, containing 2 or 3 seeds (sometimes only one due to abortion), each seed enclosed in a cartilaginous endocarp with reticulate venation.

Alain (1953) recognised six *Bunchosia* species in the Cuban archipelago. Dobson (1983) added *B. articulata*, newly described. Anderson (1988) mentions one more species for Cuba, without providing details: *B. polystachia*. The identification of several *Bunchosia* speci-

mens kept in Cuban herbaria being uncertain, a revision was undertaken in order to clarify their taxonomy.

### Materials and methods

About 200 Cuban specimens of *Bunchosia* were revised, held in herbaria of Cuba, the USA and Europe (A, B, GH, HAC, HAJB, JE, K, LE, NY and S, abbreviations following Holmgren & al. 1990) and including historical and type specimens, or their images. These studies were complemented by the observation of live plants in the field. For *B. linearifolia*, specimens from Hispaniola (JBSD and NY) were examined in addition.

### Results

The number of *Bunchosia* species present on Cuba is reduced from eight to four. One of the recorded species

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was relegated to synonymy, three proved to have been recorded in error.

As already noted by Dobson (1983), the name *Bunchosia emarginata* has been generally misapplied to the species he newly described as *B. articulata*. Whereas Dobson held that Regel's real *B. emarginata*, described from a cultivated plant of Cuban origin, was only known from the type, I found that it does not differ significantly from *B. leonis*, published much later, which therefore becomes a synonym. The only apparent discrepancy are the larger leaves of Regel's cultivated material, which are probably due to the abnormal greenhouse environment in which the plant was raised.

*Bunchosia media* (Dryand.) DC. is a doubtful species, described from cultivated material of unstated West Indian origin (perhaps from Barbados, as the English protologue designation suggests) that does not appear to have been preserved. Anderson (1988) treated *B. media* as a likely synonym of *B. polystachia*, a bicarpellate species that does not extend to Cuba (see below). However, Niedenzu (1898, 1914, 1928) misapplied the name *B. media* to tricarpellate species, for Cuba notably *B. articulata*. Cuban reports of *B. media* (e.g., by Alain 1953) are wrong and mostly refer to *B. articulata*.

*Bunchosia nitida* (Jacq.) DC. was reported by Niedenzu (1928) from Lomas de Camoa (Habana province) on the basis of a specimen (*Ekman 13447*) that I failed to trace. Another specimen from Sierra de Camoa (*León 7319*) is, however, *B. articulata* and Alain's (1953) record of *B. nitida* from the Pinar del Río province probably concerns the same species. As confirmed by Anderson (pers. comm.), true *B. nitida* does not grow on Cuba.

Finally, Anderson (1988) cited *Bunchosia polystachia* (Andrews) DC. as occurring in Cuba. I have found no Cuban specimens of genuine *B. polystachia* among the material studied, and am therefore excluding that species as well from the Cuban flora.

Four native species of *Bunchosia* thus remain, growing in the Cuban archipelago. They are keyed out and described below. In addition, a cultivated species has been seen growing in gardens of the provinces Pinar del Río, Matanzas, Camagüey and Guantánamo: *B. glandulifera* (Jacq.) Kunth, which is, however, omitted from the present treatment.

#### Key to the native Cuban *Bunchosia* species

1. Leaves up to 0.5(–0.8) cm wide . . . 1. *B. linearifolia*
- Leaves  $\geq 0.7$  cm wide . . . . . 2
2. Carpels 3; stigma 3-lobed; leaf glands contiguous to the midvein . . . . . 2. *B. articulata*
- Carpels 2; stigma 2-lobed; leaf glands variously positioned, but rarely very close to the midvein . . . . . 3
3. Leaves emarginate or rounded . . . . 3. *B. emarginata*
- Leaves acute or acuminate . . . . . 4. *B. swartziana*

**1. *Bunchosia linearifolia*** P. Wilson in Bull. Torrey Bot. Club 53: 460. 1926. – Holotype: Cuba, prov. Guantánamo, “between Jauco and Cajobabo”, 17.7.–4.8.1924, *León 12062* (NY!; isotypes: HAC[4]!, NY[2]!).

= *Bunchosia linearifolia* Urb. & Nied. in Engler, Pflanzenz. 94: 656. 1928, nom. illeg. – Holotype: Cuba, prov. Guantánamo, *E. L. Ekman 15781* (NY [ex Herb. Niedenzu]!; isotypes: G[n.v.], S!).

Key to the subspecies

1. Inflorescences 2(–3)-flowered . . . subsp. *linearifolia*
- Inflorescences 3–7-flowered . . . . . subsp. *barahonica*

**1.1. *Bunchosia linearifolia*** P. Wilson subsp. *linearifolia*

*Shrub* to c. 3 m tall. *Branches* greyish, with abundant lenticels, hairy when young. *Leaves* with petiole 1–3 mm long; lamina mostly linear, sometimes lanceolate, narrowly elliptic or narrowly obovate, (1.5)2.5–8 cm long, 0.2–0.5(–0.8) cm wide, dull, pale or greenish brown when dry, pale green abaxially when fresh, with scattered hairs on both faces and small punctiform dots adaxially, apex acute or rounded or emarginate, base narrowed or  $\pm$  decurrent on the petiole, margin entire, revolute and sometimes undulate; midvein prominent abaxially, secondary veins inconspicuous, in 7–9 pairs; abaxial glands 2(–4), mostly inconspicuous, located at the base of the lamina and close to the margin. *Inflorescences* up to 3 cm long, 2(–3)-flowered; pedicels 7–8 mm long, bracteoles < 1 mm long, peduncle 1–2 mm long, bract c. 0.5 mm long. *Flowers* 12–14 mm in diameter; calyx lobes c. 2 mm long; petals with margin erose, especially near the base of the limb, the 4 lateral ones with a 1–1.5 mm long claw and a suborbicular limb 3–4 mm in diameter, the posterior one with a 2.5–3 mm long claw and a limb 3  $\times$  4 mm; stamens with 1.5–2 mm long filaments and < 1 mm long anthers; ovary bicarpellate, c. 2 mm long; stigma 2-lobed. *Fruit* one per infructescence,  $\pm$  heart-shaped, 12 mm long and to 15 mm wide; seeds 2 per fruit (one of them sometimes aborted), c. 10 mm long and 8 mm wide. – Fig. 1.

*Distribution.* — Endemic to C and E Cuba, growing in xeromorphic scrub from sea level to 200 m of altitude, flowering in June and fruiting June to November.

*Specimens seen.* — C CUBA: LAS TUNAS: Puerto Padre, camino costero, 25.11.1951, *Acuña & al.* (HAC). — E CUBA: HOLGUÍN: Entre Gibara y Caletones, matorral xeromorfo costero, 14.6.2009, *González HFC-85858* (HAJB); San Andrés, loma de los refugios, en cuabales degradados, 6.–8.2009, *Gómez-Hechavarría* (HAJB). — SANTIAGO DE CUBA: Siboney, manigua costera cerca de playa Baconao, 4.1969, *Bisse & Lippold HFC-14635* (HAJB, JE); entre Santa María del Pilar y playa Borrachos, monte seco, 4.5.1969, *Bisse & Lippold HFC-14933* (HAJB, JE), 4.1970, *Bisse HFC-15791* (HAJB, JE). — GUANTÁNAMO: US Station, near the warfes,

17.12.1919, *Ekman 10174* (A, NY); at Naval Station, in serpentine hills, 26.11.1922, *Ekman 15781* (NY, S); United States Naval Station, 3.1909, *Britton 2055* (NY); Cajobabo, 7.–8.1924, *León 12065* (GH); Cabanas [or cubanas?] bay, 17.3.1912, *Britton & Cowell 12715* (HAC, NY); southern Baracoa region, Jauco and Cajobabo, 7.–8.1924, *León 12062* (NY [2]); Finca La Zarza, 12.1929, *Hioram* (GH, HAC); Imías, 8.2.1952, *Acuña & Díaz Barreto 17376* (HAC, NY); cerca del paso de la Yegua, 5.1968, *Bisse & Köhler HFC-8828* (HAJB, JE); monte seco cerca de Imías, 6.1967, *Bisse & Rojas HFC-3432* (HAJB, JE); en la loma del Cuero, cerca del río Tacre, 8.2.1976, *Areces & al. HFC-29801* (B, HAJB, JE); la Chivera, loma frente al campamento, 8.2.1979, *Berzain & al. HFC-39047* (B, HAJB, JE); Yacambo, loma de Yacambo, 9. 2.1976, *Areces & al. HFC-29875* (B, HAJB, JE); Sierra de Imías, entre Las Marías y El Posango, 200–700 m, 10.4.1984, *Arias & al. HFC-52713* (B, JE); Maisí, Jauco, terrazas costeras al este de la desembocadura del río Caleta, 200 m, 12.2.1979, *Berzain & al. HFC-39258* (B, HAJB, JE); Maisí, terraza costera inferior entre río Ovando y Punta Caleta, 50–100 m, 7.6.1982 *Bässler & al. HFC-47895* (B, HAJB, JE); Mesa de Ovando, Maisí, 1.1940, *León & Matos* (GH, HAC); Meseta de Maisí, 6.2.1952, *Acuña & Díaz-Barreto* (HAC); Alrededores de Tortuguilla, 12.4.1972, *Bisse & Berzain HFC-21843* (HAJB, JE). — SANTIAGO DE CUBA OR GUANTÁNAMO: Coast between Santiago de Cuba and Guantánamo, 11.1920, *Bucher 195* (HAC, erroneously labelled “zona de Moa-Baracoa”; NY Roig 5355).

**1.2. *Bunchosia linearifolia* subsp. *barahonica*** P. A. González, **subsp. nov.** – Holotype: Hispaniola, Dominican Republic, “Pedernales, Península de Barahona, Isla Beata, 2.5 km al este del Campamento de la Marina de Guerra, 17°36'30"N, 71°31'W”, 25–30 m, 30.8.1985, *García & Pimentel 508* (NY 990772!; isotype: JBSD [photo!]) – Fig. 2.

A subspecies typica, insulae Cubae incola, differt inflorescentiis 3–7-floris, c. 3.5 cm longis.

*Note.* — The plants of this subspecies are very similar to the typical subspecies, but constantly have 3–7-flowered



Fig. 1. Branch with fruits of *Bunchosia linearifolia* subsp. *linearifolia* growing between Gibara and Caletones, province Holguín (*González HFC 85858*, HAJB).

inflorescences, c. 3.5 cm long, infructescence with more than one berry and are only found on Hispaniola in the Dominican Republic and Haití.

*Etymology.* — Named after the Barahona peninsula in the Dominican Republic, where it appears to abound and where three of the collections seen, including the type, were collected.

*Distribution.* — Endemic to Hispaniola (Dominican Republic and Haití), growing in xeromorphic coastal vegetation from sea level to c. 150 m of altitude; flowering May to September and January, fruiting August to September.

*Specimens seen.* — HISPANIOLA: DOMINICAN REPUBLIC: Sobre rocas calcáreas, maniguas entre Oviedo y Pedernales, 100 m, 23.5.1976, *Liogier & Liogier 25247* (JBSD [photo!]); Pedernales, península de Barahona, Isla Beata, 2.5 km al este del Campamento de la Marina de Guerra, 17°36'30"N, 71°31'W, 25–30 m, 30.8.1985, *García & Pimentel 508* (JBSD [photo!], NY); Parque Nacional Jara-gua, península de Barahona, a 30 km aproximadamente al Este de Trudillé, frente a la isla Beata, 17°36'N, 71°25'W, 0–150 m, 25.9.1997, *González & al. 1194* (JBSD [photo!]). — HAITÍ: En el presqu'île du St Nicolas, 19°50'N, 73°22'23'E, nivel del mar hasta 87 m, 20.1.1984, *Zanoni & al. 28366* (JBSD (photo!)).



Fig. 2. Isotype (branch with fruits) of *Bunchosia linearifolia* subsp. *barahonica* (García & Pimentel 508, JBSD).

**2. *Bunchosia articulata*** Dobson in Syst. Bot. 8: 272. 1983. – Holotype: Cuba, prov. Ciudad de La Habana, “hill near Marianao”, 25.6.1908, *León* 527 (NY 55506!; isotype: HAC!).

*Shrub or small tree* 2–6 m high. *Branches* with scattered hairs when young, glabrescent with age, the oldest ones totally hairless and lenticellate. *Leaves* with petiole 3–9 mm long, glabrous; stipules to c. 1 mm long, inconspicuous; lamina elliptic to obovate, sometimes lanceolate, (2–)4–12 cm long, 1.2–5.5 cm wide, chartaceous or subcoriaceous, apex obtuse to short-acuminate, base mostly acute or attenuate, lower surface glabrescent and with 2 (or very rare 4) glands close to or on the midvein at the base of the lamina, margin entire, ± undulate; venation typically reticulate, secondary veins in 3–7 pairs. *Inflorescences* up to c. 9.5 cm long, with scattered hairs and 4–8(–13) flowers; pedicels 4–11 mm long, bracteoles < 1 mm long, peduncles 1–1.5 mm long, bract c. 1–2 mm long. *Flowers* 13–22 mm in diameter; calyx lobes 2.5–4 mm long; petals with erose margin, the 4 lateral ones with a 2–4 mm long claw and a limb 5–8 mm in diameter, the posterior petal with a 3–4 mm long claw and a limb 4–6 mm in diameter; stamens with 3–4.5 mm long filaments and 1–1.5 mm long anthers; ovary 3-carpellate, 1.5–2 mm long; stigma 3-lobed. *Fruit* 5–10 mm in diameter; seeds 2 or 3 per fruit, c. 7 mm long and c. 4 mm wide.

*Distribution.* — Endemic to W and C Cuba, growing in woods and scrubs, on soils derived from limestone rocks, from sea level to 1200 m of altitude; flowering April to July and fruiting May to September and in January.

*Specimens seen.* — W CUBA: PINAR DEL RÍO: Sierras de Galalón, 7.1965, *Yero* 406 (HAC); Sumidero, Mogote de la Punta, 19.12.1978, *Bisse & al.* HFC-38820 (B, HAJB, JE); mogotes en el valle de Viñales, 16.11.1968, *Bisse & Lippold* HFC-10698 (HAJB, JE). — HABANA: Escaleras de Jaruco, 20.7.1977, *Bisse & al.* HFC-35061 (B, JE); bosques en las márgenes del río Ariguanabo, cerca del parque Río Ariguanabo, 17.6.1987, *Arias, Berazaín & Gutiérrez* HFC-62132 (HAJB); Loma de Esperón, on the NW outskirts of Caimito, 8.7.1951, *Webster* 3691 (GH); Sierra de Esperón, 24.3.1956, *Alain* 5310 (HAC); Finca San José, Cacahual, 29.5.1954, *Alain* 4014 (HAC); Loma de Somorrostro, limestone, Jamaica, 13.7.1923, *León* 11458 (GH, HAC, NY); Sierra de Camoa, 12.7.1917, *León & al.* 7319 (HAC, NY). — CIUDAD DE LA HABANA: In hillsides at Río Cojimar, towards the sea, 14.10.1921, *Ekman* 13315 (A); Marianao, maniguas, 28.6.1908, *León* 527 (HAC, NY); near Playa Marianao, small tree, limestone hill, *León & Edmond* 9025 (HAC); Santiago de Las Vegas, 6.1931, *León* 14902 (GH, HAC); in silvula int. Vedado et Marianao, 5.2.1914, *Ekman* 831 (NY). — MATANZAS: Canasí, loma de Palenque, 250–300 m, rocas calcáreas, 16.7.1970, *Lippold* HFC-

17471 (HAJB, JE); thickets east to Matanzas, 9.1903, *Britton & Wilson* 410 (NY [2]). — CUBA: CIENFUEGOS: Buenos Aires, Trinidad hills, 2500–3500 ft., 7.1930, *Jack* 8079 (A, NY); lomas de Buenos Aires, este de Cienfuegos, Las Villas, 12.7.1929, *León* 14020 (HAC); Guabairo, Soledad, Las Villas, 17.3.1928, *Jack* 5885 (HAC); Cieneguita, 8.1.1895, *Combs* 362 (GH, NY, K). — SANCTI SPIRITUS: Banao, falda Sur de las lomas de Banao, 300–500 m, 20.11.1975, *Álvarez & al.* HFC-28765 (B, HAC, HAJB, JE). — CIEGO DE ÁVILA: Municipio Florencia, Sierra de Jatibonico, Mogotes cerca de Boquerón, 30.4.1987, *Arias & al.* HFC-62045 (HAJB, JE). — CULTIVATED: Cultivada en la Estación, 4.1954, *Acuña* 19234 (HAC); Estación agronómica, Coloma 22820 (HAC); Arboretum, estación experimental agronómica, *Fortún* (NY). — WITHOUT LOCALITY: *Wright* 2149 (K, NY).

**3. *Bunchosia emarginata*** Regel in Kuester & al., Index Sem. Hort. Bot. Petrop. 1856: 35. 1856. – Holotype: Cultivated in Saint Petersburg from seeds sent from Cuba by Chappy, *Regel* (LE [photo!]).

= *Bunchosia leonis* Britton & P. Wilson in Mem. Torrey Bot. Club 16: 72. 1920. – Holotype: Cuba, prov. Habana, “not far from sea shore, Playa del Chivo, Habana”, 24.5.1917, *León* 7214 (NY!; isotypes: GH!, HAC!).

= *Bunchosia leonis* f. *emarginata* Nied. in Engler, Pflanzenz. 94: 656. 1928. – Lectotype (designated here): Cuba, prov. Ciudad de La Habana, “Habana urbs, Casa Blanca, in exposed cliffs at El Morro”, 6.7.1923, *Ekman* 16883 (S [photo!]; isolectotype: G, NY!).

*Shrub* 0.5–3 m high with greyish branches and lenticellate. *Leaves* with petiole 1–2 mm long, lamina mostly obovate, 2–4.5(–10) cm long, 0.7–1.7(–3.5) cm wide, pale brown when dry, shiny above, with 2(–4) glands at the base of the lamina and close to the margin, margin revolute, apex emarginate or rounded, base acute or cuneate; venation reticulate, especially above, secondary veins in 4–7 pairs. *Inflorescence* 1–1.7 cm long, with 3–6 flowers; pedicels 6–10 mm long, bracteoles not seen, peduncle inconspicuous (c. 1 mm long), bract c. 1 mm long. *Flowers* 1.5 cm in diameter; calyx lobes not seen; petals yellow, the 4 lateral ones with a c. 3 mm long claw and a limb c. 6 mm in diameter, the posterior one with a 4–5 mm long claw and a limb c. 4 mm in diameter; stamens not seen; ovary 2-carpellate, stigma 2-lobed. *Fruit* 0.8–1.7 cm long, 0.6–2 cm wide, sometimes with a persistent style; seeds 2 per fruit, c. 15 mm long, 8 mm wide.

*Distribution.* — Endemic to W Cuba, growing in xeromorphic scrub near sea level; flowering March to April and October, fruiting April to October. A rare species, not collected in the wild since 1930 although persisting in cultivation until at least 1949. If it still exists, it is certainly endangered and in need of protection.

*Note.* — The description of *Bunchosia emarginata* is still incomplete because flowering specimens were seen only in pictures and neither living nor flowering plants have been recently collected in Cuba.

*Specimens seen.* — W CUBA: PINAR DEL RÍO: Coastal thickets west of Yayales, Cabo San Antonio, 19.3.1924, *Ekman 18794* (NY [2], S). — CIUDAD DE LA HABANA: Near El Morro, in arid cliffs, 9.9.1921, *Ekman 13150* (S [photo!]); Casa Blanca, in exposed cliffs at El Morro, 6.7.1923, *Ekman 16883* (NY, S [photo!]); Morro Castle, in dry locality, 29.10.1921, *Ekman 13381* (S [photo!]). — HABANA: Not far from sea shore, Playa del Chivo, 24.5.1917, *León 7214* (GH, HAC, NY); coastal rocks near Morro castle, 3.1922, *León 10693* (GH, HAC, NY); 4.1922, *León 10696* (GH, HAC, NY). — MATANZAS: Boca de Canasí, cumbre de loma caliza, 7.12.1927, *León 13186* (HAC, NY); coastal thickets, Boca de Canasí, 17.10.1928, *León 13678* (GH, HAC), 6.1929, *León 13872* (GH, HAC) Montes de Bartolina, south coast of oriental Zapata (Sta Clara), 8.1930, *León 14642* (A, GH, HAC, NY). — CULTIVATED: En Guatao de una planta de Canasí, *León 22736* (HAC), 7.1943, *León 21877* (GH), 4.1949, *León 22880* (HAC).

**4. *Bunchosia swartziana*** Griseb., Fl. Brit. W. I.: 115. 1860. — Lectotype (Anderson 2007: 84): Jamaica, *March 1646* (K 000426979 [photo!]).

= *Bunchosia leonis* f. *rotundata* Nied. in Engler, Pflanzenr. 94: 656. 1928. — Lectotype (designated here): Cuba, prov. Camagüey, “Cayo Sabinal between Corte Jicotea and Corte Ganado”, *Ekman 15516* (S [photo!]).

*Shrub* 1.5–2 m high. *Leaves* with petiole 1–4 mm long, lamina lanceolate, elliptic, narrowly elliptic or obovate, (2.5–)5–10 cm long, 1–4.5 cm wide, apex acute or acuminate, base acute or cuneate and slightly decurrent, margin entire and sometimes also slightly revolute; pale green in living plants, brownish green when dry, paler beneath, with glands located in the basal half between the margin and the midvein, frequently closer to the margin or closer to the midvein, venation reticulate, secondary veins commonly in 5–7 pairs. *Inflorescence* 2–7 cm long, with up to c. 15 flowers; pedicels 3–9 mm long, pubescent, bracteoles < 1 mm long, peduncle up to 1.5 mm long (sometimes almost absent), bract at its base c. 1 mm long, acute. *Flowers* 10–13 mm in diameter; calyx lobes 2–3 mm long; petals yellow, the 4 lateral ones with a c. 2 mm long claw and a limb 4 mm long and wide, the posterior one with a claw 2.5–3 mm long and thicker than in the lateral petals, and a limb 4 mm long and wide; stamens with filaments 2–3 mm long and anthers c. 1 mm long; ovary 3-carpellate, 1–2 mm long, stigma 3-lobed. *Fruit* 4–10 mm long, orange coloured in living plants when ripe; seeds 3 per fruit (commonly fewer due to abortion), c. 5 mm long and c. 3 mm wide.

*Distribution.* — Yucatán, Jamaica and Cuba, growing in xeromorphic coastal scrub, forests, cliff habitats and secondary vegetation, mostly on soils derived from limestone rocks, from sea level to c. 600 m of altitude; flowering March to November and fruiting January to December.

*Note.* — *Bunchosia swartziana* is very variable in leaf size.

*Specimens seen.* — W CUBA: PINAR DEL RÍO: Forest near la Grifa, 19.11.1923, *Ekman 18146* (NY, S); península de Guanahacabibes, montes cerca de la Bajada, 23.2.1977, *Areces & al. HFC-34398* (B, HAJB, JE); Guane, península de Guanahacabibes, montes a la orilla de la carretera, 4.10.1975, *Areces & al. HFC-28499* (B, HAJB, JE); Sandino, península de Guanahacabibes, Cabo Corrientes, camino de la costa al campamento Los Trillos, 22.2.1977, *Areces & al. HFC-34323* (B, HAJB, JE); Las Martinas, 9.–13.4.1930, *Acuña & Roig 10832* (HAC [2]); península de corrientes, Guanahacabibes, 20.12.1959, *Alain 6920* (HAC [2]); península de Guanahacabibes, 23.7.1955, *Acuña & Zayas 19879* (HAC); Punta La Yana, Las Martinas, 7.1947, *Fors 14695* (HAC). — HABANA: Santiago de Las Vegas, 1919, *Fortún 25267* (HAC). — MATANZAS: Península de Zapata, montes a 5 km, E de Playa Girón, 20.4.1977, *Areces & al. HFC-34534* (B, HAJB, JE). — C CUBA: VILLA CLARA: Sabanas de Manacas, Las Villas, 6.6.1953, *Acuña & Correll 18637* (HAC). — CIEGO DE ÁVILA: Sierra de Judas, Cunagua, 8.1985, *Cano & Herrera 99* (HAC). — CAMAGÜEY: Cayo Sabinal between Corte Jicotea and Corte Ganado, *Ekman 15516* (S [photo!]); Arroyo Hondo, 8.5.1915, *Roig & al. 785* (HAC); Mogote pequeño en la Sierra de Najasa, dentro de la pueblo Belén, 19.5.1976, *Areces & al. HFC-31726* (B, HAJB, HAC, JE); cerca de Vilató al Norte de Lesca, 6.1975, *Bisse & Cueto HFC-26014* (HAJB); Vilató, entre el pueblo y Ocuja, 25.4.1984, *Arias & al. HFC-53850* (B, JE); Pastelillo, near Nuevitas, 7.10.1922, *Ekman 15431* (A, NY, S). — LAS TUNAS: Maniguas del central Manatí, 11.1951, *Acuña 17105* (HAC), *Acuña 17106* (HAC, NY); Manigua costera, Playa Boca, Puerto Padre, 20.5.1957, *Figueiras 2949* (HAC [2]). — E CUBA: HOLGUÍN: Mayarí, Sierra de Nipe in collibus prope Pinalito, 25.7.1915, *Ekman 6131* (S), 8.6.1915, *Ekman 5930* (GH, S); Sierra de Nipe, Mayarí Abajo, lomas calizas de Cayo Rey cerca de Miranda, 4.1968, *Bisse & Köhler HFC-7488* (HAJB, JE); Sierra de Nipe, Mayarí Abajo, en el valle del río Jimbambay, 4.1968, *Bisse & Köhler HFC-7644* (HAJB, JE); Mayarí, Mella, Pinares de Mayarí, alto de La Estrella, 400 m, 24.5.1983, *Bisse & al. HFC-50057* (HAJB). — GRANMA: Guisa, Guillermo González, al NO de Guisa, 17.4.1989, *Dietrich & al. HFC-66534* (B, JE), *HFC-66567* (B, HAJB, JE); Río Magdalena, Cabo Cruz, 2.6.1952, *Smith 651* (HAC). — SANTIAGO DE CUBA: Près Santiago de Cuba, 10.1929, *Bucher 63* (HAC); antigua línea de Firmeza,

camino de Aguadores, 5.1946, *Clemente 5016* (GH, HAC [2]); Ciudadamar–Santiago, 6.1946, *Clemente 5034* (GH, HAC); Finca Jicotea, El Cobre, 15.5.1948, *Clemente 6054* (HAC); Bayate ad flumen Cauto, 10.2.1915, *Ekman 4590* (NY, S); Bayate, Monte oscuro (collis. Calcar. in Sierra de Nipe), 13.2.1915, *Ekman 4608* (A, S); Bayate, inter S. Bíbano et Río Bayate, 24.6.1915, *Ekman 6123* (S); prope Santiago, in coll. calcar., vicin. Campo Columbia, 16.2.1916, *Ekman 8502* (S); on railroad [...] near the town, 11.1922, *Ekman 15632* (A, NY, S); Palmarito de Cauto, c. 350 m, 27.6.1924, *Ekman 19088* (S); El Mogote cerca de Palmarito de Cauto, 5.4.1956, *Figueiras 2680* (HAC); Manigua costera, cerca de Ciudadamar, 10.6.1956, *Figueiras 2743* (HAC); Florida Blanca, Alto Songo, terrenos calcáreos, 1.5.1957, *Figueiras 2880* (HAC [2]); Jaibo Abajo, 29.5.1919, *Hioram 2393* (NY); San Luis, Mogote El Picote cerca de Pedernal, 2.6.1983, *Arias & al. HFC-50721* (HAJB), *HFC-50751* (B, HAJB, JE). — GUANTÁNAMO: Baracoa, finca Playuela, in forest on the coral reef, 28.1.1915, *Ekman 4497* (S); Finca Confianza, 18.4.1918, *Hioram* (HAC, NY); Imías, Baitiquirí, 400–600 m, 13.5.1980, *Álvarez & al. HFC-43176* (B, HAJB, JE); Maisí, El Diamante, terrazas costeras inferiores entre El Corojo y río Ovando, 50–250 m, 7.6.1982, *Bässler & al. HFC-47848* (B, HAJB, JE); prope villam Monte Verde, *Wright 89* (GH, K, NY), *Wright 88* (GH, K); San Antonio del Sur, valle de Caujerí, al este de los letreros, 7.2.1978, *Bisse & Stohr HFC-36603* (B, HAJB, JE). — WITHOUT LOCALITY: *Wright 87* (GH, K); 1843–44, *Linden 1808* (K).

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