

Theophrastaceae cubanae novae IV

Authors: Lepper, Lothar, and Amaro, Jorge E. Gutiérrez

Source: Willdenowia, 41(2) : 277-288

Published By: Botanic Garden and Botanical Museum Berlin (BGBM)

URL: <https://doi.org/10.3372/wi.41.41209>

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LOTHAR LEPPER^{1*} & JORGE E. GUTIÉRREZ AMARO²***Theophrastaceae cubanae novae IV*****Abstract**

Lepper L. & Gutiérrez Amaro J. E.: *Theophrastaceae cubanae novae IV* [Novitiae florae cubensis 36]. – Willdenowia 41: 277–288. December 2011. – Online ISSN 1868-6397; © 2011 BGBM Berlin-Dahlem.
Stable URL: <http://dx.doi.org/10.3372/wi.41.41209>

The Cuban representatives of *Theophrastaceae* are grouped in three genera: *Neomezia*, endemic of Cuba, *Jacquinia* s.str., found mainly in the Caribbean, and *Bonellia*, distributed in the Greater Antilles, Mesoamerica and NE South America. As a result of a taxonomic revision of this family for the Flora de la República de Cuba five new species are described and seven new combinations are published in Cuban *Jacquinia* and *Bonellia*.

Additional key words: *Jacquinia*, *Bonellia*, taxonomy, Cuba, Greater Antilles

Theophrastaceae D. Don constitute a strictly neotropical family, ranging from NW Mexico and S Florida to S Brazil and N Paraguay (Ståhl 2010). At generic level, the highest diversity is found in the Caribbean, with *Neomezia* and *Theophrasta* being endemic genera of Cuba and Hispaniola, respectively. The family comprises 95 species, mainly small trees and bushes, which are currently grouped in seven genera (Ståhl 2004; Ståhl & Källersjö 2004; Ståhl 2010).

A complete overview of the *Theophrastaceae* for Cuba is given by Alain (1957), who reports two genera, 17 taxa of *Jacquinia* L. and one species of *Deherainia* Decne. Later contributions were made by Borhidi & Muñiz (1978) who added five new species to *Jacquinia*, by Lepper (1982) who described a new subspecies, *Deherainia cubensis* subsp. *oligospinosa*, and by Lepper (1983, 1985) who added two new species of *Jacquinia*.

A recent revision of the genus *Jacquinia* for the Antilles and South America is that of Ståhl (1996). This

author reduced to 12 the species present in Cuba. This drastic simplification, in our opinion, is inappropriate and hinders the proper understanding of the differentiation processes in this group.

Borhidi (1996) re-established the genus *Neomezia* Votsch for plants previously considered as belonging to *Deherainia*. *Neomezia* is a genus endemic to Cuba, unaccountably ignored in previous taxonomic analyses.

Ståhl & Källersjö (2003), based on combined molecular and morphologic data, demonstrated that *Jacquinia* as previously circumscribed was paraphyletic and suggested its segregation into two genera. By consequence, Ståhl & Källersjö (2004) reinstated *Bonellia* Colla as a separate genus.

Independently, Lepper (unpublished) had also found a marked differentiation into two lineages in Cuban *Jacquinia* sensu lato. In the first lineage, young branches are covered by capitate and branched trichomes (Fig. 1g–l), the flowers and fruits are never dark orange and the seeds

1 Hirschroda 26, D-07774 Dornburg-Camburg, Germany; *e-mail: lothirsch26@online.de (author for correspondence)

2 Jardín Botánico Nacional, Universidad de la Habana, Carretera del Rocío km 3½, Calabazar. C.P. 19230, La Habana, Cuba; e-mail: joregut@fbio.uh.cu

are globose, with a single-layered testa of non-inflated cells. In the second, young branches are covered with unbranched, uniseriate pluricellular hairs (Fig. 1b–f), the flowers and fruits are dark orange, and the seeds are flattened, with a two-layered testa in which the cells of the outer layer are inflated. The second lineage coincides with Ståhl & Källersjö's (2004) redefined *Bonellia*.

By consequence, the Cuban representatives of *Theophrastaceae* are here assigned to three genera: *Nemezia*, endemic to Cuba, *Jacquinia* s.str., distributed mainly in the Caribbean, and *Bonellia*, distributed in the Greater Antilles, Mesoamerica, and NE South America.

The taxonomic revision of this family for the Flora de la República de Cuba, based on the study of herbarium specimens and field work spanning the whole of Cuba, allowed us to characterise previously unknown populations as distinct, making necessary the description of five new species and the publication of seven new combinations.

***Jacquinia* L.**, Fl. Jamaica: 27. 1759 [*'Jaquinia'*], nom. & orth. cons.
Type: *Jacquinia ruscifolia* Jacq., Enum. Syst. Pl.: 15. 1760.

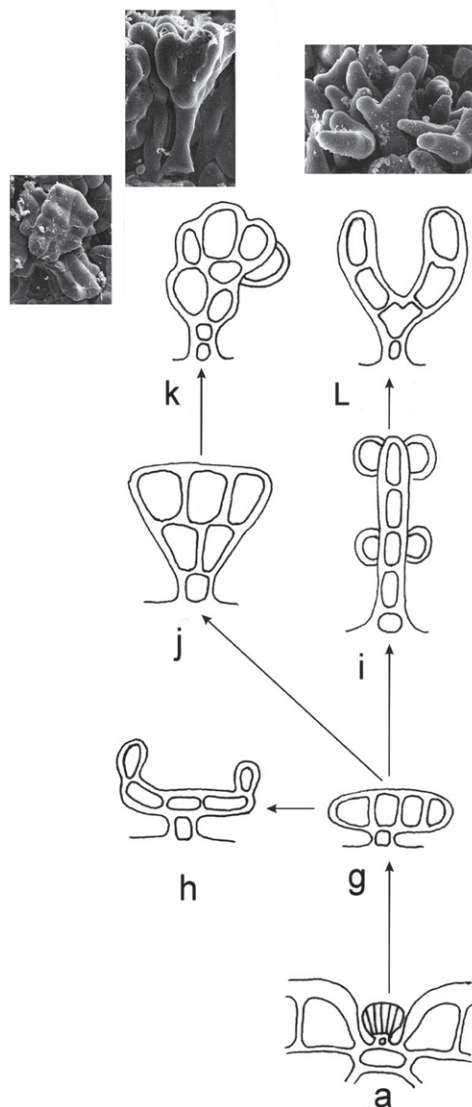
***Jacquinia cristalensis* Lepper & J. E. Gut., sp. nov.**

Holotype: Cuba, "prov. Santiago de Cuba, Segundo Frente, charrascos entre los Güiros y El Oro", 18.4.1985, Dietrich & al. HFC 56164 (HAJB!; isotypes: B!, HAJB!, JE!) – Fig. 2.

Ab affini *Jacquinia roigii* differt ramulis indumento denso brunneo-ochraceo obtectis, foliis glaucis in facie superiore lucidis apice acuminatis mucronatis, inflorescentiis uni- vel, bi- raro trifloris, pedicellis recurvis nutantibus 1–1.5 cm longis, bracteis antrorsis a pedicello liberis nec ejus parte basali adnatis et corollae tubo calycem subsuperante.

Small shrub up to 1 m high; *branches* verticillate, bark brown in the oldest parts and ochre-brownish in young branchlets, densely covered with pluricellular disk-shaped and cupuliform hairs (Fig. g–h). *Leaves* 6–8 per verticil with extremely short petioles to sessile, blade elliptic to obovate, 2.5–5 × 1–2 cm, leathery, shining, acute

Jacquinia



Bonellia

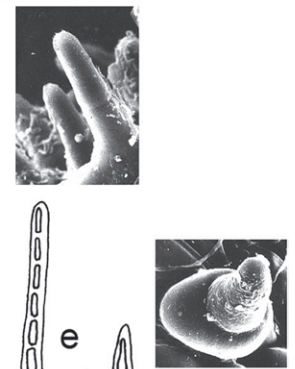


Fig. 1. Hypothesis about the evolution of trichome types in *Jacquinia* and *Bonellia* – a: glandular trichome on the leaf surface; b–f: development of the uniseriate trichomes in *Bonellia*; g–l: development of the pluricellular branched trichomes in *Jacquinia* (g: disciform, h: cupuliform, i+l: development of candelabra-like trichomes; j+k: development of tree-like trichomes).

at apex and base, margin revolute; *nervation* with three primary nerves, inconspicuous, secondary nerves and the rest of nerves conspicuous, blue-green when fresh, yellow or brown-yellowish when dry, glandular-punctate on both sides with pluricellular hairs, without any other surface processes. *Inflorescence* subumbellate with 1–2(–3) flowers in open racemes. *Flowers* with *pedicel* 1–1.5 cm long, recurved or nodding; *sepals* ciliate; *corolla* somewhat exceeding the calyx. *Fruit* ovoid-globose, red, c. 12 mm long, 9 mm in diameter; *seeds* spherical and leiosperm.

Note. — The fresh flowers have not been seen, but we expect them to be white.



Fig. 2. *Jacquinia cristalensis* Lepper & J. E. Gut., holotype at HAJB.

Additional specimens seen. — CUBA: SANTIAGO DE CUBA: Segundo Frente, Mayarí Arriba, Sierra del Cristal, Loma Saca la Lengua, 25.2.1976, *Areces & al. HFC 30699* (B, HAJB, JE); Segundo Frente, Mayarí Arriba, Sierra Cristal, charrascal en la Loma Saca la Lengua, 4.1970, *Bisse HFC 15904* (HAJB, JE); Segundo Frente, Mayarí Arriba, Sierra de Mícara, 6.1967, *Bisse & Rojas HFC 4239* (JE).

Distribution and habitat. — Endemic to Sierra Cristal in the province of Santiago de Cuba (Fig. 3), growing over ultramafic rock and at lower altitudes than the vicarious *Jacquinia sessiliflora*.

***Jacquinia curvata* Lepper & J. E. Gut., sp. nov.**

Holotype: Cuba, “prov. Camagüey, Nuevitas, Península Pastelillo, loma de Punta Gorda”, 27.4.1984, *Bisse & al. HFC 54117* (HAJB!; isotypes: B!, HAJB!, JE!) — Fig. 4.

Ab affini *Jacquinia aculeata* differt foliis navicularibus curvis et margine revolutis, inflorescentiis uni- vel bi-rarius trifloris, pedicellis 0.6–0.9 cm longis sub fructu recurvis, sepalis orbicularibus margine conspicue membranaceis parce ciliatis, corolla calycem aliquanto superante et fructu diametro suo sublongiore.

Shrub up to 1.5 m high, with sympodial growth and at the apical branches generally with axillary buds; *branches* 1–5 times verticillate, branchlets densely lepidote, indumentum grey or grey brownish, mostly with cupuliform hairs (Fig. 1h). *Leaves* 8–10 per verticil, subsessile, blade navicular and revolute, ovate-lanceolate, 1.8–4.6 × 0.2–0.8 cm, with the midnerve notably prominent in the lower surface, punctate with glandular hairs. *Inflorescence* subumbellate, terminal, with 1–2(–3) flowers in open raceme. *Flowers* (Fig. 5) with *pedicel* filiform, 0.6–0.9 cm long, initially extended and curvate in fruit; *sepals* orbiculate, 8 mm long, narrowly membranaceous, margin slightly ciliate; *corolla* milk-white, 8.5–10 mm long; tube campanulate, 4.5 mm long, twice exceeding calyx; lobes 4 × 3.5 mm, subauriculate, extended; *staminodes* 2.5 × 1.2 mm, not auriculate; *staminal tube* 1 mm long; *stamens* 2.3 mm long, filaments 0.8 mm long; *ovary* ovoid, 2 mm long and 1.2 mm in diameter, style very short, stigma capitate. *Fruit* ovoid-globose, dark orange to red when fresh, 8–9 mm long, 6.5–8 mm in diameter; *seeds* spherical, 2.7–4.1 mm in diameter, brown and leiosperm.

Note. — The description of the flower (see also Fig. 5) is based on a plant grown in the Botanic Garden of Jena (*Lepper HFC 60821a*, JE, from the wild source Holguín, Sagua de Tánamo, *Bässler & al. HFC 60821*).

Additional specimens seen. — CUBA: CAMAGÜEY: Nuevitas, Santa Lucía, monte seco antes de llegar a Calabazas, 16.4.1973, *Álvarez & Berazaín HFC 23838* (HAJB); Nuevitas, falda sur de la Península de Pastelillo, 11.5.1976, *Areces & al. HFC 31422* (B, HAJB, JE); Nuevitas, Cayo Sabinal, camino del Jato a la Playa Sabinal, 8.1.1976, *Areces HFC 32116* (HAJB); Nuevitas, Cayos los Ballenatos, en la Bahía de Nuevitas, 14.1.1976, *Areces HFC 33646* (HAJB); Nuevitas, Santa Lucía, 10 km. al sur de Santa Lucía, orillas de manglares, 26.4.1984, *Bisse & al. HFC 54059* (B, HAJB, JE); Nuevitas, Cayo Sabinal, camino de la Loma de la Alegría, hacia el noreste, 9.1.1976, *Areces HFC 33713* (HAJB); Esmeralda, Cayo Romano, camino de Versalles a Playa del Muerto, 16.5.1976, *Areces & al. HFC 31664* (B, HAJB, JE); Esmeralda, Cayo Romano, monte y manigua al oeste del caserío Versalles, 20.2.1981, *Álvarez & al. HFC 43684* (B, HAJB, JE); Sierra de Cubitas, Cayo Guajaba, cerca de la Loma de los Hornos, 22.2.1981, *Álvarez & al. HFC 43803* (B, HAJB, JE); Sierra de Cubitas, mogote al oeste de Los Farallones, 25.4.1984, *Bisse & al. HFC 53910* (B, HAJB, JE). — LAS TUNAS: Jesús Menéndez, manigua costera cerca de Playa Herradura, 6.12.1975, *Areces & al. HFC 29045* (HAJB, JE); Jesús Menéndez, maniguas cerca de Playa Herradura, 22.4.1987, *Arias & al. HFC 61692* (B, HAJB, JE), *Arias & al. HFC 61709* (B, HAJB, JE). — HOLGUÍN: Banes, costa entre Punta Gorda y Punta Manglito, Cabo Lucrecia, 21.10.1978, *Bisse & al. HFC 38423* (B, HAJB, JE); Banes, manigua costera destruída sobre diente de perro entre Gibara y Playa Caletones, 22.10.1978, *Bisse & al. HFC 38481* (B, HAJB, JE); Gibara, manigua entre Playa Caletones y El Mangle, 20.4.1987, *Arias & al. HFC 61546* (B, HAJB, JE); Gibara, camino entre Juan Antonio y La Resbalosa, 22.4.1987, *Arias & al. HFC 61711* (B, HAJB, JE); Gibara, charrascos en la zona de San Marcos al sur de Floro Pérez, 23.4.1987, *Arias & al. HFC 61752* (B, HAJB, JE); Sagua de Tánamo potreros en los alrededores de Sagua de Tánamo, a orillas del río Miguel, 4.5.1985, *Álvarez & al. HFC 57616* (B, HAJB, JE); Sagua de Tánamo, 5 km al oeste de Sagua de Tánamo, detrás de la planta de asfalto, 9.4.1987, *Bässler & al. HFC 60821* (B, HAJB, JE), cultivated in the Botanical Garden Jena, 12.12.2010, *Lepper HFC 60821a* (JE); Mayarí, maniguas cerca de Punta Velera, 9.4.1987, *Bässler & al. HFC 60991* (B, HAJB, JE). — SANTIAGO DE CUBA: Segundo

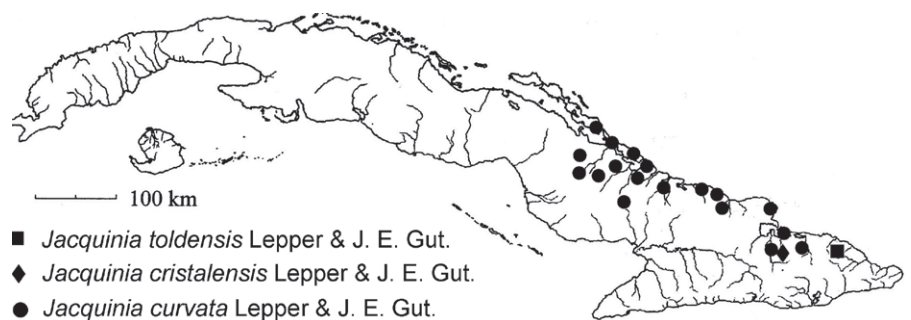


Fig. 3. Distribution of *Jacquinia cristalensis*, *J. curvata* and *J. toldensis*.



Fig. 4. *Jacquinia curvata* Lepper & J. E. Gut., holotype at HAJB.

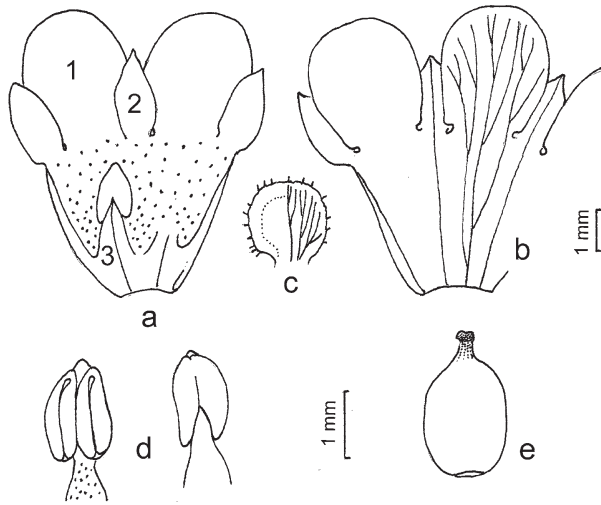


Fig. 5. *Jacquinia curvata* – a: dissection of the corolla (1 = petal, 2 = staminode, 3 = stamen); b: nervature of the petals and staminodes; c: calyx lobe; d: stamen, frontal and dorsal view; e: gynoecium. – From Lepper HFC 60821a (JE).

Frente, Sierra Cristal, Seboruco, 10.8.1070, *Bisse & Lippold HFC 17996* (HAJB, JE); Segundo Frente, Seboruco, 18.4.1987, *Dietrich & al. HFC 61534* (B, HAJB, JE); Segundo frente, Sierra de Nipe, charrascales cerca de Seboruco, 1.11.1977, *Bisse & al. HFC 35944* (B, HAJB, JE); Santiago de Cuba, Altiplanicie de Santa María del Loreto, alto de la torre, 3.5.1987, *Gutiérrez & al. HFC 67954* (B, HAJB, JE).

Distribution and habitat. — Endemic in northern central-east Cuba, in the provinces Camagüey, Las Tunas, Holguín and Santiago de Cuba (Fig 3), growing in undegraded vegetation rather than in secondary habitats like *Jacquinia aculeata*.

***Jacquinia toldensis* Lepper & J. E. Gut., sp. nov.**

Holotype: Cuba, “prov. Holguín, Moa, subida al Pico el Toldo”, 21.4.1985, *Álvarez de Zayas & al. HFC 56306* (HAJB!; isotypes: B!, HAJB!, JE!) – Fig. 6.

Ab affini *Jacquinia obovata* differt statura minore ad 1 m tantum alta, internodiis multo brevioribus, foliis alternis obovatis 6–10 mm longis et 4–6 mm latis margine revolutis, inflorescentiis univariis bifloris nec non margine sepalorum denticulato.

Procumbent shrub to 1 m tall, densely branched; *branches* with compressed nodes and with pluricellular, glandular tree-like, candelabra-like and campanulate hairs (Fig. 1i–l). *Leaves* alternate, with very short petiole (1–2 mm long), blade obovate, 6–10 × 4–6 mm, obtuse to round at apex, acute at base, margin thick and revolute; *nervature* brochidodromous with one intramarginal nerve at both sides and with robust secondary nerves and non-prominent tertiary nerves in the admedial region. *Inflorescences* with 1(–2) flowers in reduced open racemes.

Flowers with *pedicel* 4–5 mm long; *sepals* 1 mm long, with margin shortly denticulate and glandular-punctate; *corolla* campanulate, the tube larger than the calyx. *Fruit* globose, c. 9–10 mm long and 8–9 mm in diameter, yellow-brownish when fresh, brown when dry; *seeds* one per fruit, spherical and leiosperm.

Additional specimens seen. — CUBA: HOLGUÍN: Sierra de Moa, La Melba, charrascal cerca del aserrío, 400–500 m, 22.12.1968, *Bisse & Lippold HFC 11523* (HAJB, JE); charrascales en el Altiplano 600–900 m, 7.1.1969, *Bisse & Lippold HFC 12092* (HAJB, JE); entre Revuelta de los Chinos y Loma de la Calinga 800–900 m, 12.8.1970, *Bisse & Lippold HFC 17974* (HAJB, JE); falda sur del Pico El Toldo 21.1.1988, *Berazaín & al. HFC 63371* (HAJB); 24.3.2005, *Gutiérrez & al. HFC 83335, 83349* (HAJB). — GUANTÁNAMO: Baracoa, subida a la Mina Iberia, 3.1968, *Bisse & Köhler HFC 6279* (HAJB); Yateras, Parque “Alejandro de Humboldt”, en el camino entre Piedra La Vela y Loma del Mulo, 28.3.2003, *Gutiérrez & al. HFC 80676* (HAJB).

Distribution and habitat. — Endemic to the highest part of Sierra de Moa (provinces Holguín and Guantánamo, Fig. 3), where it replaces the vicarious *Jacquinia obovata*.

***Bonellia* Colla, Hortus Ripul.: 21. 1824.**

Type: *Bonellia cavanillesii* Bertero ex Colla, nom. illeg. (*Jacquinia macrocarpa* Cav. ≡ *Bonellia macrocarpa* (Cav.) B. Ståhl & Källersjö).

***Bonellia fruticulosa* Lepper & J. E. Gut., sp. nov.**

Holotype: Cuba, “prov. Camagüey, Minas, cuabal al sur de la carretera Minas-Altigracia”, 27.4.1984, *Bisse & al. HFC 54102* (HAJB!; isotypes: B!, HAJB!, JE!) – Fig. 7.

Ab affini *Bonellia verrucosa* differt statura minore ad 0.6 m tantum alta, habitu sphaeroideo ramosissimo, internodiis abbreviatis ad 1 cm tantum longis, foliis alternis vel subverticillatis anguste acicularibus rigidis, inflorescentiis uni- vel bivariis trifloris, floribus subsessilibus, corollae lobulis symmetrice biauriculatis, tubo staminali dissite glanduloso-punctato et fructu ellipsoideo 3.5 mm longo et 2 mm crasso.

Dwarf shrub up to 0.6 m high, with spheroid habit and dense branching; *branches* short, 2–4 times bifurcate, internodes reduced to 1 cm, branchlets greenish, brown-ochre when old, indumentum scarce with uniseriate hairs of one basal mammiform cell and 1–2 further cells (Fig. 1f). *Leaves* 1.5–1.8 × 0.1–0.3 cm, alternate to subverticillate due to reduction of the nodes, 6–12 per verticil, narrowly acicular, rigid, apex mucronate; *nervature* brochidodromous with midnerve robust, straight, terminating in a mucro, intramarginal nerves absent. *Inflorescences* with 1–2(–3) flowers in very reduced racemes. *Flowers* (Fig. 8) subsessile; *sepals* 1.7 × 1.7 mm, broadly



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No 56306

FLORA DE CUBA

PROV. Holguín

Noa, Subida al pico El Toldo.

msm. Fecha 21-4-25

leg. A. Alvarez, R. Berazaín, Ch. Beurton, H. Dietrich,
J. Gutierrez, E. Kohler, A. Leiva, I. Lepper, R. Oviedo,

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HERBARIO DEL JARDIN BOTANICO NACIONAL DE CUBA (HAJB)
Holotipo
Jacquinia toldensis Lepper & J.E. Gut.
Rev.: L. Lepper 2.4.1096

Fig. 6. *Jacquinia toldensis* Lepper & J. E. Gut., holotype at HAJB.



Fig. 7. *Bonellia fruticulosa* Lepper & J. E. Gut., holotype at HAJB.

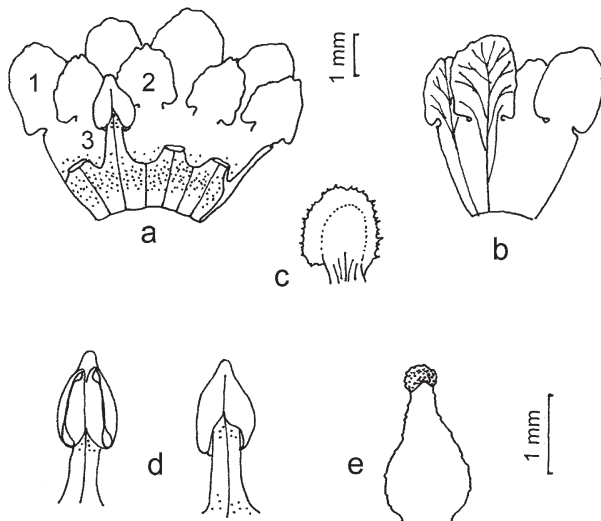


Fig. 8. *Bonellia fruticolosa* – a: dissection of the corolla (1: petal, 2: staminode, 3: estambre); b: nervature of the petals and staminodes; c: sepal; d: frontal and dorsal view of stamen; e: gynoecium. – From Bisse & al. HFC 54102 (HAJB).

lomatomembranaceous, with denticulate margin; *corolla* orange, 4.3 mm long, lobes 2.2×1.7 mm, conspicuously auriculate, commonly emarginate, tube 2.1 mm long, scarcely gland-dotted; *staminodes* 1.4×1.2 mm, evidently auriculate, bicuspidate and emarginate; *staminal tube* dispersed gland-dotted; *stamens* 2.1 mm long, filaments 0.8 mm long, scarcely gland-dotted at the base and apex; *gynoecium* 2 mm long, slightly verruculose, stigma capitate. *Fruit* yellow-orange, ellipsoid, 3.5×2 mm, longitudinally striate and conspicuously verrucose; *seeds* flat, brown, dictyosperm, 2.8×1.6 mm.

Additional specimens seen. — CUBA: CAMAGÜEY: Sabana serpentina al oeste de la Loma Alta Gracia, 6.1967, Bisse & Rojas HFC 2932 (HAJB, JE); Altagracia, sobre roca ultrabásica, 4.1975, Areces & Álvarez HFC 29469, 29524 (HAJB); vegetación serpentinícola en el km. 27 de la carretera Camagüey–Minas, 8.5.1976, Areces & al. HFC 31304 (B, HAJB, JE); Mesa de San Felipe, al sur de Las Veguitas, 24.4.1984, Bisse & al. HFC 53679 (B, HAJB, JE); Minas, Altagracia, Los Orientales, 21.2.2010, Borsch 4015 & al. (B).

Distribution and habitat. — Central Cuba, surroundings of Camagüey (province Camagüey, Fig. 9). Endemic to the ultramafic outcrops of Minas, Altagracia, and the plateau of San Felipe.

***Bonellia verrucosa* Lepper & J. E. Gut., sp. nov.**

Holotype: Cuba, “prov. Matanzas, Cárdenas, Cantel, Camarioca”, 19.2.1976, Berazaín & González HFC 31966 (HAJB!; isotype: HAJB!) – Fig. 10.

Ab affini *Bonellia brunnescente* differt ramis adultis atrobrunneis, foliis subrecurvis margine incrassatis; inflores-

centiis 2–6-floris, pedicellis patentibus vel subrecurvis, sepalis margine membranaceis denticulato-ciliolatis, fructu flavescenti-aurantiaco ovoidi in stylum excurrente verrucoso et longitudinaliter striato.

Shrub 0.5–1 m high; *branches* scattered, the oldest dark brown, branchlets densely ferrugineous-tomentose, with dense indumentum of uniseriate, 1–2 celled hairs. *Leaves* alternate, blade $1.5\text{--}2.5 \times 0.2\text{--}0.4$ cm, linear-lanceolate, broader in the lower half, slightly recurvate, margin thick, apex mucronate; *nervature* brochidodromous, with the midnerve robust, straight, terminating in a mucro, intramarginal nerves absent. *Inflorescences* subumbellate, with 2–6 flowers in open racemes. *Flowers* (Fig. 11) with *pedicel* extended to slightly recurvate; *sepals* 1.9×2.3 mm, membranaceous with denticulate-ciliolate margin; *corolla* orange, 5 mm long, lobes 2.6×1.6 mm, unequally auriculate, tube scarcely gland-dotted in the inner surface; *staminodes* 2×1.5 mm, conspicuously auriculate; *staminal tube* densely gland-dotted except in basal part; *stamens* 2.3 mm long, filament 0.9 mm long, scarcely gland-dotted at base and apex; *gynoecium* 2.8 mm long, stigma flat-capitate. *Fruit* ovoid, 6–7 mm long and 5–5.5 mm in diameter, yellow-orange, regularly decurrent in the style, longitudinal striate and verrucose; *seeds* flat, brown, dictyosperm, 3×2.4 mm to 3.8×2.8 mm.

Note. — The description of the flower (see also Fig. 11) is based on Arias & al. HFC 61857, HAJB.

Additional specimens seen. — CUBA: MATANZAS: Cárdenas, serpentina del sureste de Camarioca, 29.11.1976, Álvarez & al. HFC 33400 (B, HAJB, JE); Cárdenas, Tetas de Camarioca, falda oriental, cerca de Ponce, 24.10.1979, Bisse & al. HFC 40790 (B, HAJB,

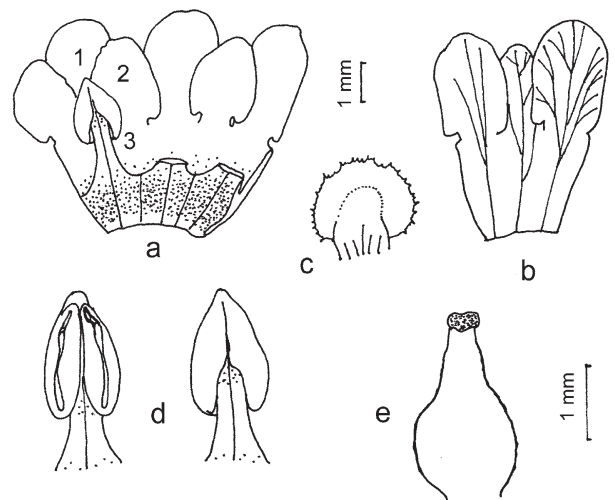


Fig. 11. *Bonellia verrucosa* – a: dissection of the corolla (1: petal, 2: staminode, 3: estambre); b: nervature of the petals and staminodes; c: sepal; d: frontal and dorsal view of stamen; e: gynoecium. – From Arias & al. HFC 61857 (HAJB).

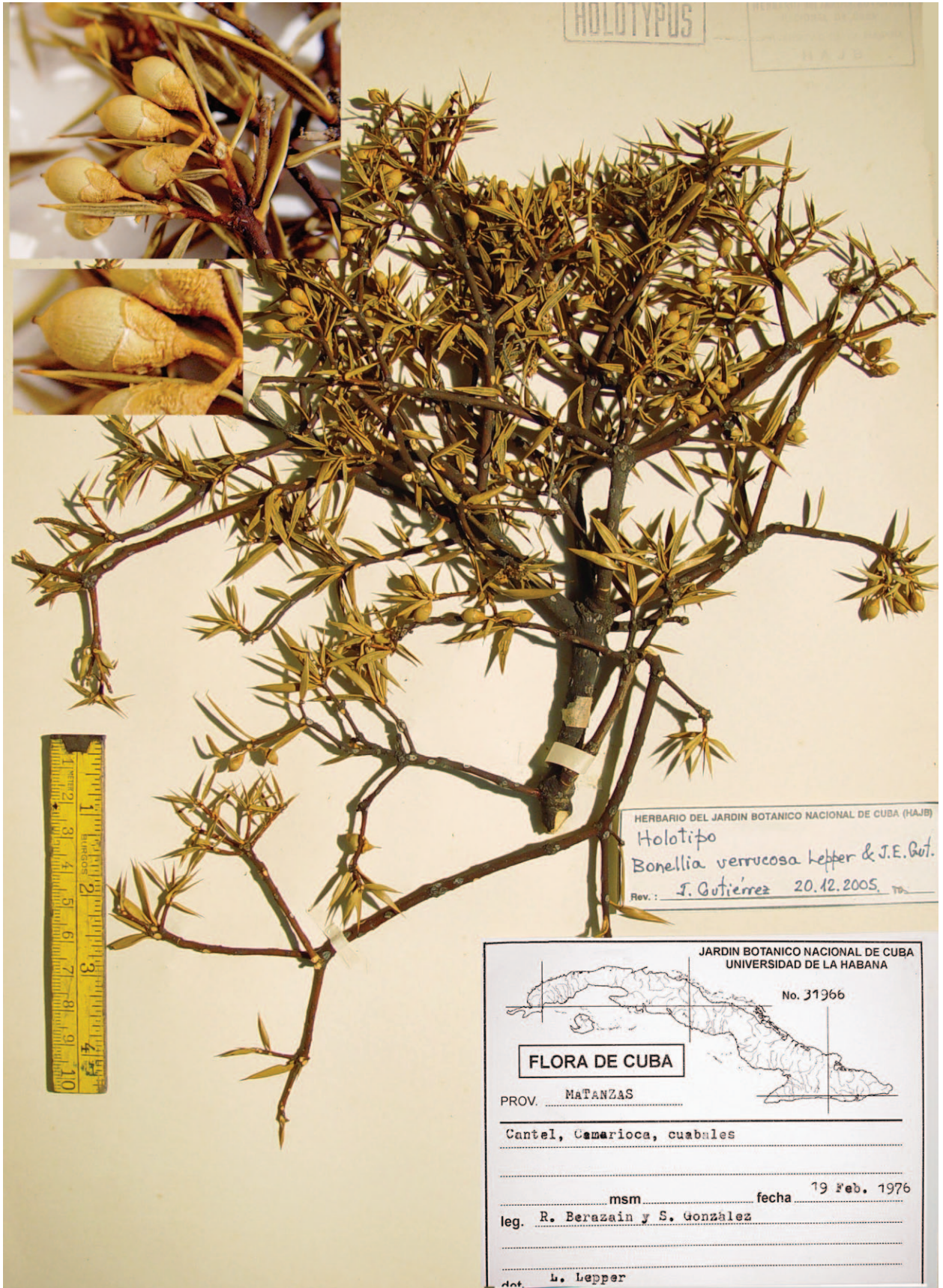


Fig. 10. *Bonellia verrucosa* Lepper & J. E. Gut., holotype at HAJB.

JE); Cárdenas, al norte de las lomas de Camarioca, 21.7.1982, *Gutiérrez & al. HFC 48324* (HAJB); Cárdenas, Cantel, Tetas de Camarioca, en la falda norte, 20.10.1993, *Dietrich & al. HFC 70805, 70822* (HAJB, JE). — VILLA CLARA: Cuabal en la orilla de la carretera central a la entrada oeste de Santa Clara, 2.1968, *Bisse HFC 4987* (JE), *Bisse HFC 4994* (HAJB, JE); Presa Agabama, 30.3. 1974, *Areces HFC 24993* (HAJB); Santa Clara, lomas de Agabama, cerca de la presa vieja, 30.8.1977, *Bisse & al. HFC 35161, 35166* (B, HAJB, JE); Santa Clara, loma de Pelo Malo, 28.10.1985, *Berzaín & al. HFC 57947* (HAJB); Santa Clara, Sierra alta de Agabama, alrededores del Embalse Gramal, 30.10.1985, *Berzaín & al. HFC 58108* (HAJB); Santa Clara, Cubanacán, 3.1984, *Claro HFC 68511* (HAJB). — SANCTI SPIRITUS: Arroyo Blanco, Jatibonico, 3.1975, *Bisse & Cueto HFC 29436* (HAJB); Cabaiguán, Jíquima de Peláez, lomas de serpentina al norte de Minas de Jarahueca, 31.8.1977, *Bisse & al. HFC 35273* (B, HAJB, JE); Sancti Spiritus, Lomas de Banao, Loma Garrote, 31.10.1986, *Arias & al. HFC 60008* (HAJB, JE). — CIEGO DE ÁVILA: Florencia, 2 km al suroeste de Guadalupe, 27.4.1987, *Arias & al. HFC 61857* (B, HAJB, JE).

Distribution and habitat. — Endemic to ultramafic outcrops in Central Cuba, from Camarioca to Jatibonico (provinces of Matanzas, Villa Clara, Sancti Spíritus and Ciego de Ávila, Fig. 9).

Bonellia bissei (Lepper) Lepper & J. E. Gut., **comb. nov.** ≡ *Jacquinia bissei* Lepper in Feddes Repert. 96: 518. 1985. – Holotype: Cuba, “Santiago de Cuba, El Caney, Loma la Begoña”, 10.6.1983, *Dietrich & al. HFC 50820* (HAJB!; isotype: JE!).

Bonellia brunnescens (Urb.) Lepper & J. E. Gut., **comb. nov.** ≡ *Jacquinia brunnescens* Urb., Symb. Antill. 1: 378. 1899. – Type: Cuba, without locality, 1865, *Wright 2912 p. p.* (holotype: B†; lectotype, designated here: GH; isolectotype?: NY!).

Bonellia curtissii (Britton) Lepper & J. E. Gut., **comb. nov.** ≡ *Jacquinia curtissii* Britton in Torreyia 5: 44. 1905. – Lectotype (designated by Ståhl 1996: 502): Cuba, “Isla de Pinos, near Nueva Gerona”, 24.4.1904, *Curtiss 463* (NY!; isolectotypes: BM!, CM!, F!, G!, K!, L!, MO!, US!).

Bonellia moana (Borhidi) Lepper & J. E. Gut., **comb. nov.** ≡ *Jacquinia moana* Borhidi in Pl. Syst. Evol. 129: 6. 1978. – Holotype: Cuba, “Prov. Oriente; Moa”, 13.4.1943, *Marie-Victorin & Alain as León 21457* (HAC!).

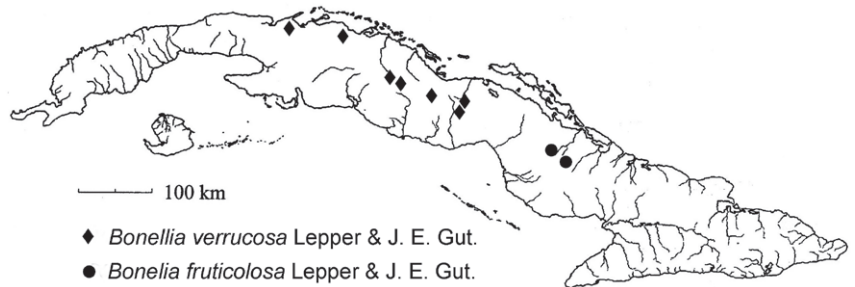


Fig. 9. Distribution of *Bonellia fruticolosa* and *B. verrucosa*.

Bonellia oligantha (Borhidi) Lepper & J. E. Gut., **comb. nov.** ≡ *Jacquinia oligantha* Borhidi in Pl. Syst. Evol. 129: 5. 1978. – Holotype: Cuba, “Prov. Oriente, Sierra Cristal, charrascos de la región del Río Miguel”, 2.–7.4.1956, *Acuña & al. as Alain 5907* (HAC!).

Bonellia robusta (Urb.) Lepper & J. E. Gut., **comb. nov.** ≡ *Jacquinia robusta* Urb. in Repert. Spec. Nov. Regni Veg. 13: 468. 1915. – Lectotype (designated by Ståhl 1996: 506): Cuba, “Holguín, Sierra de Nipe, vicinity of Woofred”, 500–600 m, 15.1.1910, *Shafer 3561* (NY!; isolectotypes: NY!, HAC!).

Bonellia stenophylloides (Borhidi) Lepper & J. E. Gut., **comb. nov.** ≡ *Jacquinia stenophylloides* Borhidi in Pl. Syst. Evol. 129: 7. 1978. – Holotype: Cuba, “Prov. Oriente, manigua de la costa, falda de la Mesa de Jauco Abajo (sur de Baracoa)”, 17.7.–4.8.1924, *León 11763* (HAC!).

≡ *Jacquinia nipensis* Borhidi in Pl. Syst. Evol. 129: 8. 1978. – Holotype: Cuba, “Prov. Oriente, Sierra de Nipe, charrascos en la Loma del Winch”, 550 m, 22.4.1960, *Acuña & Alain as Alain 8092* (HAC!).

Acknowledgements

The second author thanks the Herbarium Haussknecht of the Friedrich Schiller University Jena as well as the Botanic Garden and Botanical Museum Berlin-Dahlem and the Humboldt University Berlin for financial and scientific support. Thanks are due to Prof. Dr W. Greuter for valuable advice and translating the diagnoses into Latin; to M. Sc. P. A. González Gutiérrez for the revision the English version; to Dr R. Rankin for her helpful advice and general cooperation; to Dr N. Kilian for his editorial assistance.

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