Theophrastaceae cubanae novae IV

Abstract

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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 Theophrastus 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Independently, Lepper (unpublished) had also found a marked differentiation into two lineages in Cuban Jacquinia sensu lato.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–I), the flowers and fruits are never dark orange and the seeds...
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: Neomezia, 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 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 *Jacquínia roigii* differt ramiulis indumento dense brunneo-ochraceo obtectis, foliis glaucis in facie superiore lucidis apice acuminatis microphalatis, inflorescentiis univeli, bi-raro trilorosis, 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 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.

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, Peninsula 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 univalentibus et margine conspicue membranaceis parce ciliatis, corolla calycem aliquanto superioribus 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; **sepalis** orbiculare, 8 mm long, narrowly membraneaeus, 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; **staminale** 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 capitata. **Fruit** ovoid-globose, dark orange to red when fresh, 8–9 mm long, 6.5–8 mm in diameter; **seeds** spherica, 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).

![Map of distribution](attachment:map.png)

**Fig. 3. Distribution of Jacquinia cristalensis, J. curvata and J. toldensis.**
Fig. 4. *Jacquinia curvata* Lepper & J. E. Gut., holotype at HAJB.
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.


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).

Jacquinia toldensis Lepper & J. E. Gut., sp. nov.
Holotype: Cuba, “prov. Camagüey, Minas, cabal al sur de la carretera Minas-Altagracia”, 27.4.1984, Bisse & al. HFC 54102 (HAJB!; isotypes: B!, HAJB!, JE!) — Fig. 7.

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

Procumbent shrub to 1 m tall, densely branched; branches with compressed nodes and with plurilocular, glandular tree-like, candelabra-like and campanulate hairs (Fig. 1i–1). 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.
Fig. 6. *Jacquinia toldensis* Lepper & J. E. Gut., holotype at HAJB.
Fig. 7. *Bonellia fruticulosa* Lepper & J. E. Gut., holotype at 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 capitulate. Fruit yellow-orange, ellipsoid, 3.5 × 1.6 mm, longitudinally striate and conspicuously verrucose; seeds flat, brown, dictyosperm, 2.8 × 1.6 mm.

Additional specimens seen. — Cuba: Camagüey: Sabana serpentinosa 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 atro-brunneis, foliis subrecurvis margine incrassatis; inflorescentis 2–6-floris, pedicellis patensibus vel subcurvis, sepalis marginis membranaceis denticulato-ciliolatis, fructu flavescenti-aureantiaco 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 1.5–2.5 × 0.2–0.4 cm, linear-lanceolate, broader in the lower half, slightly recurvate, margin thick, apex mucronate; nervature brochidodromous, with the midnerves robust, straight, terminating in a macro, 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, Tetes de Camarioca, falda oriental, cerca de Ponce, 24.10.1979, Bisse & al. HFC 40790 (B, HAJB,}

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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).

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

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References


