

## **Coccoloba berazinae and C. cristalensis (Polygonaceae) from Cuba, a new species and a new combination**

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IDELFONSO CASTAÑEDA-NOA<sup>1</sup>***Coccoloba berazainae* and *C. cristalensis* (Polygonaceae) from Cuba, a new species and a new combination****Abstract**

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*Coccoloba berazainae*, a new species from E Cuba, is described, illustrated and compared with another Cuban endemic species, *C. acuna*. The status of *C. nervosa* subsp. *cristalensis*, also endemic to E Cuba, is discussed. It is compared with typical *C. nervosa*, raised in rank, and treated as a separate species, *C. cristalensis*.

Additional key words: taxonomy, *Coccoloba acuna*, *C. nervosa*, endemism, West Indies, endangered, vulnerable

**Introduction**

The genus *Coccoloba* P. Browne is very diverse in the Neotropics, where 120 species occur (Brandbyge 1993; Mabberley 2008). It is found from Bermuda and Florida through the West Indies, Mexico and Central America to South America, with a large number of species in the Amazon basin.

In the West Indies, *Coccoloba* shows considerable diversity with a high level of endemism (Stohr 1983): Cuba, with 34 species (25 endemic), and Hispaniola, with 29 species (16 endemic), constitute the two main evolutionary centres in the Caribbean. These two islands have only four endemic species in common: *C. costata* C. Wright, *C. krugii* Lindau, *C. leonardii* R. A Howard and *C. wrightii* Lindau; plus four widely distributed ones: *C. diversifolia* Jacq., *C. swartzii* Meisn., *C. uvifera* (L.) L. and *C. venosa* L. (Howard 1949, 1957a, b, 1958; Alain 1983; Castañeda-Noa 2012).

In the context of a revision of *Coccoloba* for the *Flora de la República de Cuba* project, the author has carried out extensive field work and herbarium studies. In this paper, *Coccoloba berazainae* is described as a new species and *C. cristalensis* is recognized as a species different from *C. nervosa* Alain, within which it used to be classified as *C. nervosa* subsp. *cristalensis*.

**Results and Discussion*****Coccoloba berazainae* I. Castañeda, sp. nov.**

Holotype: Cuba, Holguín province, Moa municipality, “Concesión minera Santa Teresita” al este de Yamani-güey, pinares y charrascales, 31 Mar 2011, Borsch & al. 4624 (ULV!; isotypes: B!, HAJB!, ULV!) – Fig. 1.

*Diagnosis* — *Coccoloba berazainae* differs from *C. acuna* R. A. Howard (locally endemic to Cuba: Holguín

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Fig. 1. *Coccoloba berazainae* – photograph of the holotype specimen at ULV.

province: Moa municipality: Playa La Vaca and Cerro de Miraflores) in having the leaf blade orbicular or elliptic-obovate to obovate (vs. orbicular or broadly elliptic in *C. acuna*), with lower surface glabrous or scarcely puberulent along veins (vs. densely puberulent), and margin slightly revolute or flat (vs. coarsely revolute); the inflorescence axis, bracts, and ochreolae glabrous (vs. puberulent); and the fruiting perianth lobes appressed to the achene apex (vs. forming a crown around the achene apex) and glabrous (vs. puberulent).

**Description** — Shrubs densely branched, 1–2 m tall. *Brachyblasts* often geniculate, puberulent when young, with swollen nodes. *Ochreae* cylindrical, longitudinally split opposite to petiole, 2–3 mm long, membranous, puberulent, apex oblique. *Leaf petiole* inserted at base of ochrea, (2–)3.5(–4) mm long, puberulent; *leaf blade* orbicular or elliptic-obovate to obovate, (0.8–)1–1.8(–2.5) × (0.6–)0.8–1(–1.5) cm, coriaceous, lower surface glabrous or scarcely puberulent along veins, upper surface smooth and often shining, base cuneate, margin slightly revolute or flat, apex rounded to truncate; midrib and primary veins slightly raised on lower surface, impressed on upper surface, primary veins in 3 or 4 pairs, straight, bifurcating close to margin to form an intramarginal vein; secondary venation reticulate, obscure. *Inflorescence* terminal, (1.5–)2–3 cm long; axis striate, glabrous; *bracts* and *ochreolae* ovate, less than 1 mm long, membranous, glabrous, persistent. *Flowers* greenish white; *staminate flowers* solitary at each node, *pedicel* to 1 mm long, *stamens* 0.5–1 mm long; *pistillate flowers* not seen. *Achene* ovoid, c. 3 × 2.6 mm, apex obtuse; fruiting perianth lobes appressed to achene apex, glabrous.

**Phenology** — *Coccoloba berazainae* flowers from February to March and bears fruit from March to April.

**Distribution and ecology** — *Coccoloba berazainae* is known only from a small area in E Cuba, in Holguín and Guantánamo provinces, growing in xerophytic thorny scrub on serpentine, between 100 and 200 m above sea level.

**Conservation status** — *Coccoloba berazainae* is a rare plant. It must be assessed as Endangered, EN B2ac(iii), according to the Red List categories and criteria of the IUCN (2012). So far, the species is documented from few localities, where it is infrequent. The overall extent of occurrence is less than 100 km<sup>2</sup>.

**Etymology** — The epithet honours Rosalina Berazaín Iturralde, professor and distinguished researcher of Cuba's flora and vegetation.

**Additional specimen seen (paratypes)** — CUBA: HOLGUÍN PROVINCE, Moa municipality: “charrascales al este de Yamanigüey”, *Bisse & Köhler HFC 6021*; *Noa*

& *al.* 3802 (ULV); “charrascales al este de Yamanigüey, entronque de Mina Potosí y río Jiguani”, *Bisse & al. HFC 44290* (B, HAJB, JE); “charrascales cerca de Yamanigüey”, *Bisse HFC 15223* (HAJB, JE). – GUANTÁNAMO PROVINCE: Baracoa municipality: “charrascales entre Taco Bay y Yamanigüey, concesión minera Santa Teresita”, *Borsch & al. 4624* (B, HAJB, ULV); “charrascales entre Nibujón y Taco Bay”, *Álvarez & al. HFC 55624* (B, HAJB, JE); “charrascales al oeste de Nibujón”, *Claro & Gutiérrez HFC 25880* (HAJB); “charrascales cerca de la desembocadura del arroyo Maguana”, *Bisse & Köhler HFC 5632* (B, HAJB, JE); “Báez, charrascales serpentinosos cerca del arroyo Maguana” *Bisse & al. HFC 33882* (B, HAJB, JE).

***Coccoloba cristalensis*** (Alain) I. Castañeda, **comb. & stat. nov.** ≡ *Coccoloba nervosa* var. *cristalensis* Alain in Mem. Soc. Cub. Hist. Nat. “Felipe Poey” 24: 113 1960 ≡ *Coccoloba nervosa* subsp. *cristalensis* (Alain) Borhidi in Bot. Közlem. 58: 176. 1971. – Holotype: Cuba, Holguín province, “Sierra de Cristal, en charrascales”, 2–7 Apr 1956, *Alain, Acuña & López Figueiras 5691* (HAC!; isotypes: HAC!, NY 73595!).

**Description** — Shrubs densely branched, 1–2 m tall. *Brachyblasts* terete, rusty-puberulent when young, with slightly swollen nodes. *Ochreae* cylindrical, longitudinally split opposite to petiole, 3–3.6 mm long, membranous, puberulent, apex oblique. *Leaf petiole* inserted at base of ochrea, 1.8–2 mm long, puberulent; *leaf blade* brown and shining on lower surface, dark brown and shining on upper surface, obovate, broadly elliptic-obovate or orbicular, (1.2–)1.4–1.6(–1.8) × (0.8–)1–1.4(–1.6) cm, coriaceous, lower surface densely glandular punctate, base broadly or narrowly cuneate, not oblique, margin entire, revolute, apex obtuse or rounded to truncate; midrib and primary veins slightly raised on both surfaces; primary veins in 3 or 4(or 5) pairs, straight, bifurcating close to margin to form an intramarginal vein; secondary venation laxly reticulate. *Inflorescence* terminal, spiciform, (0.8–)1–1.4(–1.6) cm long, not exceeding leaves; axis striate; *bracts* ovate, c. 1 mm long, membranous; *ochreolae* obovate, c. 1.5 mm long, membranous, persistent; inflorescence axis, bracts, and ochreolae rusty-puberulent. *Flowers* solitary at each node, greenish white; *pedicel* c. 1 mm long; *stamens* 1.8–2 mm long; *pistillate flowers* with c. 1 mm long hypanthium and c. 2 mm long style. *Achene* ovate, 5(–6) × c. 4 mm, apex acute; fruiting perianth lobes glabrous forming a conspicuous crown around achene apex.

**Phenology** — *Coccoloba cristalensis* flowers from February to April and bears fruit from March to June.

**Distribution and ecology** — *Coccoloba cristalensis* is endemic to E Cuba, where it grows in thorny scrub on





Fig. 2. Specimen portions, showing leaves and inflorescences – A: *Coccoloba cristalensis*, Areces & al. HFC 30517 (HAJB); B: *C. nervosa*, López Figueiras 2860 (HAC).

serpentine, between (100–)300 and 400(–1235) m above sea level.

**Conservation status** — *Coccoloba cristalensis* is considered a rare species. It must be assessed as Vulnerable, VU B2ab(iii,iv), according to the Red List categories and criteria of the IUCN (2012). So far, the species is documented from few localities and the overall extent of occurrence is less than 2000 km<sup>2</sup>.

**Remarks** — *Coccoloba nervosa* var. *cristalensis* was described by Alain (1960) based on a single specimen collected by Alain & al. in the Sierra de Cristal, Holguín province. It was said to differ from *C. nervosa* var. *nervosa*, which is also endemic to E Cuba (Holguín, Santiago de Cuba and Guantánamo provinces), in the orbicular leaf blade measuring c. 1 × 1.8 cm, rounded to truncate at the base, and in the glabrous ochreolae up to 1 mm long. Borhidi (1971), later raised it to the rank of subspecies. The scant herbarium material available to Alain, and the incompletely developed inflorescences of the holotype, caused Alain (1960) to describe *C. nervosa* var. *nervosa* as having very small, c. 1 cm long racemes; but in a

note added at the end he stated that the specimen López Figueiras 2860 (HAC; see Fig. 2B), also belonging to *C. nervosa* var. *nervosa*, presents up to 3 cm long immature inflorescences and up to 1.5 mm long fruiting pedicels. In all fertile herbarium material of *C. nervosa*, we found (2.5–)3–3.5(–4) cm long racemiform inflorescences in the form of a simple thyse; bracts ovate, to 1 mm long, membranous, puberulent; ochreolae to 1.5 mm long, membranous, puberulent, persistent; and pedicels c. 2 mm long in flower, 2–3 mm long in fruit (Table 1, Fig. 2). The opportunity to study type material for both taxa and further relevant material from various herbaria consulted (A, B, HAC, HAJB, JE, NY, ULV) allowed us to ascertain that the two taxa, compared in Table 1 and Fig. 2, deserve to be treated as different species.

**Additional specimens seen** — CUBA: SANTIAGO DE CUBA PROVINCE: Segundo Frente municipality: Mayarí Arriba, “Sierra del Cristal, región superior del macizo central”, Areces & al. HFC 30517 (B, HAJB, JE); “charrascal en la falda sur de los Pinares de Mícará”, Areces & al. HFC 30649 (B, HAJB, JE); “falda sur de Sierra de Mícará, Bisse 15986 (JE). HOLGUÍN PROVINCE: “Sierra de Nipe,

Table 1. Comparison of characters of *Coccoloba nervosa* and *C. cristalensis*.

Character	<i>Coccoloba nervosa</i>	<i>Coccoloba cristalensis</i>
Petiole length	3.4–5 mm	1.8–2 mm
Leaf blade shape	elliptic to elliptic-obovate, base usually slightly oblique	obovate, broadly elliptic-obovate or orbicular, base not oblique
Leaf blade primary veins	4–7 pairs, densely branched	3 or 4(or 5) pairs, laxly branched
Leaf blade lower surface secondary venation	slightly raised	not evident
Leaf blade upper surface secondary venation	conspicuous and densely reticulate	laxly reticulate
Inflorescence	racemiform, exceeding leaves	spiciform, not exceeding leaves
Flowering pedicel length	c. 2 mm, exceeding ochreolae	c. 1 mm, shorter than ochreolae

Mayarí Abajo, Cayo de la Plancha”, *Bisse HFC* 15894 (HAJB, JE). — GUANTÁNAMO PROVINCE: Maisí “orillas del Arroyo del Pino entre Guajimero y Alto del Pino”, *Genes & al. HFC* 59111 (B, HAJB, JE); La Tinta, “Peladero de Jauco, cerca de Guajimero”, *Bisse & al. HFC* 47802 (B, HAJB, JE); “Peladero de Jauco”, *Bisse HFC* 20150 (JE); “monte seco de Baitiquirí por el camino a la mina del Yeso”, *Bisse & Köhler HFC* 7655 (JE); “Cayo Fortuna, pinares y charrascos en el trillo de Riito a Piloto Arriba”, *Bisse & Berazaín HFC* 21985 (JE).

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