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ISIDRO MÉNDEZ

The problem of *Citharexylum spinosum (Verbenaceae)* in the Antilles

Abstract

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As part of the revision of the genus *Citharexylum* for the projects "Flora of the Cuban Republic" and "Flora of the Greater Antilles", conspecificity of *C. spinosum* and plants assigned by many authors to a different species, misnamed *"C. fruticosum"* (an illegitimate name), is demonstrated. Infraspecific classification of *C. spinosum* is critically reconsidered, resulting in five new combinations, three of them at a new rank.

Introduction

Numerous authors have approached the taxonomic problem surrounding *Citharexylum spinosum* L., especially in relation to *C. fruticosum* L. (Schulz 1909, Alain 1957, Moldenke 1958a-b, 1959, Görts-van Rijn 1988, Howard 1989, Liogier 1994, 1995, Acevedo 1996, among others). Méndez & Cafferty (2001) demonstrated that *C. fruticosum* is an illegitimate name used by Linnaeus in his work "Systema Naturae ed. 10" (1759), in replacement of *C. spinosum*. The present article summarizes the taxonomic and nomenclatural approaches that the author has assumed for the purposes of the projects "Flora of the Cuban Republic" and "Flora of the Greater Antilles."

Linnaeus established *Citharexylum* in 1753 as a monotypic genus for the species *C. spinosum*. In 1759, although he continued recognizing the existence of a single species, he substituted the previous name with *C. fruticosum*. During the first three quarters of the twentieth century, all authors who studied this group in the Caribbean region accepted the existence of two different species and made some effort to justify their distinction (Schulz 1909, Moldenke 1939, Alain 1957, Moldenke 1958a-b, 1959, Liogier 1994, 1995). More recently, the existence of two independent taxa has been questioned, among others by: (1) Görts-van Rijn (1988), who considered that in Guyana only *C. spinosum* exists, and included *C. fruticosum* L. as a synonym; (2) Howard (1989), who suggested that, in the Lesser Antilles, *C. fruticosum* is only an ecological variant of *C. spinosum*; (3) Acevedo (1996), who predicted that exhaustive studies could demonstrate that both binomials are synonymous, with *C. spinosum* having priority; (4) Méndez & Cafferty (2001), who demonstrated the illegitimacy of *C. fruticosum*.

Nevertheless, the taxonomic and nomenclatural problems are not completely clarified, because numerous heterotypic synonyms exist. An infraspecific system under *Citharexylum fruti-*

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cosum auct. (non L.) has been established and hybrids have been pointed out between the two supposed species and between each of them and *C. caudatum* L., whose situation should be clarified.

The author who with the most precision established the distinction between *Citharexylum spinosum* L. and *C. fruticosum* auct. (non L.) was Schulz (1909). It was based on the consistency of the foliar lamina, the prominence of the veins on both surfaces of the leaves, the length of the floral pedicels, the configuration of the calyx border and the form of the fruit. Moldenke (1939) accepted this approach without major modifications and, based on it, he distinguished hybrids between the two species and between each of them and *C. caudatum* (Moldenke 1959).

Field observations (carried out by the author during 17 years of work in Cuba and Puerto Rico) and the study of more than 300 herbarium specimens (from B, BM, BR, C, F, FL, GH, HAC, HAJB, HIPC, HIVC, HPPR, JBSD, JE, M, NY, PR, S and US), including six types, have confirmed that the characters presented by Schulz (1909) are expressed in a continuous way and that the differential details cited are extreme manifestations that rarely appear jointly in a single individual, as had been described. The existence of a single species (previously outlined by Görts-van Rijn (1988) and suggested by Howard (1989) and Acevedo (1996)) was verified, in spite of the variability that sustains the infraspecific system established under *C. fruticosum* auct. (non L.)

A critical revision of this system is summarised below, with the new combinations that are necessary in the light of our current knowledge.

Citharexylum spinosum L., Sp. Pl.: 625. 1753 ≡ *Citharexylum cinereum* L., Sp. Pl., ed. 2: 872. 1763, nom. illeg. ≡ *Citharexylum fruticosum* L., Syst. Nat., ed. 10: 1115. 1759, nom. illeg. – Lectotype (Howard in Bot. J. Linn. Soc. 79: 82. 1979): [icon] "Citharexylum americanum alterum, foliis ad marginem dentatis" in Plukenet, Phytographia: t. 161, f. 5. 1692. Epitype (Méndez & Cafferty in Taxon 50, in press. 2001): "Barbados, St. Andrew," 9.1940, *Gooding 228* (BM [photo!]).
= *Citharexylum quadrangulare* Jacq., Enum. Syst. Pl. Carib.: 26. 1760. – Type not designated.
= *Citharexylum teres* Jacq., Select. Stirp. Amer. Hist.: 185, t. 118. 1763. – Lectotype (designated here): [icon] Jacquin, Select. Stirp. Amer. Hist.: t. 118. 1763!, based on material from Martinique.
= *Citharexylum cinereum* Jacq. ex J. F. Gmel., Syst. Nat., ed. 13, 2: 492. 1789, nom. illeg. – Holotype [icon] Gmelin, Syst. Nat., ed. 13, 2: t. 178. 1789 [n.v.], based on material from Martinique.
= *Citharexylum pentandrum* Vent., Descr. Pl. Jard. Cels: 47. 1800. – Type not designated.
= *Citharexylum surrectum* Griseb., Fl. Brit. W. I.: 497. 1861. – Type not designated.
= *Citharexylum hibridum* Mold. in Lilloa 4: 313. 1939 (pro hybr. *C. fruticosum* L. × *C. spinosum* L.). – Holotype: Tobago, Rockkley Vale, 21.7.1910, *Brodway 4064* (NY [n.v.]).
– *Citharexylum fruticosum* auct. (non L., Syst. Nat., ed. 10: 1115. 1759).

Shrub or tree, 4-18 m tall; trunk slender. *Branches* generally 4-angled, sometimes cylindrical and grooved; glabrous except at the nodes. *Leaves* opposite-decussate; petioles 5-30 mm, glabrous, with a gland at the apex; lamina orbicular, elliptic, oblong, lanceolate-elliptic, lanceolate, or linear-lanceolate, 4-20 cm, generally chartaceous, rarely membranaceous, with 1-3 pairs of glands near the base; acute, obtuse or emarginate at the apex; cuneate at the base; glabrous above, glabrous or with variable pubescence below; margin somewhat revolute, usually entire, some juvenile leaves sometimes subserrate toward the apex, with teeth up to 4 mm; veins prominent on both surfaces. *Inflorescences* mostly terminal or, more rarely, axillary, simple or branched with two or more basal branches, 9-30 cm long, laxly many-flowered; axis glabrous; bracteoles filiform to lanceolate, sometimes with hairs. *Pedicels* 1-1.5 mm long. *Flowers* fragrant. *Calyx* pale green, 2-4 mm, glabrous outside; margin ciliate, irregular or 5-toothed. *Corolla* white, pale yellowish or pale reddish; tube 4-10 mm, 2-3 times as long as the calyx; limb 5-parted, 6-7 mm in diameter. *Drupe* oblong, 6-10 mm in diameter, initially yellow-orange, black when mature; fruiting calyx hardened, cup-shaped.

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Distribution. – Bermuda, Antilles, Venezuela and Guyana.

The species is extremely variable as to indumentum, form consistency and border of the leaf lamina. A thorough study of various populations revealed that the phenotypic expression of these characters is continuous and that the morphological segregation is unrelated to phytogeographical or ecological patterns. For such variation, the form is the most appropriate rank at the infraspecific level.

Key to the formae

1. Leaves mostly glabrous below, if pubescent then only in the axils of the secondary veins . 2
– Leaves pubescent below, at least along the midvein (not only in the axils of the secondary veins) 4
2. Leaves pubescent below in the axils of the secondary veins, all with an entire margin . . . . . 1. *C. spinosum* f. *spinosum*
– Leaves totally glabrous, some subserrate at the apex 3
3. Leaves linear-lanceolate, up to 6 times as long as wide. . . . . 2. *C. spinosum* f. *smallii*
– Leaves elliptic, lanceolate-elliptic or rarely lanceolate, but in such cases only some leaves up to 4 times as long as wide . . . . . 3. *C. spinosum* f. *subserratum*
4. Hairs present throughout the lower surface of the leaf, margin entire or subdentate toward the apex . . . . . 4. *C. fruticosum* f. *villosum*
– Hairs dispersed, mostly limited to the veins, margin entire 5
5. Leaves membranaceous, veins scarcely prominent . . . . . 5. *C. spinosum* f. *brittonii*
– Leaves chartaceous or subcoriaceous, veins prominent . . 6. *C. spinosum* f. *subvillosum*

1. *Citharexylum spinosum* L. f. *spinosum*

Leaves elliptic, lanceolate-elliptic or rarely lanceolate (but in such cases only some leaves up to 4 times as long as wide), margin entire, pubescent below only in the axils of the secondary veins.

Distribution. – Bermuda, Antilles, Venezuela and Guyana. For additional specimens examined see the electronic supplement at http://www.bgbm.fu-berlin.de/bgbm/library/publikat/willd31/mendez.htm.

The lectotype selected by Howard (1979) offers very limited information about the varying morphology to which the binomial was originally assigned, but the most evident character relates to the leaf margin, a detail that he repeats in three of the lines of variation within the species. The typical form is assigned to this phenotype, based on the epitype selected by Méndez & Cafferty (2001).

2. *Citharexylum spinosum* f. *smallii* (Mold.) I. E. Méndez, comb. & stat. nov. ≡ *Citharexylum fruticosum* var. *smallii* Mold. in Repert. Spec. Nov. Regni Veg. 37: 223. 1934. – Holotype: Bahamas, Andros, coppice near Deep Oreek, Long Bay Cay Sections, 20.-22.1.1910, *Small & Carter 8583* (NY!).

Leaves linear-lanceolate, up to 6 times as long as wide; margin entire or 2-4-toothed toward the apex (on some leaves of young branches of certain specimens).

Distribution. – Bahamas, Jamaica, Puerto Rico. Alain (1957) and Moldenke (1958, 1980) reported this form also from Cuba. For additional specimens examined see the electronic supplement at http://www.bgbm.fu-berlin.de/bgbm/library/publikat/willd31/mendez.htm.

3. *Citharexylum spinosum* f. *subserratum* (Sw.) I. E. Méndez, comb. nova ≡ *Citharexylum subserratum* Sw., Prodr.: 91. 1788 ≡ *Citharexylum fruticosum* var. *subserratum* (Sw.) Mold. in

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Phytologia 1: 17. 1933 ≡ *Citharexylum fruticosum* f. *subserratum* (Sw.) Mold. in Phytologia 36: 164. 1977. – Lectotype (Moldenke in Phytologia 6: 384. 1958): Española, *Swartz* (S [n.v.]).

Leaves elliptic, lanceolate-elliptic, or rarely lanceolate (in such cases only some up to 4 times as long as wide), totally glabrous below; margin entire or sometimes subserrate toward the apex (teeth in extreme cases up to 4 mm).

Distribution. – Hispaniola (Alain 1957, Moldenke 1958, 1980); Liogier (1994) reported this form also from Cuba. For additional specimens examined see the electronic supplement at http://www.bgbm.fu-berlin.de/bgbm/library/publikat/willd31/mendez.htm.

4. *Citharexylum spinosum* f. ***villosum*** (Jacq.) I. E. Méndez, **comb. & stat. nov.** ≡ *Citharexylum villosum* Jacq., Icon. Pl. Rar. 1: 12. 1786 ≡ *Citharexylum fruticosum* var. *villosum* (Jacq.) O. E. Schulz in Urban, Symb. Antill. 6: 63. 1900. – Holotype: [icon] Jacquin, Icon. Pl. Rar. 1: 12. 1786 [n.v.], based on a cultivated plant in the Botanic Garden of Vienna, Austria, apparently grown from seeds obtained from Santo Domingo.
= *Citharexylum polystachyum* Turcz. in Bull. Soc. Imp. Naturalistes Moscou 36: 209. 1863 – Holotype: "Cuba, from Santiago to Río Guaso, Oriente", 1837, *Linden 1975* (KWU [n.v.]).

Leaves elliptic or oblong, rarely orbicular; pubescent, with dense hairs on all veins and on leaf tissue between the veins; margin entire or subdentate toward the apex.

Distribution. – Cuba, Hispaniola, Puerto Rico, Bahamas. For additional specimens examined see the electronic supplements at http://www.bgbm.fu-berlin.de/bgbm/library/publikat/willd31/mendez.htm.

5. *Citharexylum spinosum* f. ***brittonii*** (Mold.) I. E. Méndez, **comb. & stat. nov.** ≡ *Citharexylum fruticosum* var. *brittonii* Mold. in Lilloa 4: 311. 1939 ≡ *Citharexylum broadwayi* O. E. Schulz in Urban, Symb. Antill. 7: 354. 1912. – Holotype: Cedros Islands, 15.1.1908, *Broadway 3198* (B†).

Leaves elliptic, lanceolate-elliptic, or rarely lanceolate (in such cases only some up to 4 times as long as wide), membranaceous, veins hardly prominent, pubescent below, hairs scattered, mostly limited to the nerves, margin entire.

Distribution. – Trinidad.

Note. – For this project it was not possible to study either the holotype (destroyed in B) or additional specimens from Trinidad. The description upon which the new combination and status are based, is taken from Moldenke (1958a: 366).

6. *Citharexylum spinosum* f. ***subvillosum*** (Mold.) I. E. Méndez, **comb. nova** ≡ *Citharexylum fruticosum* f. *subvillosum* (Mold.) Mold. in Phytologia 36: 164. 1977 ≡ *Citharexylum fruticosum* var. *subvillosum* Mold. in Repert. Spec. Nov. Regni Veg. 37: 223. 1934. – Holotype: Cuba, Guantánamo Bay, 17.-30.3.1909, *Britton 2101* (NY!).
= *Citharexylum bahamense* Millsp. in Bull. New York Bot. Gard. 3: 450. 1905 ≡ *Citharexylum fruticosum* var. *bahamense* (Millsp.) Mold. in Phytologia 13: 242. 1966. – Holotype: Bahamas, New Providence, coppice Farringdon Road, 24.7.1904, *Britton & Brace 233a* (NY!; isotype US).

Leaves lanceolate, chartaceous or subcoriaceous, pubescent below, hairs scattered, on the nerves and leaf tissue, margin entire.

*Citharexylum fruticosu*m f. *subvillosum* (Mold.) Mold. was established originally to differentiate individuals with prominent veins. This is actually unfounded in practice, because the conspicuous veins are inherent to the whole species.

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Distribution. – Cuba, Hispaniola, Bahamas, Virgin Islands. For additional specimens examined see the electronic supplement at http://www.bgbm.fu-berlin.de/bgbm/library/publikat/willd31/mendez.htm.

Supposed hybrids

Harold Moldenke has also described two hybrids involving the foregoing species.

Citharexylum ×*jamaicense* Mold. in Phytologia 6: 416. 1958 (*C. caudatum* L. × *C. fruticosum* L.). – Holotype: Jamaica, *Perkins 419* (B†).

Citharexylum ×*perkinsii* Mold. in Phytologia 6: 496. 1959 (*C. caudatum* L. × *C. spinosum* L.). – Holotype: Jamaica, near Troy, in pasture, 1500 m, *Perkins 1320* (B†; isotypes G, N?, Z [n.v.]). – Moldenke (1980) reported this hybrid for Jamaica, Hispaniola and Puerto Rico.

It was not possible to study the holotypes (destroyed in B), but numerous specimens coming from Jamaica were evaluated, identified by Moldenke with these names. All fall within the range of variability of *C. caudatum* L., and the intermediate characters between the supposed parents are not evident in any of them.

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