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Research

A contribution towards resolving the nomenclature of *Citharexylum* (Verbenaceae): typification of names linked to South American taxa

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During ongoing taxonomic studies in the genus *Citharexylum* (Verbenaceae), twenty names were found in need of typification or typification clarifications. Fourteen names (*C. andinum*, *C. herrerae*, *C. ilicifolium*, *C. kunthianum*, *C. laetum*, *C. myrianthum* var. *acuminatum*, *C. myrianthum* var. *rigidum*, *C. pernambucense*, *C. poeppigii*, *C. quercifolium*, *C. solanaceum*, *C. solanaceum* var. *macrocalyx*, *C. surrectum* and *C. weberbaueri*) are here lectotypified, and epitypes are selected for three names (*C. herrerae*, *C. kunthianum* and *C. pernambucense*). Neotypes are designated for the names *C. berteroi*, *C. broadwayi* and *C. coriaceum*. Furthermore, updates and supporting information for three names already typified by Harold Moldenke (*C. macrochlamys*, *C. punctatum* and *C. subthyrsoideum*) are provided.

Keywords: *Citharexylum*, typification

Introduction

Citharexylum L. is a New World genus of trees and shrubs distributed from southern North America through Central America and the Caribbean to Argentina and Uruguay (Atkins 2004). It is characterized by arborescent habit, drupaceous fruits with a shallowly cupulate, chartaceous persistent calyx that does not cover the fruit, and short styles (Sanders 2001). The genus was first described by Linnaeus (1753, p. 625) with a single species, *Citharexylum spinosum* L. Subsequently, many authors have contributed to increase the number of species in the genus to the current ca 130 (Sanders 2001, Múlgura et al. 2012). Between 1958 and 1959, Moldenke (1958a, 1958b, 1958c, 1958d, 1959a, 1959b, 1959c) published seven short fascicles of what would be a larger work, the monograph of *Citharexylum*, in which he gave descriptions and provided information about the type material of many names. According to the modern rules of the ICN (McNeill et al. 2012), effective typifications can be traced through Moldenke's works.

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During ongoing studies for a modern revision of *Citharexylum* in South America the need to work on the typification of several names became evident. As a result, seventeen new typifications (lectotypes, neotypes and/or epitypes) of names are here presented along with updates for three names already typified by Moldenke (1959a, 1959c).

Material and methods

In order to resolve these typifications all the potential sources of original material were studied, including the protologue, herbaria and relevant literature about the names concerned. Type specimens from B, BM, BR, C, E, F, FI, G, GH, GOET, HAL, K, LE, MICH, MO, MOL, MPU, P, S, US and W were analyzed from digital images available in the JSTOR Global Plants database (JSTOR 2017), from online access to herbaria B (< http://ww2.bgbm.org/herbarium/default.cfm >), K (< https://www.kew.org/science/collections/Herbarium >), NY (< http://sciweb.nybg.org/science2/hcol/vasc/index.asp >), and P (< https://science.mnhn.fr/institution/mnhn/collection/p/item/search/form >), or through digital images obtained by personal communication with the curators at C, LE, S, and US. Names in this work are arranged into two main categories: A) names needing typification, and B) names already typified by Moldenke but needing typification clarifications. Those names included in the former category are arranged in two sections based on whether or not the type material was deposited at herbarium B. Names in each of the sections are listed alphabetically. When it was considered necessary, the provenance statements mentioned in the protologues were provided.

A. *Citharexylum* names in need of typification

A1. Names based on material deposited at B

The Verbenaceae herbarium at Berlin (B) was destroyed by the fire caused by the Allied bombing on the night of 1–2 March 1943 (Hiepko 1987). In 1936, a few years before the start of the war, Moldenke visited B as well as other European herbaria (P, K, W, S and many others). During this journey, Moldenke not only the studied material relevant for his then ongoing revisions but he also took photographs of the type elements and removed fragments from them (now isotypes). These fragments are currently mounted on herbarium sheets housed at F and NY. In many cases these photographs and fragments are the only extant material linked to the names concerned, and they have repeatedly served to resolve typification issues in Verbenaceae (França and Guilietti 2012, Moroni and O'Leary 2016). Thanks to the efforts of Moldenke, various American and European herbaria have a significant type photograph collection of Verbenaceae. Therefore it is important to highlight the value of the task carried out by him, analogous and complementary to that of the American botanist F. Macbride (1892–1976) who photographed type material deposited at several European herbaria.

***Citharexylum broadwayi* Schulz, in Urban (1912, p. 354)**

Neotype (designated here): Trinidad and Tobago. Cedros, on the sea shore, 6 Jun 1911, W.E. Broadway 3861 (NY 02219105!).

Notes: Schulz (1912) described *Citharexylum broadwayi* based on a collection made by Broadway in Trinidad and Tobago. The holotype housed at B is no longer extant. The only reference to the destroyed material is a photograph taken by Moldenke during his visit to the herbarium (NY 2219104!). No original Broadway material could be traced at the herbaria that are known to house some of his duplicates: F, GH, K, OXF, TRIN and US (following Stafleu and Cowan 1976). Since all potential sources of original material have been checked, but nothing has been found, a neotype is here proposed (Art. 9.7 of the ICN, McNeill et al. 2012). It is a specimen from the same locality and in morphological agreement with the material studied and cited by Moldenke (1939, 1958b).

***Citharexylum berteroi* Sprengel (1825, p. 763)**

(syn. *Citharexylum caudatum* L.)

Neotype (designated here): Jamaica. Morce's Gap, 2 Sep 1906, N.L. Britton 106 (NY 01337692!; isoneotype NY 01337691!).

Notes: Sprengel (1825) described *Citharexylum berteroi* based on a Bertero collection from Jamaica. According to Stafleu and Cowan (1985), Sprengel's herbarium was sold after the death of his son in 1851, and his material of Verbenaceae went to HEID via J.A. Schmidt. However, no original material could be located there (Peter Sack, Technical Assistant Curator at HEID, pers. comm.).

Moldenke (1958b, p. 309) regarded *C. berteroi* as a synonym of *C. caudatum* and it is thus likely that he had studied the type elements. Indeed, Moldenke cited two Bertero specimens among the Jamaican material identified as *C. caudatum*. Among them, the specimen Bertero no. 160 was indicated as deposited at B. Unfortunately, this material was destroyed during the bombing of Berlin but there are several copies of a photograph taken by Moldenke which allow us to assert that the specimen lodged at B was original material. Since there are no duplicates of the Berlin collection, and we aim to fix the usage of the name, a neotype is designated (Art. 9.7 of the ICN, McNeill et al. 2012) from the Jamaican material examined by Moldenke (1958b). After careful examination of the available collections, the specimen Britton 106 is here selected as neotype since it shows all the morphological features described in the protologue.

***Citharexylum herrerae* Mansfeld (1925, p. 469)**

Lectotype (designated here): Peru. Cuzco, San Sebastián, 3200–3400 m a.s.l., May 1925, E.L. Herrera 677 (NY 137253!). **Epitype** (designated here): Peru. Cuzco: Cuzco Valley, 3200–3500 m a.s.l., Feb 1927, F.L. Herrera 1464a (NY!).

Protologue citation: "Peru: Prov. Cuzco, Distr. De San Sebastian, 3200–3400 m a.s.l. (Herrera n. 677! – Blühend und fruchtend im Mai 1925; Herb. Berol.)".

Notes: According to Mansfeld (1925) the type material of *Citharexylum herrerae* was housed at B. Moldenke (1958b, p. 403, 1966) discussed this name and its original material, explicitly citing that the holotype was kept at B along with three isotypes, as well as another isotype housed at NY which consists of fragments removed from one of the isotypes at B. Unfortunately, the type elements at B are no longer extant there, only a photograph from Macbride's series is available (neg. 17595). The only original material remaining is the sheet at NY, and so it is here selected as lectotype of the name. Since the fragments cannot be taxonomically identified for purposes of the precise application of the name, an epitype is here selected from among the material studied and cited by Moldenke (1958b) (Art. 9.8 of the ICN, McNeill et al. 2012).

Citharexylum quercifolium **Hayek (1909, p. 169)**
Lectotype (designated here): Peru. Cajamarca. Bancas und Celendin, n.d., A. Weberbauer 4248 (G 176440!, isolectotypes: F 74320F!, MOL 4393!, NY 137278!, NY 137277!).

Protologue citation: "Peru: westliche Talwand des Marañon zwischen Balsas und Celendin (Dep. Cajamarca), 3100–3200 m (A. Weberbauer, Flora von Peru, n. 4248)."

Notes: In the description of *Citharexylum quercifolium* Hayek (1909) cited a Weberbauer collection from Peru. Moldenke (1959b, pp. 7–8) indicated a specimen housed at B as the holotype along with four isotypes housed at B, F, G and NY. Thus, according to the latest edition of the ICN (Art. 9.9 and 9.23 of the ICN, McNeill et al. 2012), the type citation by Moldenke (1959b) has to be accepted as an effective lectotypification Unfortunately, the type element is no longer extant at B, only a photograph from Macbride's series is available (neg. 17598), and so a new lectotype is here chosen. An additional duplicate located at MOL must be added to the original material previously cited by Moldenke. From among these, the specimen kept at G is here selected as lectotype since it has Weberbauer's original label matching the locus classicus indicated by Hayek in the protologue of the species. Concerning the sheets kept at F and NY, they consists of fragments that Moldenke removed from the duplicates lodged at B and G, respectively.

Citharexylum weberbaueri **Hayek (1909, p. 169)**
Lectotype (designated here): Peru. No date, A. Weberbauer 3731 (NY 137295!).

Protologue citation: "Peru: Tal des Marañon zwischen Chuquibamba und Punchau (Dep. Huanuco, prov. Huamalies. Aus Kräuten (auch Grasern) und Sträuchern gemischte offene Formation, 2730 m A. Weberbauer, Flora von Peru, n. 3731".

Notes: Hayek's description of *Citharexylum weberbaueri* was based on a Weberbauer's collection from Peru. Moldenke (1959c) explicitly cited herbarium B as the institution in which he had studied the type material and therefore his statement is here interpreted as an effective lectotypification (Art. 9.9 and 9.23 of the ICN, McNeill et al. 2012). He also referred to an isotype housed at NY (i.e. an isolectotype). This sheet consists of fragments brought with him from the type at B. In an additional note on the species, Moldenke (1966) indicated that the type material is no longer extant at B, and referred to a Macbride negative of the type (photo neg. F 0BN017603!) and a copy lodged at US. Despite extensive search of duplicates, the sheet at NY is the only original material found for this name. Thus, it is here selected as lectotype of the name.

Citharexylum solanaceum **Cham. var. *macrocalyx* Moldenke (1934, p. 234)**
(syn. *Citharexylum solanaceum* Cham.)

Lectotype (designated here): Brazil. Brasilia, s.d., F. Sellow s.n. (P 00689444!; isolectotype NY 137286!).

Protologue citation: "Type collected by Fiedrich Sellow in Southern Brazil, deposited at the Botanisches Museum, Berlin."

Notes: In the protologue of *Citharexylum solanaceum* var. *macrocalyx* Moldenke (1934) cited an element collected by Sellow in Brazil, and deposited at herbarium B. Unfortunately, the holotype was destroyed in 1943. In an additional note on the species, Moldenke (1959b, p. 31) indicated two isotypes lodged at NY and P. The duplicate at NY contains fragments removed by Moldenke from the holotype while the sheet housed at P (ex Herb. Reg. Berolinense) contains a fertile branch in a good state of preservation which was annotated by Moldenke as "ISOTYPE!". Therefore, the duplicate at P is here selected as lectotype of the name.

Citharexylum pernambucense **Moldenke (1940, p. 442)**
Lectotype (designated here): Brazil. Pernanmbuco, Tapera, Caruarú, Jan. 1928, B.J. Pickel 1501 (NY 137269!). **Epitype** (designated here): Brazil. Pernambuco, Jaboatao dos Guararapes Jaboatao, 5 May 1935, B.J. Pickel 3921 (NY 564173!).

Protologue citation: "The type of this species was collected by my good friend, Don Bento Pickel (no. 1501) at Caruarú, tapera, Pernambuco, Brazil, in January, 1928, and is deposited in the herbarium of the Botanisches Museum at Berlin".

Notes: According to the protologue of *Citharexylum pernambucense* (Moldenke 1940) the type specimen was deposited at B. Unfortunately, this material is no longer extant there. In a later work, Moldenke (1959a, p. 498) discussed the original material of *C. pernambucense*, referring to an isotype housed at NY. This material consists of leaves removed by Moldenke from the holotype, most likely during his visit to the herbarium in 1936. The sheet held at NY is the only known material linked to the type collection and therefore it is here selected as lectotype of the name. In order to fix the precise application of the name, an epitype supporting current usage is selected among the material studied and cited by Moldenke (1959a, p. 498) (Art. 9.8 of the ICN, McNeill et al. 2012).

A2. Names based on material deposited at other herbaria

***Citharexylum andinum* Moldenke (1934, p. 217)**
Lectotype (designated here): Bolivia. Larecaja, vicinity Sorata, Oct 1857 – Abr 1858, G. Mandon 1493 (W 24660!; isolectotypes BM 992741!, F 74301F!, G 176394!, G 176395!, GH 94471!, K 487139!, NY 137244!, P 689400!, P 689401!, P 689402!, S no. 04-2556!, US 118967!, W 24661!).

Notes: In the description of *Citharexylum andinum* Moldenke (1934, p. 218) clearly indicated that the type element is deposited at herbarium W. Two sheets bearing original Moldenke labels that read "Type!" were located there. Since Moldenke's statement does not distinguish between sheets, the element showing the best quality of preservation of the important diagnostic features of the taxon is here selected as lectotype of the name.

***Citharexylum coriaceum* Desfontaines (1815, p. 65)**
(syn. *Citharexylum spinosum* L.)

Neotype (designated here): (location unknown) Cultivated in Jardin du Roi (Paris, France), s.d., R.L. Desfontaines s.n. (FI 011047!).

Notes: In describing *Citharexylum coriaceum* Desfontaines (1815) referred to the species as a woody plant cultivated in a greenhouse in the Jardin des Plantes, Paris. Although there is no further reference to original material it is known that Desfontaines collected for his own herbarium all the plants growing in the garden when he was the curator of the botanical garden of Paris (Steinberg 1977). Desfontaines' own herbarium was purchased by P.B. Webb in 1834 and is kept at FI since that time (Steinberg 1977), but another bulk of specimens still remains at P. Therefore, original material of this name should be sought for at these two herbaria. In the general collection at P there is one specimen whose label reads "*Citharexylum coriaceum*/s. ch. 1830 hort. Paris". Since it is a post-1815 acquisition it is not original material of the name. A specimen lodged in the herbarium of Desfontaines at FI has a label that reads "*Citharexylum coriaceum* H.p." but has neither a reference to collector nor a date. Although the annotation "H.p." on the label refers to the Hortus Parisiensis, it is almost certain that the calligraphy on the label does not match the handwriting attributed to Desfontaines (Steinberg 1973, 1977, C. Nepi (FI), pers. comm.), so this material could not be regarded as original. Since all potential sources of original material have been checked but nothing has been found, the specimen lodged in the Desfontaines' herbarium at FI is here selected as neotype of the name (Art. 9.7 of the ICN, McNeill et al. 2012).

There is some confusion regarding the citation of the place of publication of *C. coriaceum*. The protologue has been misquoted by several authors (Walpers 1845, Schauer 1847, Richard 1850, Acevedo-Rodríguez and Strong 2012) as the Tableau de l'École de Botanique (Desfontaines 1829), whereas the correct citation is the Tableu de l'école de Botanique du Jardin du Roi (Desfontaines 1815).

***Citharexylum ilicifolium* Kunth (1818, p. 256)**
Lectotype (designated here): Ecuador. "Río Chambo", 1802, W.H.A. von Humboldt and A.J.A. Bonpland 3195 (P 00670102!; isolectotypes P 00689422!).

Protologue citation: "Crescit in Regno Quitensi prope Quito, Chillo, Riobamba et Penipe, alt. 1300 et 1500 hex".

Notes: Kunth (1818, p. 256) described *Citharexylum ilicifolium* based on four syntypes collected by Humboldt and Bonpland near Quito, Chillo, Riobamba and Penipe, in Ecuador. Walpers (1845, p. 74) and Schauer (1847, p. 609) cited a specimen in the Willdenow Herbarium at B (B-W 11669-00 0!) which was annotated by D. F. L. von Schlechtendal as a Humboldt collection. However, this material can not have been studied by Kunth since he did not see the collections housed there (McVaugh 1955, p. 79). According to Moldenke (1958d, p. 414–415) there are eight sheets housed at B, F and P which belong to the original material. Kunth lived and worked in Paris 1813–1829 and the material he used to describe this species should thus be lodged at P (Burdet 1976). As far as the specimens at B are concerned, these sheets were lost in the fire in 1943. The single sheet housed at F consists of fragments removed by Moldenke from one of the syntypes lodged at P. However, in the Humboldt and Bonpland herbarium at P there are two specimens from Quito, a single sheet without locality data, and two specimens from Río Chambo. Specimen P 00670102 is the only one bearing a label annotated by Kunth as "*Citharexylum ilicifolium*" but the locality (i.e. Río Chambo) does not match with those cited in the protologue. However, Humboldt's travel diary contains a detailed itinerary of the excursion to Riobamba in June 1802 (Yudilevich Levy 2004, p. 247). To reach there the explorers visited the village of Penipe, where they saw the famous bridge of ropes erected over the Chambo river. Therefore, this specimen studied and annotated by Kunth is certainly original material since the locality annotated on the label is covered by the protologue. For this reason, it is here selected as lectotype of the name.

***Citharexylum kunthianum* Moldenke (1941, p. 51)**
Based on the same type: *Citharexylum tomentosum* Kunth (1818, p. 258), nom. illeg., non Poiret (1811, p. 368).

Lectotype (first-step designation by Moldenke (1958d, p. 428); second-step designation here): Colombia. "Crescit in convalli fluminis Caucae inter pagum Tuluam et urbem Bugam Popayanensium," A.J.A. Bonpland 1898 (P 670106!; isolectotypes: B-W 11476010!, P 689425!, P 689426!).

Protologue citation: "Crescit in convalli fluminis Caucæ inter pagum Tuluam et urbem Bugan Popayanensium, alt. 500 hex."

Notes: Based on a collection made by Humboldt and Bonpland, Kunth (1818) described *Citharexylum tomentosum* without noticing that the name had already been used by Poiret (1811). Therefore, Moldenke (1941) proposed *C. kunthianum* as a replacement name. According to Moldenke

(1958d, p. 428) the type element of this species is housed at P, and his statement is here interpreted as a lectotype designation. However, three sheets were found at P and thus only a first-step lectotypification was effected by Moldenke. This designation is here narrowed by selecting the only specimen annotated "*Citharexylum tomentosum*" by Kunth as a second step-lectotype (Art. 9.17 of the ICN, McNeill et al. 2012, McNeill 2014).

It is worth noting that there is some confusion as to the collection number since Moldenke (1958d, p. 428) erroneously referred to no. 5898 instead of no. 1898.

***Citharexylum laetum* Hieronymus (1877, p. 104)**

Lectotype (designated here): Brazil. Minas Gerais, Lagoa Santa, 14 Mar 1864, J.E.B. Warming s.n. (NY 00137257!; isolectotypes: C 10019903!, MPU 012653!, P 02870985!, S no. 04-2561!).

Protologue citation: "Ad Lagoa Santa in silvulis hinc illinc; flor. Dec. Jan.; c. fr. maturo m. Jan.–Aprili. – In prov. S. Paulo legit Burchell (4377), incolis "Maria molle" ob lignum molle; in montibus Serra de Orgãos legit Gardner (733)."

Notes: Hieronymus (1877) based the diagnosis of *Citharexylum laetum* on three syntypes from Brazil. The first collection was made by Warming in Lagoa Santa while the other two were made by Burchell in São Paulo and by Gardner in Serra de Orgãos. Moldenke (1958d, p. 430) discussed this name and its original material in some detail, referring to two Warming collections deposited at C although he did not treat any of them as the type. We located five duplicates of a Warming collection at C, MPU, NY, P, and S, and among the other syntypes, only one duplicate of Burchell 4377 was found at K and two duplicates of the collection Gardner 733 were found at K. The Warming specimens agree with the diagnosis and the locality cited in the protologue while the other syntypes had no information on the labels concerning the locus classicus. For this reason, the former collection is preferred over those of Burchell and Gardner. All Warming duplicates except the one lodged at C were annotated by Hieronymus as "*Citharexylon laetum*". Therefore, the sheet showing the best preservation of the important diagnostic features of the taxon is here selected as lectotype of the name (Art. 9.5 of the ICN, McNeill et al. 2012).

***Citharexylum myrianthum* Cham. var. *acuminatum* Briquet (1904, p. 317)**

(syn. *Citharexylum myrianthum* Cham.)

Lectotype (first-step designation by Moldenke (1959a, p. 484); second-step designation here): Paraguay. Borja, entre Villa Rica y Caaguazu, Nov. 1874, B. Balansa 2090a (G 00174081!; isolectotypes: BR 0000005505487!, G 00174082!).

Notes: In describing *Citharexylum myriantum* var. *acuminatum*, Briquet (1904) cited a Balansa collection from Paraguay. Although the author did not indicate the herbarium which houses the type element, it is well documented that his types are kept at G (Stafleu and Cowan 1976). Moldenke (1959a, p. 484) cited an element housed at G as the type material although two sheets are actually lodged there. According to the modern rules of the ICN (Art. 9.17 of the ICN, McNeill et al. 2012, McNeill 2014) the choice of Moldenke is here interpreted as a first-step lectotypification, but it cannot be ascertained which of the specimens at G he referred to. Therefore, the most complete duplicate is here selected as a second-step lectotype of the name.

***Citharexylum myrianthum* var. *rigidum* Briquet (1904, p. 317)**

Based on the same type: *Citharexylum rigidum* (Briq.) Moldenke (1937, p. 17).

Lectotype (first-step designation by Moldenke (1959b, p. 16); second-step designation here): Paraguay. Près de l'Assomption, Mar 1875, B. Balansa 2090 (G 174080!; isolectotypes: BR 5505814!, F 074321F!, G 174079!, K 487143!, NY 137266!, NY 137267!, P 689442!, P 689443!, S no. 04-2562!).

Notes: Briquet (1904) described this variety based on a collection made by Balansa in Paraguay. Moldenke (1959b, p. 16), who raised *C. myriantum* var. *rigidum* to species rank, clearly indicated by direct citation that the type is housed in the Delessert herbarium at G, which is here interpreted as a lectotype designation (Art. 9.9 and 9.23 of the ICN, McNeill et al. 2012, McNeill 2014). However, two duplicates were found there and Moldenke's statement must thus be considered as a first-step typification. In order to narrow this broad designation, the most complete specimen is here selected as a second-step lectotype (Art. 9.17 of the ICN, McNeill et al. 2012, McNeill 2014).

***Citharexylum poeppigii* Walpers (1845, p. 76)**

Lectotype (designated here): Brazil. "crescit ad fluvium Amazonum prope Egam.", E.F. Poeppig 2910 (G 176435!; isolectotypes: F 74316F!, F 74315F!, G 176434!, NY 137271!, NY 137270!, P 689439!, W 24790!, W 1889-0111251!, W 24791!).

Protologue citation: "Crescit ad fluvium Amazonum prope Egam. – (Poepp. Herb. fl. Amaz. 2910.) (v. s. sp.)".

Notes: In the protologue of *Citharexylum poeppigii*, Walpers (1845) indicated that his diagnosis was based on dried material collected by Poeppig in Amazonas, Brazil. Since the current location of Walpers' herbarium is not known, the main herbaria, B and W, which hold material from Poeppig and Walpers (Stafleu and Cowan 1983) were revised. Duplicates of the type collection were located at F, G, NY, P and W. Moldenke (1959a, p. 499) extensively revised the type collection of this name and stated "the finest representation of the species is in the Vienna herbarium" although he does not designate any element as type. In spite of Moldenke's statement, a duplicate among those housed at G is preferred

over the material at W since it is the only specimen whose flowers are in anthesis. Thus, it is here selected as lectotype of the name (Art. 9.5 of the ICN, McNeill et al. 2012).

***Citharexylum solanaceum* Cham. (1832, p. 119)**
Lectotype (designated here): Brazil. "Brasilia", n.d., F. Sellow s.n. (NY 137285!; isolectotypes: BM 000992754!, HAL 0065149!, W 0024797!).

Protologue citation: "E Brasilia aequinoctiali misit Sellowius pluribus locis laectum, Varietatemque semel lectam".

Notes: Chamisso's description of *Citharexylum solanaceum* (Chamisso 1832) was based on several syntypes collected by Sellow in Brazil, without explicit reference to any locality. Although a large part of Chamisso's herbarium was acquired by LE, it is possible to locate original material used by him in many other herbaria (Stafleu and Cowan 1976). Moldenke (1959b, p. 30) regarded as syntypes the collections no. 3104, 3241, 4988 and s.n., all then deposited at herbarium B but lost in the fire of the of herbarium in 1943. However, it is well documented that herbarium HAL lodges Chamisso's original specimens since the time when D.F.L. von Schlechtendtal acquired a large set of duplicates from herbarium B, which he then transferred to HAL (Braun and Wittig 2003). In accordance with this, a duplicate studied and annotated by Chamisso was located at HAL, but additional material was also found at BM, NY and W, all coming from herbarium B and annotated by Chamisso. Despite the good state of preservation of the specimens, the Sellow material at NY is preferred over the other sheets since it is the more complete. Thus, it is here selected as the lectotype of the name (Art. 9.5 of the ICN, McNeill et al. 2012).

***Citharexylum surrectum* Grisebach (1862, p. 497)**
(syn. *Citharexylum spinosum* L.)

Lectotype (designated here): Jamaica. Port Royal, W. T. March [1447] (GOET 11504!; isolectotype: K 000487161!).

Notes: In the protologue of *C. surrectum* Grisebach (1862) cited two syntypes. The first one was collected by W.T. March in Port Royal, Jamaica, and the second one was collected by H.R. Wullschlägel in Antigua and Barbuda. One duplicate of each collection, annotated '*Citharexylum surrectum*' by Grisebach, were located at GOET where Grisebach's type specimens are mainly housed (Stafleu and Cowan 1976). In addition to this material, one duplicate of the Jamaican collection was found at herbarium K and many of the types of the 'Flora of the British West Indian Islands' are also kept there (Stafleu and Cowan 1976). Among the syntypes at GOET, the March collection is preferred over that of Wullschlägel because it shows the best quality of preservation of the important diagnostic features of the taxon. Therefore, it is here selected as lectotype of the name (Art. 9.5 of the ICN, McNeill et al. 2012).

B. *Citharexylum* names needing typification remarks

***Citharexylum macrochlamys* Pittier (1917, p. 254)**

Based on the same type: *Citharexylum macranthum* Pittier (1916, p. 169) nom. illeg., non Hayek (1909, p. 170).

Lectotype (designated by Moldenke 1959a, p. 461): Panama. Colón, collected along Río Fató, above Nombre de Dios, in high forest, 1911, H. Pittier 3897 (US 118993!; isolectotypes: GH 09445!, NY 137212!).

Protologue citation: "Type in U.S.: National Herbarium nos. 678974 and 679301, collected along Río Fatóm above Nombre de Dios, Province of Colón, Panama, in high forest, flowers, July 8 and August 16, 1911, by H. Pittier (no. 3897 and 4199)."

Notes: Pittier (1916) based the diagnosis of *Citharexylum macranthum* on two syntypes from Panama. Subsequently, Pittier (1917) himself published *C. macrochlamys* as a replacement name since his earlier name was a later homonym of *C. macranthum* Hayek (1909). Pittier (1917) did not resolve the typification of the name at that time, but later Moldenke (1959a) explicitly stated "only the no. 3897 is inscribed by him [Pittier] "type specimen" on the sheet, so I am regarding that collection as the type collection only". Thus, according to Art. 9.9 and 9.23 of the ICN (McNeill et al. 2012, McNeill 2014) Moldenke's statement is here interpreted as a lectotype designation.

***Citharexylum punctatum* Greenman (1907, p. 189)**
(syn. *Citharexylum dentatum* D. Don)

Lectotype (designated by Moldenke 1959a, p. 505): Bolivia. "without definite locality", M. Bang 1917 (GH 94481!; isolectotypes: BM 992749!, E 259095!, F 074318F!, F 074319F!, G 176438!, G 176439!, K 487131!, MICH 1108350!, MO 694733!, NY 137274!, NY 137275!, NY 137276!, US 119004!).

Protologue citation: "Bolivia. Without definite locality, Bang, no. 1917 (hb. Gray, hb. John Donnel Smith, and hb. Field. Mus.), distributed as "*Citharexylum ilicifolium* H. B. K."

Notes: In describing *Citharexylum punctatum*, Greenman (1907) cited a single collection, but he also referred to duplicates at GH, US and F. Thus, these duplicates are syntypes. Even though these specimens carry no identification by Greenman, they agree with the locality information and name and number of collection given in the protologue. Moldenke (1959a, p. 505) clearly indicated the type material by direct citation of the housing institution (i.e. GH), and since only one specimen is present there, lectotypification was clearly effectuated (Art. 9.9 and 9.23 of the ICN, McNeill et al. 2012, McNeill 2014).

***Citharexylum subthyrsoideum* Pittier (1923, p. 42)**

Lectotype (designated by Moldenke 1959c, p. 54): Venezuela. Bosques claros al pié de Catuche, cerca de la sabana del Blanco, 1000 m a.s.l., en los alrededores de Caracas, 8 Aug 1917, H. Pittier 7234 (US 119013!).

Notes: Pittier (1923, p. 43) cited two syntypes in the protologue of *C. subthyrsoideum*, both collected by himself in Venezuela. Later, Moldenke (1959c, p. 54) clearly referred to the type element by direct citation of the collection no. 7234 at US. Thus, according to Art. 9.9 and 9.23 of the ICN (McNeill et al. 2012, McNeill 2014), Moldenke's statement is here interpreted as a lectotype designation.

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