Phytotaxa 194 (1): 001–067
www.mapress.com/phytotaxa/

Monograph

ISSN 1179-3155 (print edition)
PHYTOTAXA
ISSN 1179-3163 (online edition)

http://dx.doi.org/10.11646/phytotaxa.194.1.1

PHYTOTAXA

194

A taxonomic revision of Antillean *Symplocos* (Symplocaceae)

PETER W. FRITSCH & FRANK ALMEDA
California Academy of Sciences, Department of Botany, 55 Music Concourse Drive, San Francisco, CA 94118-4599, USA.
Email: pfritsch@calacademy.org; falmeda@calacademy.org

Magnolia Press
Auckland, New Zealand

Accepted by Tim Utteridge: 1 Sept. 2014; published: 21 Jan. 2015

PETER W. FRITSCH & FRANK ALMEDA
A taxonomic revision of Antillean *Symplocos* (Symplocaceae)
(*Phytotaxa* 194)

67 pp.; 30 cm.

21 January 2015

ISBN 978-1-77557-629-7 (paperback)

ISBN 978-1-77557-630-3 (Online edition)

FIRST PUBLISHED IN 2015 BY

Magnolia Press

P.O. Box 41-383

Auckland 1346

New Zealand

e-mail: magnolia@mapress.com

http://www.mapress.com/phytotaxa/

ISSN 1179-3155 (Print edition)

ISSN 1179-3163 (Online edition)

Table of content

Abstract

We present a taxonomic revision of *Symplocos* (Symplocaceae, Ericales, Angiospermae) for the Antilles. The seventeen species recognized are distributed among three major clades of the genus corresponding to *S.* sect. *Hopea*, *S.* ser. *Symplocos*, and *S.* ser. *Urbaniocharis*, the latter two comprising *S.* sect. *Symplocos*. Fifteen of the species are endemic to the Antilles and only one (*S. cubensis*) occurs in more than one major island group. The revision includes keys, descriptions, distribution maps, and a conservation assessment for each species. **Symplocos baracoensis** is described as new, and lectotypes are designated for **S. apiculata, S. domingensis, S. guadeloupensis, S. harrisii, S. hyboneura, S. jamaicensis, S. jurgensenii, S. lanata, S. latifolia, S. micrantha, S. pilifera, S. polyantha, S. tubulifera, and S. urbaniana.**

Key words: Caribbean, lectotype, new species

Introduction

Symplocos Jacquin (1760: 24) comprises *ca.* 340 species of woody, mostly evergreen flowering plants distributed in the Americas and the lands bordering the western Pacific Rim (Nooteboom 1975, Fritsch *et al*. 2008). The genus is found primarily in humid tropical montane forests, but several species extend into the north-temperate zone. The infrafamilial classification of the Symplocaceae was recently revised in accordance with strict monophyly on the basis of phylogenetic data from morphology and DNA sequences (Fritsch *et al.* 2008). Two genera are recognized, i.e., the strictly Asian *Cordyloblaste* Henschel ex Moritzi (1848: 606), and *Symplocos*; the latter is divided into two subgenera [*Palura* G.Don (1837: 3 and *Symplocos*], three sections within *S.* subg. *Symplocos* [*Hopea* Linnaeus (1767: 105) Candolle (1844: 253), *Lodhra* G.Don (1837: 2), and *Symplocos*], and two series within *S.* sect. *Symplocos* [*Symplocos* and *Urbaniocharis* (Brand) P.W.Fritsch in Fritsch *et al.* (2008); Fritsch *et al*. 2008; Table 1].

A number of taxonomic studies conducted since 1990 have updated the family-wide species-level taxonomy of Brand (1901). These studies encompass all species in most of Andean South America (Ståhl 1991, 1993, 1994, 1995b, 1996, 2010a, 2010b), the Venezuelan Guayana (Steyermark & Berry 2005), central French Guiana (Mori & Brown 2002), Mexico and Mesoamerica (Kelly & Almeda 2009, Kelly *et al*. in preparation), and the United States (Almeda & Fritsch, 2009), as well as the species in *S.* sect. *Hopea* in South America (Aranha Filho 2011, Aranha Filho *et al*. 2012) and those of *S.* sect. *Symplocos* in part (the "Neosymplocos group", endemic to South America; Aranha Filho *et al*. 2007, 2009). The major areas still remaining to be covered with detailed taxonomic treatments of New World *Symplocos* are non-Guayanan Venezuela [a treatment of Venezuelan species (Aristeguieta 1957) appears to be outdated], most of the Guianas, the Brazilian members of *S.* ser. *Symplocos*, and the Antilles.

In terms of biogeography and endemism, the Antilles may represent the most significant gap in taxonomic knowledge of the genus. The region, here defined as the islands of the Caribbean from Cuba through Puerto Rico (the Greater Antilles) south through Grenada (the Lesser Antilles) and excluding the Bahamas and the islands off the north coast of Venezuela (the latter of which are sometimes included in the Lesser Antilles), is poised between the two large continental landmasses of North America and South America. Its tropical climate and complex geology have resulted in both high biotic diversity and high endemism, with many plant species endemic to

1922, *Ekman 14688* (F!, NY [2]!, S!, US!); Sierra Maestra, lower N slopes of main ridge above Río Yao, 300–1000 m, [20°04'N, 76°39'W], 27–28 October 1941, *Morton & Acuña Galé 3464* (F!, HAC!, MO!, NY!, US!). **Isla de la Juventad:** Nueva Gerona, Sierra la Cañada, 300 m, [21°45'N, 82°57'W], 1 April 1967, *Bisse 1586* (JE!); unspecified, *Blain 137* (F!); vicinity of Los Indios, [21°42'N, 83°0'W], 13 February 1916, *Britton et al. 14237* (F!, GH!, MO!, NY!, S!, US!); [Cerros de] San Juan, [21°41'N, 82°40'W], 15, 17 March 1916, *Britton et al. 15002* (F!, GH!, NY!, US!); near Nueva Gerona, [21°53'N, 82°48'W], 23 February 1904, *Curtiss 365* (F!, GH!, NY!, US!); Nueva Gerona towards [Loma] Bibijagua, [21°53'N, 82°44'W], 6 December 1920, *Ekman 12527* (S!); between Mina de Oro and Playa del Soldado, [21°45'13"N, 83°02'11"W], 6 April 1954, *Killip 43871* (F!, GH!, NY!, US!); along rd to San Francisco de las Piedras, [21°47'N, 82°50'W], 23 February 1955, *Killip 44878* (US!). **Pinar del Río:** Herradura, [22°34'25"N, 83°27'09"W], 13 April 1920, *Ekman 10801* (F!, S!, US!), 22 June 1922, *Ekman 14100* (S!); Km 13 of the high rd to La Coloma S of Pinar del Río city, [22°20'N, 83°40'W], 30 November 1923, *Ekman 18240* (NY!, S!). **Sancti Spiritus:** Banao, Arroyo Agabama Valley, N of the town, [21°51'N, 79°35'W], 15 November 1975, *Areces-Mallea et al. 28683* (B [image 10 0415530]!, JE!); Mpio. Fomento, Alturas de Sancti Spíritus, valle de Arroyo Gavilancito, 300–400 m, 10 November 1979, *Bisse et al. HFC 41083* (B [image 10 0364099]!); Banao Mtns. [Lomas de Banao], summit of Loma [Lomas] de la Gloria, 950 m, [21°58'37"N, 79°39'47"W], 30 July 1918, *León & Roca 7987* (HAC!, NY!); La Güira Mtn., Tope[s] de Collantes, [21°49'30"N, 79°38'19"W], 19 July 1957, *Liogier 6476* (GH!, HAC!, US!); Lomas de Banao, [21°51'42"N, 79°35'35"W], 9 January 1920, *Luna 19* (NY!). **Villa Clara:** Trinidad Mtns., [Valle de la] Siguanea, 400 m, [22°03'N, 80°04'W], 2–5 March 1910, *Britton & Wilson 4970* (F!, NY [2]!).

Excluded name

Symplocos glabra Euphrasén (1798: 224).

The main part of Euphrasén's collections is reportedly in the Thunberg Herbarium at UPS, with a small portion at S (Stafleu and Cowan, 1976). Like Howard (1988), we were not able to locate type material. Howard (1988) considered it possible that this is conspecific with *Symplocos martinicensis* by the single-flowered axillary peduncles. Although the racemes of *S. martinicensis* can be single-flowered, usually there are several flowers. The glabrous leaves, however, differ from the leaves of *S. martinicensis*, which are at least sparsely strigillose to pilosulose proximally on the midvein of the abaxial surface.

Acknowledgments

We thank the curators of A, B, C, CAS, DS, F, GH, GOET, HAC, JBSD, JE, K, LL, MO, NY, S, SJ, UPR, UPRRP, US, and W for loans or other access to collections; Frank Axelrod (UPRRP), Tim McDowell (ETSU), and the staff of Jardín Botánico Santo Domingo (JBSD) for field support and assistance; Jessica Oppenheimer for assistance with databasing and character examination; Jon Fong for help with the database; Camille Nowell for map production; Larry Kelly for insights into *Symplocos* morphology and for contributing the information for the lectotypificaton of *Symplocos jurgensenii*; and Alan Chou for the illustrations. This work was supported by U.S. National Science Foundation grant DEB-0126631 to the authors and Research Experience for Undergraduates grant DBI-0353797 to the Summer Systematics Institute at CAS.

References

Adams, C.D. (1972) *Flowering plants of Jamaica*. University of the West Indies, Mona, Jamaica, 848 pp.

Adams, C.D. (1997) Regional overview: Caribbean islands. *In*: Davis, S.D., Heywood, V.H., Herrera-MacBryde, O., Villa-Lobos, J. & Hamilton, A. (eds.) *Centres of plant diversity: a guide and strategy for their conservation.* Vol. 3. IUCN Publications Unit, Cambridge, England, pp. 233–258.

Adanson, M. (1763) *Familles des plantes.* Part 2. Vincent, Paris, 640 pp. http://dx.doi.org/10.5962/bhl.title.271

Almeda, F. & Fritsch, P.W. (2009) Symplocaceae. *In*: Flora of North America Editorial Committee (Ed.) *Flora of North America.* Vol. 8. Oxford University Press, New York, pp. 329–331.

Aranha Filho, J.L.M. (2011) *Revisão taxonômica das espécies Sul-Americanas de* Symplocos *Jacq. seção Hopea (L.) A.DC. (Symplocaceae).* Ph.D. Dissertation, Universidade Estadual de Campinas, Campinas, Brazil, 328 pp.

Aranha Filho, J.L.M., Fritsch, P.W., Almeda, F. & Martins, A.B. (2007) A revision of *Symplocos* Jacq. sect. *Neosymplocos* Brand (Symplocaceae). [ser. 4] *Proceedings of the California Academy of Sciences* 58: 407–446.

Aranha Filho, J.L.M., Bertoncello, R., Fritsch, P.W., Almeda, F. & Martins, A.B. (2009) *Symplocos atlantica* (Symplocaceae), a new species from the Atlantic Rain Forest of Brazil. *Harvard Papers in Botany* 14: 101–104. http://dx.doi.org/10.3100/025.014.0201

Aranha Filho, J.L.M., Dias Meireles, L., Fritsch, P.W., Almeda, F. & Martins, A.B. (2012) A new species of *Symplocos* (Symplocaceae) from the Itatiaia Plateau of Brazil. *Brittonia* 64: 252–256. http://dx.doi.org/10.1007/s12228-011-9229-6

Aristeguieta, L. (1957) El genero *Symplocos* en Venezuela. *Boletín de la Sociedad Venezolana de Ciencias Naturales* 18: 106–119.

Aublet, F. (1775) *Histoire des plantes de la Guiane françoise.* Vol. 1. P.F. Didot, Paris, 621 pp. http://dx.doi.org/10.5962/bhl.title.48831

Bachman, S., Moat, J., Hill, A.W., de la Torre, J. & Scott, B. (2011) Supporting Red List threat assessments with GeoCAT: geospatial conservation assessment tool. *In*: Smith, V. & Penev, L. (Eds.) *e-Infrastructures for Data Publishing in Biodiversity Science. ZooKeys* 150: 117–126. Available from: http://geoCAT.kew.org/ (accessed September 2014)

Bellingham, P.J., Tanner, E.V.J. & Healy, J.R. (1995) Damage and responsiveness of Jamaican montane tree species after disturbance by a hurricane. *Ecology* 76: 2562–2580.

Bentham, G. (1839) Observations on some genera of plants connected with the flora of Guiana. *Transactions of the Linnean Society of London* 18: 225–237. http://dx.doi.org/10.1111/j.1095-8339.1838.tb00175.x

Bentham, G. & Hooker, J.D. (1876) *Genera Plantarum.* Vol. 2. Reeve, Londini, 1279 pp.

Boggan, J., Funk, V., Kelloff, C., Hoff, M., Cremers, G. & Feuillet, C. (1997) *Checklist of the plants of the Guianas*. Ed. 2. Biological Diversity of the Guianas Program, Washington, D.C., 226 pp.

Bonpland, A. (1808) *Plantae aequinoctiales.* Vol. 1. F. Schoell, Paris, 234 pp.

Borhidi, A. (1996) *Phytogeography and vegetation ecology of Cuba*. Ed. 2. Akadémiai Kiadó, Budapest, 923 pp.

Borhidi, A. & Muñíz, O. (1976) Plantas nuevas en Cuba V. *Acta Botanica Academiae Scientiarum Hungaricae* 22: 295–320.

Brand, A. (1901) Symplocaceae. *In*: Engler, A. (Ed.) *Das Pflanzenreich*, Heft 6 (IV, 242). Engelmann, Leipzig, pp. 1–100.

Brand, A. (1906) Additamenta nova ad cognitionem generis *Symplocos*. [ser. 2] *Bulletin de L'herbier Boissier* 6: 747–750.

Britton, N.L. (1923) Studies of West Indian plants—XI. *Bulletin of the Torrey Botanical Club* 50: 35–56. http://dx.doi.org/10.2307/2479977

Britton, N.L. & Wilson, P. (1925) *Scientific survey of Porto Rico and the Virgin Islands.* Vol. 6. Part 1. *Botany of Porto Rico and the Virgin Islands. Descriptive flora—Spermatophyta (continued)*. New York Academy of Sciences, New York, 158 pp.

Brown, R. (1811) On the Asclepiadaceae. *Memoirs of the Wernerian Natural History Society* 1: 12–78.

Buskirk, K. (1985) Zoogeographic patterns and tectonic history of Jamaica and the northern Caribbean. *Journal of Biogeography* 12: 445–461. http://dx.doi.org/10.2307/2844953

Candolle, A. de (1844) *Prodromus systematis naturalis regni vegetabilis.* Vol. 8. Treuttel & Würtz, Paris, 684 pp.

CBAF (2007) Les plantes endémiques. *Bulletin du Conservatoire Botanique des Antilles Francaises, Antenne Guadeloupe*. Number. 1. Available from: http://www.cbig.fr/ (accessed: May 2012)

Don, G. (1837) *A general history of dichlamydeous plants.* Vol. 4. J.G. and F. Rivington & al., London, 908 pp.

Euphrasén, B.A. (1798) *Herrn Bengt And. Euphraséns Reise nach der schwedisch-westindischen Insel St. Barthelemi und den inseln St. Estache und St. Christoph*. Dieterich, Gottingen, 308 pp. [German translation from 1795 Swedish publication] http://dx.doi.org/10.5962/bhl.title.4424

Fournet, J. (2002) *Flore illustrée des phanérogames de Guadeloupe et de Martinique*. Tome 1. Institut National de la Recherche Agronomique, Paris, 1664 pp.

Fritsch, P.W. & McDowell, T.D. (2003) Biogeography and phylogeny of Caribbean plants—introduction. *Systematic Botany* 28: 376–377.

Fritsch, P.W., Cruz, B.C., Almeda, F., Wang, Y. & Shi, S. (2006) Phylogeny of *Symplocos* based on DNA Sequences of the chloroplast *trnC-trnD* intergenic region. *Systematic Botany* 31: 181–192. http://dx.doi.org/10.1600/036364406775971877

Fritsch, P.W., Kelly, L.M., Wang, Y.F., Almeda, F. & Kriebel, R. (2008) Revised infrafamilial classification of Symplocaceae based on phylogenetic data from DNA sequences and morphology. *Taxon* 57: 823–852.

Fritsch, P.W., Manchester, S.R., Cruz, B.C., Stone, R.D. & Almeda, F. (In press) Northern Hemisphere origins of the amphi-Pacific tropical plant family Symplocaceae. *Journal of Biogeography.*

Gómez de la Maza, M. (1889) *Diccionario botánico de los nombres vulgares cubanos y puerto-riqueños*. "La Antilla" de G. Cacho-Negrete, La Habana, Cuba, 115 pp. http://dx.doi.org/10.5962/bhl.title.52369

Graham, S.A. (2010) Revision of the Caribbean genus *Ginoria* (Lythraceae), including *Haitia* from Hispaniola. *Annals of the*

Missouri Botanical Garden 97: 34–90.
http://dx.doi.org/10.3417/2007028
Greuter, W. & Rankin Rodríguez, R. (2011) *Base de datos de especímenes de la Flora de Cuba—con mapas de distribución*. Version 7.0. Available from: http://www.bgbm.org/BioDivInf/Projects/Floraofcuba/ (accessed 16 June 2014).
Grisebach, A. (1862) Plantae Wrightianae e Cuba Orientale, Pars II. (Monopetalae et Monocotyledones). [ser. 2] *Memoirs of the American Academy of Arts and Sciences* 8: 503–536.
http://dx.doi.org/10.2307/25057983
Grisebach, A. (1866) *Catalogus plantarum cubensium*. Wilhelm Engelmann, Leipzig, 301 pp.
http://dx.doi.org/10.5962/bhl.title.177
Gürke, M. (1891) Symplocaceae. *In*: Engler, A. & Prantl, K. (Eds.) *Die Natürlichen Pflanzenfamilien*. Teil 4, Abteilung 1. W. Engelmann, Leipzig, pp. 165–172.
Harris, J.G. & Harris, M.W. (2001) *Plant identification terminology. An illustrated glossary.* Ed. 2. Spring Lake Publishing, Spring Lake, Utah, 216 pp.
Hemsley, W.B. (1881–1882) *Biologia centrali-americana. Botany.* Vol. 2. R.H. Porter, London, 621 pp.
Heywood, V.H. & Davis, S.D. (1997) Introduction. *In*: Davis, S.D., Heywood, V.H., Herrera-MacBryde, O., Villa-Lobos, J. & Hamilton, A. (Eds.) *Centres of plant diversity: a guide and strategy for their conservation.* Vol. 3. IUCN Publications Unit, Cambridge, England, pp. 1–38.
Hooker, J.D. (1882) *Flora of British India.* Vol. 3. L. Reeve & Co., London, pp. 572–590.
Howard, R.A. (1988) *Charles Wright in Cuba 1856–1867*. Chadwyck-Healey, Cambridge, 90 pp.
Howard, R.A. (1989) *Flora of the Lesser Antilles. Leeward and Windward Islands.* Vol. 6. Part 3. Arnold Arboretum, Harvard University, Jamaica Plain, Massachusetts, 658 pp.
IUCN (2014) *Guidelines for using the IUCN Red List categories and criteria. Version 11.* Prepared by the Standards and Petitions Subcommittee. Available from http://www.iucnredlist.org/documents/RedListGuidelines.pdf.
Jacquin, N.J. (1760) *Enumeratio systematica plantarum*. T. Haak, Leiden, 41 pp.
Kelly, L.M. & Almeda, F. (2009) Symplocaceae. *In*: Davidse, G., Sousa, S., M., Knapp, S. & Chiang, F. (Eds.) *Flora Mesoamericana.* Vol. 4. Parte 1. Universidad Nacional Autónoma de México, México D.F., pp. 620–626.
Kelly, L.M. & Nicholson, C. (2009) Floral structure of *Symplocos* series *Symplocos*, with emphasis on anatomy and morphology of the style and stigma. Botany 2009 Abstract. Available from: http://2009.botanyconference.org/engine/search/index.php (accessed October 2014)
Kuntze, O. (1891) *Revisio generum plantarum*. Part II. Dulau & Co., London, 1011 pp.
León, Hno. & Alain, Hno. (1957–1963) *Flora de Cuba.* Vol. 2. Part 3. Habana, Cuba and Río Piedras, Puerto Rico. Reprint by Koeltz, Koenigstein, 1974, 556 pp.
Lewis, J.F. & Draper, G. (1990) Geology and tectonic evolution of the northern Caribbean margin. *In*: Dengo, G. & Case, J.E. (Eds.) *The geology of North America. Vol. H. The Caribbean region*. Geological Society of America, Boulder, pp. 77–140.
L'Héritier, C.L. (1791) On the genus of *Symplocos*, comprehending *Hopea*, *Alstonia*, and *Ciponima*. *Transactions of the Linnean Society* 1: 174–176.
http://dx.doi.org/10.1111/j.1096-3642.1791.tb00397.x
Linnaeus, C. von (1767) *Mantissa plantarum*. Vol. 1. Laurent Salvii, Holmiae, 142 pp.
Linné, C. von (1782) *Supplementum plantarum*. Impensis orphanotrophei, Brunsvigae, 467 pp.
Liogier, A.H. (1989) *La flora de la Española.* Vol. 5. Universidad Central del Este (Vol. 69, ser. científica 26), San Pedro de Macorís, 398 pp.
Liogier, A.H. (1995) *Descriptive flora of Puerto Rico and adjacent islands. Spermatophyta.* Vol. 4. Editorial de la Universidad de Puerto Rico, Río Piedras, Puerto Rico, 618 pp.
Little, E.L.Jr. & Wadsworth, F.H. (1964) *Common trees of Puerto Rico and the Virgin Islands*. Vol. 1. Agriculture Handbook No. 249. United States Department of Agriculture, Washington, D.C., 548 pp.
Little, E.L.Jr. & Woodbury, R.O. (1980) *Rare and endemic trees of Puerto Rico and the Virgin Islands*. Conservation Research Preport No. 27 USDA Forest Service, Washington, D.C.
Macfadyen, J. (1837) *The flora of Jamaica.* Vol. 1. Longman, Orme, Brown, Green & Longmans, London, 351 pp.
Maguire, B. & Huang, Y.-C. (1978) Symplocaceae. The botany of the Guayana Highland-Part X. *Memoirs of the New York Botanical Garden* 29: 223–230.
Mai, D.H. (1986) Über die Antillanische Symplocaceae. *Feddes Repertiorium* 97: 1–28.
http://dx.doi.org/10.1002/fedr.4910970102
Mai, D.H. (2005) Symplocaceae. *In*: Greuter, W. & Rankin Rodríguez, R. (Eds.) *Flora de la República de Cuba*. Fascículo 10(9). A.R. Gantner Verlag KG, Ruggell, Liechtenstein, pp. 3–20.
Miers, J. (1838) Letter from John Miers to Sir William Jackson Hooker; from 13 Hans Place, Sloane Street, London; 3 Nov 1838; four page letter comprising three images; folio 72. Library and Archives at Royal Botanic Gardens, Kew. Available from: http://plants.jstor.org/visual/kldc9378?s=t (accessed 15 November 2013)
Miers, J. (1879) On the Symplocaceae. *Journal of the Linnean Society of London, Botany* 17: 283–306.
http://dx.doi.org/10.1111/j.1095-8339.1879.tb01231.x
Mori, S.A. & Brown, J.L. (2002) Symplocaceae. *In*: Mori, S.A., Cremers, G., Gracie, C., de Granville, J.-J., Heald, S.V., Hoff, M. & Mitchell, J.D. (Eds.) *Guide to the vascular plants of central French Guiana. Part 2.* Memoirs of the New York

Botanical Garden 76, pp. 708–709.
Moritzi, A. (1848) *Cordyloblaste* (Henschel). *Botanische Zeitung* 6: 604–606.
Moscoso, R.M. (1943) *Catalogus florae Domingensis. Part 1. Spermatophyta*. L. & S. Printing, New York, 732 pp.
Myers, N., Mittermeier, R.A., Mittermeier, C.G., Da Fonseca, G.A.B. & Kent, J. (2000) Biodiversity hotspots for conservation priorities. *Nature* 403: 853–858. http://dx.doi.org/10.1038/35002501
Nagamasu, H. (1993) The Symplocaceae of Japan. *Contributions from the Biological Laboratory, Kyoto University* 28: 173–260.
Nooteboom, H.P. (1975) *Revision of the Symplocaceae of the Old World, New Caledonia excepted*. Leiden University Press, Leiden, 335 pp.
Nooteboom, H.P. (2004) Symplocaceae. *In*: Kubitzki, K. (Ed.) *The families and genera of vascular plants*. Vol. 6. Springer, Berlin, pp. 443–449.
Pohl, J.B.E. (1828–1833) *Plantarum Brasiliae icones et descriptiones*. Vol. 2. Antonii Strauss, Vindobonae, 153 pp.
Quesada, E.M. (2002) Hacia un mejor conocimiento de las fanerógamas de la Altiplanicie de Monte Iberia, Cuba Oriental. *Foresta Veracruzana* 4: 1–6.
Roig y Mesa, J.T. (1988) *Diccionario botánico de nombres vulgares cubanos*. Editorial Científico-Téchnica, Habana, 1142 pp.
Roxburgh, W. (1811–1820) *Plants of the coast of Coromandel*. Vol. 3. W. Bulmer, London, 98 pp.
Santiago-Valentin, E. & Olmstead, R.G. (2004) Historical biogeography of Caribbean plants: introduction to current knowledge and possibilities from a phylogenetic perspective. *Taxon* 53: 299–319. http://dx.doi.org/10.2307/4135610
Scopoli, J.A. (1777) *Introductio ad historiam naturalem*. Wolfgangum Gerle, Pragae, 540 pp.
Stafleu, F.A. & Cowan, R.S. (1976) *Taxonomic literature.* Ed. 2. Vol. 1. Bohn, Scheltema & Holkema, Utrecht, 1136 pp.
Stafleu, F.A. & Cowan, R.S. (1981) *Taxonomic literature*. Ed. 2. Vol. 3. Bohn, Scheltema & Holkema, Utrecht, 980 pp.
Stahl, A. (1937) *Estudios sobre la flora de Puerto-Rico.* Ed. 2. Tomo 3. Federal Emergency Relief Administration, San Juan, Puerto Rico, 373 pp.
Ståhl, B. (1991) Symplocaceae, Oleaceae. *In*: Harling, G. & Andersson, L. (Eds.) *Flora of Ecuador.* Vol. 43. Berlings, Arlöv, Sweden, pp. 1–58.
Ståhl, B. (1993) The genus *Symplocos* (Symplocaceae) in Peru. *Candollea* 48: 351–382.
Ståhl, B. (1994) The genus *Symplocos* (Symplocaceae) in Bolivia. *Candollea* 49: 369–388.
Ståhl, B. (1995b) New or noteworthy Andean species of the genus *Symplocos* (Symplocaceae). *Candollea* 50: 445–452.
Ståhl, B. (1996) The genus *Symplocos* (Symplocaceae) in Colombia. *Candollea* 51: 323–364.
Ståhl, B. (2010a) Additions to the knowledge of the genus *Symplocos* (Symplocaceae) in Ecuador and Peru. *Novon* 20: 84–94. http://dx.doi.org/10.3417/2008079
Ståhl, B. (2010b) Four new species and new records of *Symplocos* (Symplocaceae) from Peru and Bolivia, and a key to all species of *Symplocos* known to occur in Ecuador, Peru and Bolivia. *Nordic Journal of Botany* 28: 79–87.
Standley, P.C. & Steyermark, J.A. (1947) Studies of Central American plants—VII. *Publications of the Field Museum of Natural History, Botanical Series*, 23: 193–265.
Stehlé, H. (1945) Phanérogames nouvelles collectées aux Antilles françaises (7e contribution). *Bulletin de la Société Botanique de France* 92: 261–266. http://dx.doi.org/10.1080/00378941.1945.10834459
Steyermark, J.A. (1953) Botanical exploration in Venezuela—III. *Fieldiana, Botany* 28: 449–678.
Steyermark, J.A. & Berry, P.E. (2005) Symplocaceae. *In*: Berry, P.E., Yatskievych, K. & Holst, B.K. (Eds.) *Flora of the Venezuelan Guayana.* Vol. 9. Missouri Botanical Garden Press, St. Louis, pp. 290–295.
Stuessy, T.F. (2008) *Plant taxonomy: the systematic evaluation of comparative data.* Ed. 2. Columbia University Press, New York, 568 pp.
Swartz, O. (1788) Prodr. 109. *Nova genera & species plantarum prodromus*. M. Swederi, Holmiae, 152 pp.
Turczaninow, N.S. (1858) Animadversiones in secundum partem herbaria Torczaninowiani, nunc universitatis Caesareae Charkowiensis. *Bulletin de la Société Impériale des Naturalistes de Moscou* 31(1): 185–250.
Urban, I. (1893) Additamenta ad cognitionem florae Indiae occidentalis. Part 1. *Botanische Jahrbücher* 15: 286–361.
Urban, I. (1912) Nova genera et species V. *Symbolae antillanae* 7(3): 305–432.
Urban, I. (1929) Plantae Haitienses et Domingenses novae vel rariores V. a cl. E. L. Ekman 1924–1927 lectae. *Arkiv för Botanik* 22A: 1–98.
Vellozo, J.M.C. (1829) *Florae fluminensis*. Typographia Nationali, Flumine Januario, 352 pp.
Wang, Y., Fritsch, P.W., Shi, S., Almeda, F., Cruz, B.C. & Kelly, L.M. (2004) Phylogeny and infrageneric classification of *Symplocos* (Symplocaceae) inferred from DNA sequence data. *American Journal of Botany* 91: 1901–1914. http://dx.doi.org/10.3732/ajb.91.11.1901
Williams, L.O. (1967) Tropical American plants, VIII. *Fieldiana, Botany* 31: 247–269
Woodbury, R.O. (1975) *Rare and endangered plants of Puerto Rico: a committee report.* USDA Soil Conservation Service, Washington, D.C., and Puerto Rico Department of Natural Resources, San Juan, 85 pp.