

THE GENUS STENOSTOMUM C.F.GAERTN. (RUBIACEAE) OR THE RECONSIDERATION OF THE NEW WORLD ANTIRHEA SPECIES

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A new taxonomic treatment of the Old World species of the genus *Antirhea* Juss. by Chaw and S. Darwin suggested the separation of this group from the New World representatives at generic level. This important result make necessary the re-consideration of the New World species and the restoration of the genus *Stenostomum* F.G. Gaertn. Within the New World genus two sections are recognized: sect. *Stenostomum* and sect. *Resinanthus* with resinous leaves, buds and flowers and a dense secondary venation of the leaves. The Antillean genus *Neolaugeria* Nicols. is merged again into *Stenostomum* and treated as its third section. *Pittoniotis* Griseb. and *Ottoschmidtia* Urb. two monotypic genera of the Caribbean closely related to *Stenostomum* are to be maintained as separate units.

Introduction

The excellent systematic studies published by CHAW and S.DARWIN (1992) on the Old World species of the genus *Antirhea* Juss.ex.Commers. and by S.Darwin on the genus *Timonius*, put in a completely new light the taxonomic position and the generic delimitation of the New World Antirheas. The mentioned authors include into *Antirhea* Juss. s.str. 36 Old World species distributed from Madagascar to China, and through SE.Asia, the Philippines, Malaysia, Sunda Islands and New Guinea to Australia and the South Pacific Islands. They are not resinous trees and shrubs characterized by unisexual dioecious bracteate flowers with manifested sexual dimorphism and arranged in dichasial cymes. Female inflorescence is frequently reduced to solitary flowers. Calyx with well performed persistent lobes. Corolla 3- or 4-lobed, tube is commonly hairy or bearded inside at the base or in the lower part, sometimes naked. Pollen grains are semitectate, inaperturate to 1-porate.

The resurrection of the genus *Stenostomum*

The new detailed description of the genus *Antirhea* made necessary to revise the character combination of the New World *Antirheas* including about other 36 species in the Caribbean, with a strong diversification center in Cuba and Hispaniola. They are mostly resinous trees and shrubs with bisexual - mostly ebracteate - flowers without sexual dimorphism. Calyx lobes mostly not developed or truncate. Corolla 4- to 5 lobed, tube is commonly naked inside or hairy in the throat or in the upper part. Pollen grains are tectate, punctitegillate, 3-colporate.

These important differences make necessary the re-consideration of the New World species and the restoration of the genus *Stenostomum* F.G. Gaertn. Within the New World genus two sections are recognized: sect. *Stenostomum* and sect. *Resinanthus* with resinous leaves, buds and flowers and a dense secondary venation of the leaves. The Antillean genus *Neolaugeria* Nicols. is merged again into *Stenostomum* and treated as its third section. *Pittoniotis* Griseb. and *Ottoschmidtia* Urb. two monotypic genera of the Caribbean closely related to *Stenostomum* are to be maintained as separate units.

The taxonomic subdivision of the genus is suggested as follows:

I. Sectio *Stenostomum*, Arbores vel frutices non resinosi, foliis majoribus foliaceis vel chartaceis, rariter coriaceis stipulis liberis, stigmatibus 2-3-lobulatis. Typus sectionis: *Laugeria lucida* Sw.

Species huc pertinentes: *S. cahosianum*, *S. coriaceum*, *S. granulatum*, *S. jamaicense*, *S. lucidum*, *S. maëstrense*, *S. minutifolium*, *S. mucronatum*, *S. multinerve*, *S. obtusifolium*, *S. occidentale*, *S. oliganthum*, *S. ophiticola*, *S. pedicellare*, *S. pitonianum*, *S. portoricense*, *S. radiatum*, *S. reticulate*, *S. rotundatum*, *S. scrobiculatum*, *S. shaferi*, *S. sintenisii*, *S. tomentosum*, *S. urbanianum*.

II. Sectio Resinanthus Borhidi sect. nova: Frutices vel arbores parvi resinosi, inflorescentis abbreviatis dense bracteosis, foliis plerumque minoribus, coriaceis, stipulis liberis vel breviter connatis, stigmatibus 2-3-lobulatis. Typus: sectionis: *Antirhea abbreviata* Urb.

Species huc pertinentes: *S. abbreviatum*, *S. acutatum*, *S. albobruneum*, *S. aristatum*, *S. baracoense*, *S. biflorum*, *S. ekmanii*, *S. ellipticum*, *S. heteroneurum*, *S. imbricatum*, *S. montecristinum*, *S. myrtifolium*, *S. nipense*, *S. orbiculare*, *S. revolutum*.

III. Sectio: Neolaugeria (Nicols.)Borhidi sect. & comb. nova: Frutices vel arbores valde resinosi, stipulis connatis in anillum truncatum, stigmatibus 4-5-lobulatis. Typus sectionis: *Laugeria resinosa* Vahl

Species huc pertinentes: *S. apiculatum*, *S. cuspidatum*, *S. densiflorum*, *S. hotteanum*, *S. lineolatum*. *S. resinosum*.

Conspectus specierum

Stenostomum abbreviatum (Urb.)Borhidi & M.Z.Fernandez comb. nova

Basionym: *Antirhea abbreviata* Urb. Symb. Antill. 9:159. 1923.

Lectotype: Ekman 9523, S!

- - ssp. **abbreviatum**

- - ssp. **moaense** (M.Z.Fernandez) Borhidi & M.Z.Fernandez comb. et stat. novus

Basionym: *Antirhea abbreviata* var. *moaensis* M.Z.Fernandez

Acta Bot. Acad. Sci. Hung. 28: 87. 1982.

Holotype: Clemente 3639. HAC!

- -ssp. **obcordata** (Alain) Borhidi & M.Z.Fernandez comb. nova

Basionym: *Antirhea obcordata* Alain Candollea 17: 108. 1960.

Stenostomum acutatum DC. Prodr. 4:460. 1930.

Syn.: *Stenostomum viscosum* Griseb. Fl.Br.W.I. 1861:334.

Antirhea acutata Urb. Symb. Antill. 1: 439. 1899.

- -var. **latifolium** (Urb.)Borhidi comb. nova

Basionym: *Antirhea acutata* var. *latifolia* Urb. Symb. Antill. 1:439. 1899.

Type: Sintenis 3180 (B+), lectotype: US!

- Stenostomum albobruneum** (Urb. & Ekm.) Borhidi comb. nova
 Basionym: *Antirhea albobrunea* Urb. & Ekm. Ark.f.Bot. 21 A. No.5:83. 1927.
 Holotype: Ekman H 4146 S!, Isotypes: GH!, US!.
- Stenostomum apiculatum** Britt. & Standl. Bull.Torr.Bot.Cl. 50:50. 1923.
 Holotype: León, 10806. NY!, Isotypes: HAC!, US!
 Syn.: *Laugeria apiculata* Urb. & Ekm. Ark.f.Bot. 20A No.5:58. 1926.
Terebraria apiculata Alain Contr.Ocas.Mus.Hist.Nat.de la Salle 17:11. 1959.
Neolaugeria apiculata Nicolson Brittonia 31:120. 1979.
- Stenostomum aristatum** Britt. Bull.Torr.Bot.Cl. 44:36. 1917.
 Holotype: Britt. & Cowell 13241, NY!, Isotypes: GH!, HAC!, US!
 Syn.: *Antirhea aristata*. Urb. Ark.f.Bot. 21A. No.5:83. 1927.
- Stenostomum aromaticum** (Castillo-Campos & Lorence) Borhidi comb. nova
 Basionym.: *Antirhea aromatica* Castillo-Campos & Lorence Ann. Mo. Bot.Gard. 72: 268. 1985.
 Holotype: Castillo-Campos 2957, XAL, isotypes: MEXU, XAL.
- Stenostomum baracoense** Borhidi Acta Bot. Hung. 38: 000. 1995.
 Holotype: Bisse & al. 36878 HAJB.
 Syn.: *Antirhea baracoensis* Borhidi in schaedis
- Stenostomum biflorum** Borhidi Acta Bot. Hug. 38: 000. 1995.
 Holotype: Bisse & Köhler 7091 HAJB!, isotypes: HAC!
 Syn.: *Antirhea biflora* Borhidi in schaedis
- Stenostomum cahosianum** (Urb. & Ekm.) Borhidi comb. nova
 Basionym: *Antirhea cahosiana* Urb. & Ekm. Ark.f.Bot. 22A No.10:93. 1929.
 Holotype: Ekman, H 8537/a S! Isotypes: A!, NY!
- Stenostomum coriaceum** (Vahl) Griseb. Fl.Br.W.I. 1861:334.
 Basionym: *Laugeria coriacea* Vahl. Eclog. 1:26. 1796.
 Syn.: *Stenostomum dichotomum* DC. Prodr. 4:461. 1830.
Antirhea coriacea Urb. Symb. Antill. 1:436. 1899.
- Stenostomum cuspidatum** Borhidi Acta Bot. Hung. 38: 000. 1995.
 Syn.: *Terebraria cuspidata* Borhidi in schaedis
- Stenostomum densiflorum** Wr. ex Griseb. Cat.Pl.Cub. 1866:132.
 Type: Wr. 2713. Cuba occ. GH, Isotype: HAC!, NY!
 Syn.: *Guettarda densiflora* Maza Anal.Soc.Esp.Hist.Nat. 23:290. 1895.
Laugeria densiflora Hitchc. Rep.Mo.Gard. 4:93. 1893.
Neolaugeria densiflora Nicolson Brittonia 31:121. 1979.
- Stenostomum ekmanii** (Borhidi) Borhidi comb. nova
 Basionym: *Antirhea ekmanii* Borhidi Acta Bot.HUng. 29:193.. 1983.

Holotype: Ekman, H 15429 S! Isotype: NY!

Stenostomum ellipticum (Urb. & Ekm.)Borhidi comb. nova
 Basionym: *Antirhea elliptica* Urb. & Ekm. Ark.f.Bot. 24A No. 4:52. 1932.
 Holotype: Ekman, H 9863 S!. Isotypes: GH! NY! S! US!

Stenostomum granulatum Griseb. Mem.Amer.Acad. Nov.Ser. 8:507. 1862.
 Holotype: Wr. 1272 GOET !, Isotypes: GH, HAC! NY!
 Syn.: *Antirhea granulata* Urb. Symb.Antill. 1:439. 1899.

Stenostomum heteroneurum (Urb. & Ekm.)Borhidi comb. nova
 Basionym: *Antirhea heteroneura* Urb. & Ekm. Ark.f.Bot. 21A No.5:83.
 1927.
 Holotype: Ekman, H 3843 S!

Stenostomum hotteanum (Urb.)Borhidi comb. nova
 Basionym: *Laugeria hotteana* Urb. Ark.f.Bot. 20A No. 5:58. 1926.
 Holotype: Ekman, H 601 S!.
 Syn.: *Terebraria hotteana* Alain Brittonia 20:161. 1968.
Neolaugeria apiculata Nicols. p.p. Brittonia 31:120. 1979.
Neolaugeria hotteana Borhidi Acta Bot.Hung. 37:85. 1993.

Stenostomum imbricatum Borhidi Acta Bot. Hung. 38: 000. 1995.
 Holotype: Bisse 21349 HAJB!,
 Syn.: *Antirhea imbricata* Borhidi in schaedis

Stenostomum involucreatum (Urb. & Ekm.)Borhidi comb. nova
 Basionym: *Antirhea involucreata* Urb. & Ekm. Ark.f.Bot. 21A No. 5:84.
 1927.
 Holotype: Ekman, H 3527 S!, Isotypes: A!, US!

Stenostomum jamaicense (Urb.)Borhidi comb. nova
 Basionym: *Antirhea jamaicensis* Urb. Symb.Antill. 1:435. 1899.
 Holotype: Harris 5805 (B+)
 Syn.: *Stenostomum bifurcatum* Griseb. Fl.Br.W.I. 1861:333. non DC.
Antirhea bifurcata Hook.f. in Benth. & Hook. Gen.Pl. 2:100.
 1873.

Stenostomum lineolatum (Urb.)Borhidi comb. nova
 Basionym: *Laugeria lineolata* Urb. Ark.f.Bot. 20A No.5:58. 1926.
 Holotype: Ekman, H 1224 S! Isotype: US!
 Syn.: *Terebraria lineolata* Alain Brittonia 20:161. 1968.
Neolaugeria apiculata Nicols. Brittonia 31:120. 1979.
Neolaugeria lineolata Borhidi Acta Bot.Hung. 37:85. 1993.

Stenostomum lucidum (Sw.)C.F.Gaertn. Fruct. 3:69. 1805.
 Basionym: *Laugeria lucida* Sw. Prodr. 1788:48.
 Holotype: Sw. s.n. S!
 Syn.: *Antirhea lucida* Hook.f. in Benth. & Hook. Gen.Pl. 2:100. 1873.

- Stenostomum maëstreense** (Urb.) Borhidi & M.Z.Fernandez comb. nova
 Basionym: *Antirhea maëstrensis* Urb. Symb.Antill. 9:528. 1928.
 Holotype: Ekman 15849 B+. Lectotype: S!, Isolectotypes: NY!, US!
- Stenostomum minutifolium** (Borh. & Cap.) Borhidi & M.Z.Fernandez comb. nova
 Basionym: *Antirhea minutifolia* Borhidi & Capote Abstracta Bot. Budapest 7:40. 1977.
 Holotype: Borhidi 27803 HAC!, isotype: BP!
- Stenostomum montecristinum** (Urb.) Borhidi comb. nova
 Basionym: *Antirhea montecristina* Urb. Ark.f.Bot. 24A No.4:51. 1932.
 Holotype: Ekman, H 13142 S! Isotypes: GH! NY!
- Stenostomum mucronatum** (Urb.) Borhidi & M.Z.Fernandez comb. nova
 Basionym: *Antirhea mucronata* Urb. Symb.Antill. 1:440. 1899.
 Holotype: Wr. 2782 GOET!, isotype: GH, HAC!, MBG!, NY! S!.
- Stenostomum multinerve** (Urb.) Borhidi & M.Z.Fernandez comb. nova
 Basionym: *Antirhea multinervis* Urb. Symb.Antill. 9:159. 1923.
 Lectotype: Ekman, 3598 S!, Holotype: B+.
- Stenostomum myrtifolium** Griseb. Fl.Br.W.I. 1861:334.
 Holotype: Brace 445. GOET.
 Syn.: *Antirhea myrtifolia* Urb. Symb.Antill. 1:440. 1899.
- Stenostomum nipense** (Borhidi & Muniz) Borhidi & M.Z.Fernandez comb. nova
 Basionym: *Antirhea nipensis* Borhidi & Muniz Abstracta Bot. Budapest 7:41. 1977.
 Holotype: SV 27798 HAC!
- Stenostomum obtusifolium** (Urb.) Britt. & Wils. Sci.Surv.Porto Rico 6:237. 1925.
 Basionym: *Antirhea obtusifolia* Urb. Symb.Antill. 1:435. 1899.
 Holotype: Eggers 1244 B+. Lectotype: Sintenis 2569, NY!
- Stenostomum occidentale** (Urb.) Borhidi & M.Z.Fernandez comb. nova
 Basionym: *Antirhea occidentalis* Urb. Symb.Antill. 9:529. 1928.
 Holotype: Ekman, 11913 B+, Lectotype: S!.
- Stenostomum oliganthum** (Urb.) Borhidi comb. nova
 Basionym: *Antirhea oligantha* Urb. Symb.Antill. 7:411. 1912.
 Holotype: Fuertes 1471 B+, Lectotype: Fuertes 1496 A!
- Stenostomum ophiticola** (Alain) Borhidi & M.Z.Fernandez comb. nova
 Basionym: *Antirhea ophiticola* Alain Contr.Ocas.Mus.Hist.Nat.de la Salle, 17:1. 1959.
 Holotype: Acuna & Zayas 19806 SV/HAC!, Isotype: LS/HAC.
- Stenostomum orbiculare** (Alain) Borhidi & M.Z.Fernandez comb. nova

Basionym: *Antirhea orbicularis* Alain Contr.Ocas.Mus.Hist.Nat de la Salle, 17:2. 1959.
 Holotype: Clemente 6219 LS/HAC!, Isotype: NY! US!

Stenostomum pedicellare (Borhidi & Bisse) Borhidi & M.Z.Fernandez comb. nova

Basionym: *Antirhea pedicellaris* Borhidi & Bisse Acta Bot. Acad. Sci. Hung. **28**:87. 1982.
 Holotype: HAJB 17793 Bisse & Lippold, Isotype: JE.

Stenostomum pitonianum (Urb. & Ekm.) Borhidi comb. nova

Basionym: *Antirhea pitoniana* Urb. & Ekm. Ark.f.Bot. 21A No.5:82. 1927.
 Holotype: Ekman, H 4596 S! Isotypes: A! US!

Stenostomum portoricense Britt. & Wils. Sci.Surv.Porto Rico 6:564. 1930.

Syn.: *Antirhea portoricensis* Standl. N.Amer.Fl. 32:268. 1934.
 Holotype: Britton 9150 NY!

Stenostomum radiatum Griseb. Cat.Pl.Cub. 1866:132.

Holotype: Wr. 2712. GOET. Isotype: GH, MBG!, NY!, S!, US!
 Syn.: *Antirhea radiata* Urb. Symb.Antill. 1:435. 1899.
Stenostomum pauciflorum Wr. in Sauv. Anal.Acad.Habana 6:67. 1869.

- - ssp. **radiatum**

- - ssp. **haitiense** (Borhidi) Borhidi comb. nova

Basionym: *Antirhea radiata* (Griseb.)Urb. ssp. *haitiensis* Borhidi ActaBot.Hung.,.29:193. 1983.
 Holotype: Ekman, H 10149 S!

Stenostomum resinosum (Vahl) Griseb. Fl.Br.W.I. 1861:334.

Basionym: *Laugeria resinosa* Vahl. Eclog. 1:27. 1796.
 Syn.: *Antirhea resinosa* Cook & Coll. Contr. U.S. Nat.Herb. 8:82. 1903.
Terebraria resinosa Sprague
Neolaugeria resinosa Nicols. Brittonia 31:121. 1979.

Stenostomum reticulare Borhidi & M.Z.Fernandez Acta Bot.Hung. 38: 000 1995.

(Syn.: *Antirhea reticularis* Borhidi & Fernandez in schaedis)

Stenostomum revolutum Borhidi Acta Bot. Hung. **38**: 000. 1995.

(Syn.: *Antirhea revoluta* Borhidi in schaedis)

Stenostomum rotundatum Griseb. Cat.Pl.Cub. 1866:132.

Holotype: Wr. 2714 GOET! Isotype: GH, HAC!, MBG!, NY!, S!, US!
 Syn.: *Antirhea rotundata* Hook.f. in Benth. & Hook. Gen.PI. 2:100. 1873.

Stenostomum scrobiculatum (Urb.) Borhidi & M.Z.Fernandez comb. nova
 Basionym: *Antirhea scrobiculata* Urb. Symb.Antill. 9:529. 1928.
 Holotype: Ekman, 15880 B+, Lectotype: S!, Isolectotype: NY!,

Stenostomum shaferi (Urb.) Borhidi & M.Z.Fernandez comb. nova
 Basionym: *Antirhea shaferi* Urb. Feddes.Repert. 13:479. 1915.
 Holotype: Shafer 8142 B+, Lectotype: Shafer 3160 NY! Isolectotypes:
 HAC!, US!

Stenostomum sintenisii (Urb.)Britt. & Wils. Sci.Surv.Porto Rico. 6: 238.
 1925.

Basionym: *Antirhea sintenisii* Urb. Symb.Antill. 1: 438. 1899.
 Holotype: Sintenis 5945 B+, Lectotype: US!

Stenostomum tomentosum (Sw.) DC. Prodr. 4:460. 1830.

Basionym: *Laugieria tomentosa* Sw. Prodr. 1788:48.

Type: Sw. s.n. S!

Syn.: *Antirhea tomentosa* Urb. Symb.Antill. 7:412. 1912.

Stenostomum urbanianum (C.T.White) Borhidi & M.Z.Fernandez comb.
 nova

Basionym: *Antirhea urbaniana* C.T.White J.Arn.Arb. 27:121. 1946.

Holotype: Wr 2710 GOET!. Lectotype: GH, HAC!, MBG!, NY! S!

Syn.: *Antirhea tenuiflora* Urb. Symb.Antill. 1:438. 1899. non F.Muell.

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