Calycogonium pseudofloribundum, a new species of Melastomataceae, Miconieae, from eastern Cuba

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Source: Willdenowia, 41(2) : 289-294

Published By: Botanic Garden and Botanical Museum Berlin (BGBM)

URL: https://doi.org/10.3372/wi.41.41210

Novitiae florae cubensis No. 37

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Calycogonium pseudofloribundum, a new species of *Melastomataceae, Miconieae,* from eastern Cuba

Abstract

Bécquer E. R.: *Calycogonium pseudofloribundum,* a new species of *Melastomataceae, Miconieae,* from eastern Cuba [Novitiae florae cubensis 37]. – Willdenowia 41: 289–294. December 2011. – Online ISSN 1868-6397; © 2011 BGBM Berlin-Dahlem.
Stable URL: http://dx.doi.org/10.3372/wi.41.41210

Calycogonium pseudofloribundum of the *Melastomataceae* tribe *Miconieae,* from eastern Cuba, a species new to science, is described and illustrated. *C. pseudofloribundum* is closely related to *C. floribundum,* with which it has been confused for a long time. It can be distinguished from the latter species by leaf features (the ovate to lanceolate leaves have an acute to apiculate apex, the blade is flat to slightly revolute, the margin usually obscurely to minutely dentate towards the apex, the adaxial surface is flat and usually opaque to whitish in dry material by presence of wax layers; they have two, rarely one, pair of secondary veins, the second pair originating 2–9 mm above the base), the external calyx teeth being 5–6 mm long, and the petals being white, obtuse to acute, 4–5 × 2–2.5 mm. An amended description and an illustration for *C. floribundum* is also provided.

Additional key words: *Calycogonium bissei, Calycogonium floribundum, Calycogonium revolutum, Miconia, Pachyanthus, Tetrazygia,* taxonomy, Greater Antilles

Introduction

Calycogonium DC. is an Antillean genus of shrubs and small trees with about 40 species (Michelangeli & Bécquer in press). Like most genera in the *Miconieae, Calycogonium* does not seem to be monophyletic (Bécquer & al. 2008; Michelangeli & al. 2004, 2008) and its species are placed in four different clades along with species of *Miconia* Ruiz & Pav., *Pachyanthus* A. Rich. and *Tetrazygia* Rich. (Goldenberg & al. 2008; Michelangeli & al. 2008). However, most of these clades can be diagnosed by morphological characters, as it has been the case for many groups in the *Miconieae* (Bécquer & al. 2008; Martin & al. 2008; Goldenberg & al. 2008).

One of these clades can be diagnosed by abaxially densely stellate-pubescent leaves and inflorescences sometimes reduced to a single flower (Judd & Skean 1991). Several Cuban endemic species of *Calycogonium* and one of *Pachyanthus* belong to this clade, e.g. *C. floribundum* Borhidi, *C. grisebachii* Triana, *C. plicatum* Griseb., *C. revolutum* Alain, *Pachyanthus reticulatus* Britton & P. Wilson (Bécquer & al. 2008; Michelangeli & al. 2008) and also *C. bissei* Bécquer (2010).

During a morphological study of this species group, two unidentified herbarium specimens housed at HAJB and JE *(Bisse & Rojas HFC-3544, Bisse & Rojas HFC-16819)* from eastern Cuba came to my attention. The specimens have the ovary locules extending into the free distal portion of the ovary. This feature constitutes the synapomorphy of a small group of species that includes *C. bissei, C. revolutum* and *P. reticulatus* (Bécquer 2010).

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Also, the specimens are related to *C. floribundum* by the fact of having both axillary and terminal inflorescences.

My comparative study of the specimens above with several others deposited in B, HAC, HAJB and JE (herbarium abbreviations following Thiers 2008+), which were up until now determined as *Calycogonium floribundum,* showed that they do not belong to the latter species, although some of their features match those given in the protologue of *C. floribundum.*

Borhidi (1978) described *Calycogonium floribundum* based on a unique specimen deposited at HAC, supposedly collected in Sierra del Cristal by a "Misión Alemana de Investigación de alcaloides". Later, Manitz (1988) pinpointed the locality and collectors of the type specimen deposited in the herbarium HAC; in fact, the type specimen was collected in Sierra del Maguey near Cupeyal del Norte by O. Aurich & C. Horstmann (no. 4.28), with an isotype deposited in the herbarium GAT.

A careful examination of the holotype of *Calycogonium floribundum* confirmed that the two questioned specimens indeed correspond with this species, but demonstrated that all the specimens previously annotated as *C. floribundum* represent a yet undescribed, morphologically similar and presumably closely related species, which is described below and compared with *C. floribundum*.

Calycogonium pseudofloribundum Bécquer, **sp. nov.**
Holotype: Cuba, Guantánamo, Baracoa, Alturas de Baracoa, Mina Amores, place where río Camarones & río Baez meet, 20°25.493'N, 74°37.166'W, 110 m, steep 45° slopes, 21.6.2002, *D. Skean, E. Bécquer, L. R. González-Torres & J. Carrión 4167* (HAJB; isotypes: B, FLAS, HAJB). – Fig. 1, 2A–D.

A *Calycogonio floribundo* foliis ovatis vel lanceolatis, acutis apiculatisve, margine planis vel parum revolutis apicem versus saepius minute inconspicue dentatis, supra planis glabris in sicco propter stratum cerinum plerumque opace albescentibus (nec ovato- vel obovato-ellipticis, obtusis retusisve, margine revolutis integris, supra plerumque bullatis junioribus rufo-pubescentibus serius decalvantibus in sicco saepius lucidis), in utroque latere nervis secundariis (1–)2 nec (–)2 percursis cujus alter, dum adsit, 2–9 mm (nec 1–2 mm) supra basi a costa discedit; calycis dentibus exterioribus 5–6 mm (nec 3–3.5 mm) longis; atque petalis albis obtusis vel acutis 4–5 mm longis et 2–2.5 mm latis (nec purpureis, truncatis, 7.5–8 mm longis et c. 5 mm latis) differt.

Shrub 1.5–2.5 m tall, evergreen. *Indumentum* formed mostly by 0.2–0.7 mm dendritic and c. 0.1 mm long stellate hairs present on young twigs, abaxial leaf surface, inflorescences, flowers and young fruits. *Young twigs* flattened in dry material, densely ferrugineous to rufous-tomentose. *Mature branches* with smooth bark. *Leaves* with a 0.5–1 cm long terete petiole, densely ferrugineous to rufous-tomentose; blade ovate to lanceolate (Fig. 1), (2.3–)3–11.5 × 1.4–4 cm, coriaceous, acute to apiculate, with rounded to slightly cordate base and plane to slightly revolute margin, entire to obscurely minutely dentate or crenate toward apex; adaxial face usually flat, rufous-pubescent in young leaves, later glabrous, bright green in living plants, usually opaque to whitish in dry material by presence of wax layers; abaxial face completely covered with a dense, ferrugineous to rufous indumentum, sometimes turning grey or even whitish with age. *Venation* acrodromous, with one pair or two pairs of symmetrical secondary veins, the marginal pair almost basal, sometimes inconspicuous, the second pair suprabasal, originating 2–9 mm above the base; midveins and secondary veins impressed above, prominent beneath; tertiary veins slightly impressed above, raised beneath, ± perpendicular to the midvein; quaternary veins inconspicuous on either side. *Mite domatia* absent. *Inflorescence* axillary, sometime terminal (Fig. 1), cymose, nearly sessile; flowers 1–3, sometimes forming a 3-flowered dichasium, bracts persistent through anthesis, obovate, subulate to cylindrical, rarely foliaceous, 0.6–0.9 cm long, coriaceous; bracteoles paired, subulate, c. 2 mm long, persistent. *Flowers* 4-merous, sessile. *Hypanthium* (Fig. 2A) turbinate, terete to slightly 8-angulate, c. 3.5 mm long, free portions of hypanthia c. 1.5 mm long, densely rufous-tomentose on both surfaces. *Calyx* cup-shaped, with c. 1.5 mm long tube; external calyx teeth 5–6 mm long, slightly keeled at base, terete toward the obtuse apex, extended, densely rufous-tomentose; internal calyx lobes triangular-ovate, acute with the apex fused with the external calyx teeth, 2.5–3 mm long, rufous-tomentose inside. *Petals* (Fig. 2D) white, not unguiculate, oblong to obovate, concave toward the obtuse to acute apex, with a cuneate base, 4–5 × 2–2.5 mm; margin entire, glabrous. *Stamens* (Fig. 2C) 8, isomorphic, glabrous, deflexed to one side of flower at anthesis. *Filaments* c. 3 mm long, flattened, geniculate at the base. *Anthers* yellowish, c. 2 mm long, smooth; connective thickened toward base, thinning out toward apex, as long as thecae, not bifurcate, eglandular; thecae 2, smooth, with a dorsal-apical pore. *Ovary* semiinferior, 3-locular, apically slightly sunken at the insertions with the style, densely rufous-tomentose; locules extending into the free, conical distal portion (Fig. 2A); placentation axile, placentae not intrusive; style (Fig. 2B) terete, attenuate apically, glabrous, c. 5.5 mm long; stigma punctiform, papillose. *Berries* not seen, immature fruit c. 5 mm long, with ± 30 seeds. *Seeds* 1.2–1.5 mm long, with papillate testa surface.

Etymology. — The specific epithet refers to the fact that this new species has been confused with *Calycogonium floribundum*, and also alludes to the close morphological resemblance between them.

Delimitation. — *Calycogonium pseudofloribundum* differs from *C. floribundum* by its ovate to lanceolate (ver-

Fig. 1. Photo of the holotype of *Calycogonium pseudofloribundum* at HAJB; top frame: axillary flowers, bottom frame: terminal flowers.

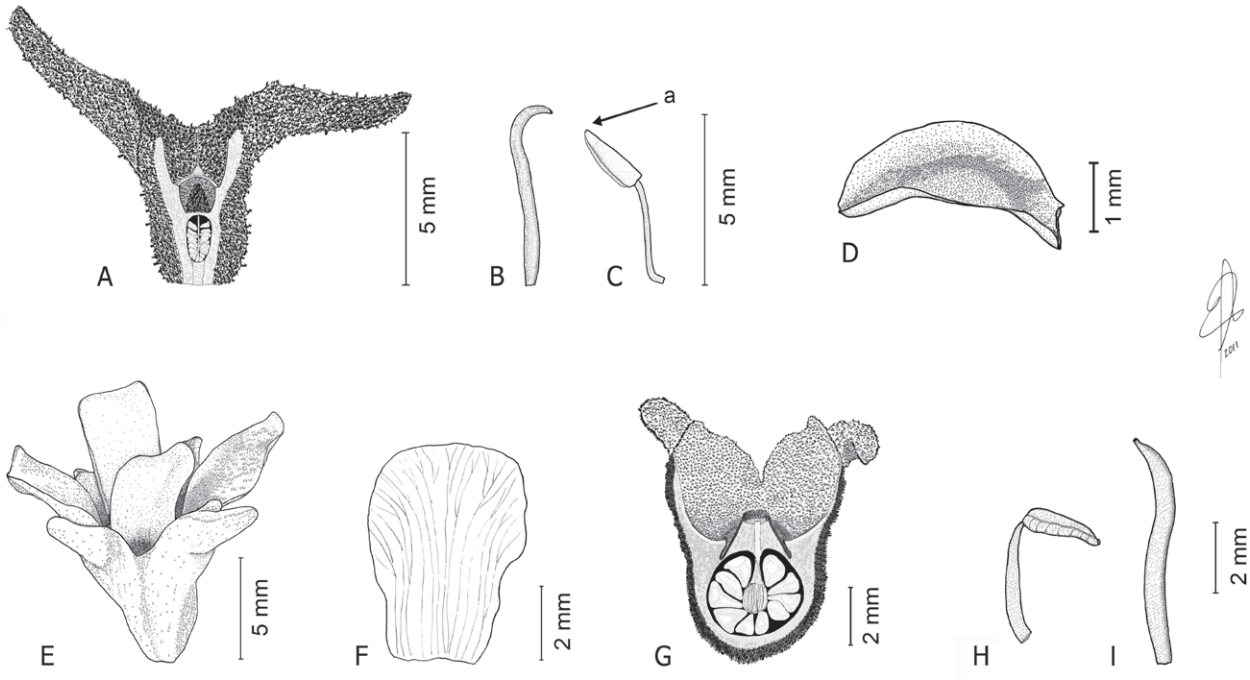

Fig. 2A–D: *Calycogonium pseudofloribundum* – flower in longitudinal section (A); style (B); stamen in side view, a = position of pore (C); petal (D). – E–D: *C. floribundum* – flower (E); petal (F); mature hypanthium in longitudinal section (G); stamen in side view (H); style (I). – A–D drawn from the holotype *Skean & al. 4167* at HAJB; E drawn from the holotype *Aurich & Horstmann 4.28* at HAC; F–I drawn from *Bisse & Rojas HFC-3544*; all drawings by the author.

sus ovate-elliptic or obovate-elliptic), acute to apiculate (versus obtuse to retuse) leaf blade with plane to slightly revolute (versus revolute) and distally usually obscurely minutely dentate (versus entire) margin, the adaxial face being flat (versus usually bullate) and usually opaque to whitish in dry material by presence of wax layers (versus shiny), the leaf venation with two pair, rarely one, of secondary veins, the second pair suprabasal, originating 2–9 mm above the base (versus one pair of basal, rarely suprabasal secondary veins originating 1–2 mm above the base); the calyx with the external teeth 5–6 mm (versus 3–3.5 mm) long, and the white and obtuse to acute (versus purple and truncate) petals of 4–5 × 2–2.5 mm (versus 7.5–8 × c. 5 mm).

Calycogonium pseudofloribundum and *C. floribundum* are the only species of the genus in Cuba with both axillary and terminal inflorescences. It is possible that both species have axillary inflorescences with some of them appearing terminal (pseudoterminal inflorescences). Little is known, however, about the phenology of the species and whether they have only pleonanthic shoots (typical for plants with axillary inflorescences) or also truly hapaxanthic shoots in which the apical shoot meristem is transformed into a flowering axis after a period of vegetative growth (Judd 1986).

Phenology. — Plants with buds have been collected in April, flowers and young fruits in June.

Distribution and habitat. — *Calycogonium pseudofloribundum* is endemic to eastern Cuba (provinces of Guantánamo and Holguín), where it occurs in ± thorny xerophytic scrub, pine forest and semi-dry montane rainforest on serpentine, at altitudes of 100−700 m. Associated species include *C. grisebachii* Triana, *C. revolutum* Alain, *Miconia cerasiflora* var. *setulifera* Urb., *M. uninervis* Alain, *Ossaea baracoensis* Borhidi, *O. pauciflora* (Naudin) Urb., *Cassipourea guianensis* Aubl., *Smilax cuprea* Ferrufino & Greuter, *Sticherus bifidus* (Willd.) Ching, *Croton ekmanii* Urb., *Euphorbia helenae* Urb. and *Pinus cubensis* Morelet.

Additional specimens examined. — Cuba: Prov. Guantánamo: Charrascos en la subida a Sierra Azul, Quibiján, Baracoa, alt. aprox. 500 m, 4.1.1960, *Alain & L. Figueiras 7343* (HAC, HAJB); Baracoa, pluvisilva a orillas del arrollo Juraguá, al suroeste de Camarones, 100 m, 5.8.1975, *Álvarez & al. HFC-26980* (B, HAJB, JE); Baracoa, Loma de Buena Vista, parte oeste (al oeste de Camarones), 500−600 m, 12.8.1975, *Álvarez & al. HFC-27368* (B, HAJB, JE); Baracoa, subida a la Sierra Azul ladera noroeste (al sur de Quibiján), matorral xeromorfo subespinoso sobre serpentina, suelo fersialítico pardo rojizo, 15.4.1986, *Arias & al. HFC-58773* (B, HAJB, JE); Baracoa, pinar en la loma al noroeste de Baracoa, 2.1968, *Bisse & Köhler HFC-5384* (HAJB, JE); Baracoa, Quibiján, Sierra Azul, charrascos entre 400−600 m, 2.1968, *Bisse & Köhler HFC-5477, HFC-5653* (HAJB, JE); Baracoa, charrascos en el valle del río Báez cerca de Arroyo naranjo, 200 m, 4.1975, *Bisse & al. HFC-25608* (HAJB); Baracoa, Quibiján, pluvisilva de la zona de Arroyo Blanco en el camino a Vega de la Palma, 16.2.1978,

Bisse & al. HFC-36975 (HAJB, JE); Imías, Sierra de Imías, La Demajagua, cima de la loma Demajagua Hueca (entre río Duaba y río Jojo), charrascos y pinares sobre laterita, 700 m, 16.4.1984, *Bisse & al. HFC-53221* (B, HAJB, JE); Camino a la mina de Río Baez, 18 km NO de Baracoa por carretera, y luego 7–9 km SO por carretera, entre dos puentes sobre el Río Báez, 20'25.55°N, 74'37.23°W, 100 m, 22.10.2009, *Michelangeli & al. 1468* (HAC, HAJB, NY). – Prov. Holguín: Moa, charrascal cerca de la mina La Melba, 600 m, 4.1.1969, *Bisse & Lippold HFC-11078* (HAJB, JE); Moa, La Melba, charrascal cerca del aserrío, 400−500 m, 22.12.1968, *Bisse & Lippold HFC-11529* (HAJB, JE).

Calycogonium floribundum Borhidi in Növenyredsz. Novényföldr. Tansz., Eötvös Loránd Tudományegyet. Budapest [= Abstr. Bot. Inst. Taxon.-Oikol. Pl. Univ. Sci. "L. Eötvös"] 5: 25. 1978. – Holotype: Prov. Guantánamo, Mcpio Yateras, "Sierra del Maguey, cerca de Cupeyal del Norte", 3.–4.4.1989, *O. Aurich & C. Horstmann 4.28* [*SV-26908*] (HAC!; isotype: GAT [photo]).

Shrub, evergreen. *Indumentum* formed by c. 0.1 mm long stellate and 0.2–0.7 mm long dendritic hairs present on young twigs, abaxial leaf surface, inflorescences, flowers and young fruits. *Young twigs* flattened in dry material, densely ferrugineous to rufous-tomentose. *Mature branches* with smooth bark. *Leaves* with a 0.4–0.7 cm long terete petiole flattened in dry material, canaliculate above, densely ferrugineous-tomentose, later grey-tomentose; blade elliptic, ovate-elliptic or obovate-elliptic, 3.5–5.7 × 1.6–2.3 cm, coriaceous, obtuse to apiculate or retuse, with obtuse to rounded base and revolute, entire margin; adaxial face usually bullate, ferrugineous-pubescent at young leaves, later glabrous, usually shiny in dry material; abaxial face completely covered with a dense, brown to ferrugineous indumentum, sometimes turning grey with age. *Venation* acrodromous, with one pair of basal (rarely suprabasal, originating 1–2 mm above the base) symmetrical secondary veins; midvein, secondary and tertiary veins impressed above, prominent beneath; tertiary veins ± perpendicular to the midvein; quaternary veins inconspicuous on either side. *Mite domatia* absent. *Inflorescence* mostly axillary on the two terminal nodes, sometimes terminal, cymose, nearly sessile; flowers 1–3(–5), usually forming a 3-flowered dichasium, sometimes 5-glomerulate, bracts persistent through anthesis, obovate, subulate to cylindrical, rarely foliaceous, 0.6–0.9 cm long, coriaceous; bracteoles paired, subulate, c. 2 mm long, persistent. *Flowers* 4-merous (Fig. 2E), sessile. *Hypanthium* (Fig. 2G) turbinate to campanulate, terete, c. 4 mm long, free portions c. 2.5 mm long, densely ferrugineous to rufous-tomentose on both faces. *Calyx* cup-shaped, with a 1–2 mm long tube; external calyx teeth 3–3.5 mm long, slightly keeled at base, terete toward the obtuse apex, ± parallel to flower axis, densely ferrugineous to rufous-tomentose; internal calyx lobes ovate to broadly rectangular, obtuse-triangular toward apex, 3–3.5 mm long, ferrugineous to rufous-tomentose inside. *Petals* (Fig. 2F) not unguiculate, obovate, oblong, slightly asymmetric, concave toward the truncate apex, with a cuneate base, 7.5–8 × c. 5 mm; margin entire, glabrous, purple. *Stamens* (Fig. 2H) 8, isomorphic, glabrous. *Filaments* c. 3.5 mm long, flattened, geniculate at the base. *Anthers* 2.2–2.5 mm long, smooth; connective thickened toward base, thinning out toward apex, slightly shorter than thecae, not bifurcate, eglandular; thecae 2, smooth; with a dorsal-apical pore. *Ovary* semiinferior, 3-locular, apically almost truncate to slightly sunken at the insertions with the style, densely ferrugineous-pubescent; locules extending into the free, conical distal portion (Fig. 2G); placentation axile, placentae not intrusive; style (Fig. 2I) terete, attenuate apically, glabrous, c. 7 mm long, stigma punctiform. *Berries* not seen, immature fruit c. 5 mm long, with ± 30 seeds. *Seeds* 1.2–1.5 mm long, with papillate testa surface.

Phenology. — Plants with flowers have been collected in April, flowers and very young fruits in June.

Distribution and habitat. — *Calycogonium floribundum* is endemic to eastern Cuba (provinces of Guantánamo and Holguín), where it occurs in ± thorny xerophytic scrub and semidry montane rainforest on serpentine, at an altitude of c. 700 m.

Additional specimens examined. — Cuba: Prov. Guantánamo: Cupeyal del Norte, monte quemado cerca de la casa de la reservación. 6.1967, *Bisse & Rojas HFC-3544* (HAJB, JE). – Prov. Holguín: Sagua de Tánamo, "Cuchillas de Toa: Sierra de Maguey", pluviosilva y charrascales, 700 m de alto, 4.1970, *Bisse & Rojas HFC 16819* (HAJB, JE).

Acknowledgements

I am grateful to the Botanic Garden and Botanical Museum Berlin-Dahlem, especially to Prof. Dr Thomas Borsch, for support during my stay at that institution in 2010. I also thank Dr Hermann Manitz for his kinds help during my visit to the Herbarium Haussknecht in Jena (JE) in 2010. Thanks are also due to the herbarium curators of B, HAC and JE for loans of *Calycogonium* specimens. I am indebted to Dr Fabián Michelangeli for the revision of an earlier version of the manuscript, to Prof. Dr Werner Greuter for translating the diagnosis into Latin, and to the reviewers Dr Hermann Manitz and Dr Dan Skean Jr. for their improvements of a previous version.

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