

A NEW NATURAL HYBRID OF *BROUGHTONIA* (ORCHIDACEAE) FROM CUBA

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ABSTRACT. At Cabo San Antonio (Guanahacabibes Peninsula), Cuba in 2004, a single specimen of *Broughtonia ortgiesiana* (Rchb.f.) Dressler, and a related species, *Broughtonia cubensis* (Lindl.) Cogn., were both observed in flower simultaneously. In 2006, fruits were observed on *B. ortgiesiana*, and nine years later (2015) we noted five young plants in anthesis that displayed floral characteristics common to both species. Given the time frame and the blend of floral traits, we conclude that these five plants are the result of a natural hybridization event between the two *Broughtonia* species the details of which are described here.

KEYWORDS: Orchidaceae, natural hybrid, Cuba

Broughtonia R.Br., is a genus of six species, endemic to the Caribbean region. Three of species are present in Cuba: *Broughtonia cubensis* (Lindl.) Cogn., *B. ortgiesiana* (Rchb.f.) Dressler, and *B. lindenii* (Lindl.) Dressler. While *B. cubensis* and *B. ortgiesiana* are both Cuban endemics, *B. lindenii* is also present in the Bahamas. Like Cuba, Jamaica also harbors two endemic *Broughtonia* species, *B. negrilensis* Fowlie, and *B. sanguinea* (Sw.) R.Br. On Hispaniola and Mona island (Puerto Rico) to the east, another species is found, *B. domingensis* (Lindl.) Rolfe (Díaz 2014, in Ackerman and collaborators). In Cuba, the distribution of *B. lindenii* and *B. ortgiesiana* is widespread. *B. cubensis* has been reported for several localities of the provinces Mayabeque (Loma La Coca), Artemisa (north coast of the municipality Mariel) and Pinar del Río (Los Pretiles and Guanahacabibes Peninsula). In Loma La Coca, the species is now extirpated due to habitat destruction and depredation. Reports for the North coast of Mariel and Los Pretiles have yet to be substantiated by the authors. In the Guanahacabibes Peninsula, *B. cubensis* is found in Cabo Corrientes and Cabo San Antonio in association with *B. lindenii* and *B. ortgiesiana* where they are protected by law

within the framework of Cuba's National System of Protected Areas. Although it is very difficult to differentiate between the plants on the basis of vegetative characters, their floral morphology and timing of anthesis clearly differ (Díaz Dumas, 1997a, 1997b).

Until now, it was assumed that *B. cubensis* and *B. lindenii* are not sympatric. However, field work carried out at Barra La Sorda (Cabo San Antonio) in 2005 revealed that both species were indeed sympatric, affixed to branches of *Plumeria tuberculata* (Apocynaceae) trees. Although their flowering seasons normally do not overlap, occasional natural cross-pollination between *B. cubensis* and *B. lindenii* cannot be ruled out.

In 2004, at the site where we have studied spatial and temporal dynamics of *B. cubensis* (Fig. 1), one individual of *B. ortgiesiana* was observed in flower (Fig. 2) representing the first such report for this species in Cabo San Antonio. In 2007 the authors observed three fruits in this plant and later (2010) two more fruits were documented.

Collectively, these observations confirm that the species are indeed sympatric and possibly capable of



FIGURE 1. *Broughtonia cubensis* at Cabo San Antonio.



Figure 2. *Broughtonia ortgiesiana*, the first record of this species at Cabo San Antonio.

eventual natural cross-pollination given their overlap in anthesis and geographic location. Evidence for sympatry is not limited to our 2004 observation. In January 2015, both species flowered concurrently again, with a second *B. ortgiesiana* yielding six flowers. Further exploration of this site revealed five individual orchids with intermediate floral characteristics of both species (Fig. 3–4).

Closer examination of *B. cubensis* individuals often reveals subtle floral variation (morphs), but never in the same proportion as those seen in other genera, namely *Encyclia* Hook. and *Tolumnia* Raf. whose morphs are often problematic for taxonomists. Based on our direct field experiences, only rarely do morphs of *B. cubensis* re-occur in the same location or in different sites.

To our knowledge, all *Broughtonia* species are incapable of self-pollination. This fact, coupled with capsule/seed set in *B. ortgiesiana*, argues in favor of natural hybridization with *B. cubensis* – the only other *Broughtonia* species in flower at that location at that time. At two other sites where *B. cubensis* is present, *B. ortgiesiana* was not detected, nor were individuals possessing flowers intermediate in form. Taken together, we conclude that the intermediate forms in the Guanahacabibes Peninsula are the result of natural hybridization.

Broughtonia* × *guanahacabibensis Mújica, E. González et J.M. Díaz, *nothosp. nov.*

Broughtonia cubensis (Lindl.) Cogn. × *Broughtonia ortgiesiana* (Rehb.f.) Dressler.



FIGURE 3. *Broughtonia* × *guanahacabibensis*, *nothosp. nov.*

TYPE: Cuba. Pinar del Río: Sandino, Cabo San Antonio, near Roncali Lighthouse, originally collected on 23 January 2015. Type: *E. Mujica 241* (holotype: Herbarium of the Soroa Orchid Garden, not registered).

Plants epiphytic, to 30 cm tall. *Roots* white, numerous, 2–3 mm in diameter. *Pseudobulbs* clustered, cylindric, fusiform, to 3 cm long, 1 cm wide, enclosed by scarious sheaths when young, with 2–3 internodes. *Leaves* 1–2, fleshy, rigid, erose, narrowly oblong, rounded to apiculate, to 8 cm long, 1 cm wide. *Inflorescences* a few-flowered racemes to 30 cm long; peduncle bracts sheathing. *Floral bracts* ovate, acute. *Pedicellate ovary* slender, to 2.5 cm long. *Flowers* showy, with white sepals, the petals white with a purple central vein, the lip white, yellow at the center, with purple margin. *Sepals* lanceolate, acute, the dorsal one to 2 cm long, 4 mm wide, the lateral

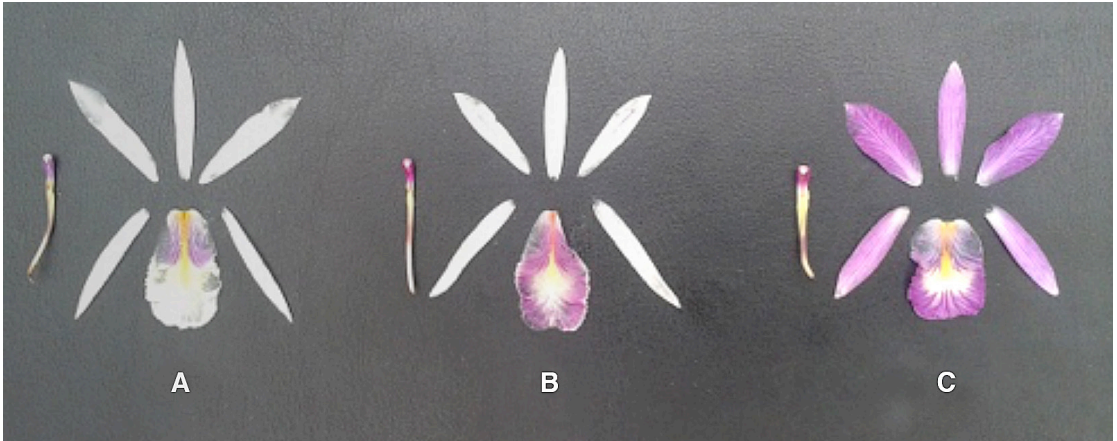


Figure 4. Dissected perianths of A – *Broughtonia cubensis*; B – *B. × guanahacabibensis*; C – *B. ortgiesiana*.

ones 2.3 cm long, 3 mm wide. *Petals* obovate-elliptic, acute, 1.8 cm long, 5 mm wide; *labellum* oblong, to 2 cm long, 1.2 cm wide, slightly emarginate, with undulate margins, enclosing the column at the base, the disc provided with branched yellow lines. *Column* white to pink, arcuate, to 1 cm long. *Pollinia* 8, yellow. *Fruit* an ellipsoid capsule, beaked, 12-13 mm long, on slender pedicel 8-10 mm long.

PARATYPE: Cuba. Pinar del Río: Sandino, Cabo San Antonio, near Roncali Lighthouse, January 2015, *E. Mujica et E. González 179* (Herbarium of the Soroa Orchid Garden [not registered], flowers in spirit).

ETYMOLOGY: From the Guanahacabibes peninsula, where the nothospecies was found.

DISTRIBUTION AND ECOLOGY: The habitat of *Broughtonia × guanahacabibensis* consists of xeromorphic sub-coastal vegetation, colonizing *Plumeria tuberculata* - the dominant tree species in the area. It is also sympatric with other orchid species: *Encyclia bocourtii* Mujica & Pupulin, *E. plicata* (Lindl.) Britton & Millspaugh, *Polystachya concreta* (Jacq.) Garay & Sweet and *Tolumnia guibertiana* (A.Rich.) Braem.

The plants of *B. cubensis* and *B. ortgiesiana* are not easy to differentiate morphologically on the basis of their vegetative habit. However, their flowers are clearly different, the latter being very distinctive for their fringed white color labellum with purple color margins. The petals of *B. ortgiesiana* are very similar to those of *B. cubensis* but they differ in having a

central nerve purple (fig. 4). This hybrid appears to comprise a viable population, thus introgression may be occurring in this site, resulting in a more variable population.

ACKNOWLEDGMENTS. The authors wish convey gratitude to their colleagues at the Ecological Station of the National Park Peninsula of Guanahacabibes for the facilities offered to do this work. We also thank Dr. James D. Ackerman, Dr. Lawrence W. Zettler and Prof. Aldo L. Ramos Hernandez for the revision and translation of this work, and two anonymous reviewers whose observations improved the manuscript.

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