

# The identity of the West Indian endemic *Vriesea macrostachya* (Bromeliaceae)

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The Identity of the West Indian *Vriesea macrostachya* is established in the course of a review of its history, the designation of a neotype, and preparation of a full description.

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## Introduction

Although *Vriesea macrostachya* (Bello) Mez (*Caraguata macrostachya* Bello) was described from Puerto Rico in 1883, and has since been widely recognized in numerous floras, no type specimen has ever been located. Furthermore, due to its poor original description coupled with later inadequate descriptions in standard floras, the taxon has developed a dubious status. Though a common species, it is known only from a few miscellaneous herbarium collections likely due to the hesitation of many collectors to collect such big, bulky bromeliads.

## History

Bello (1883) described *Caraguata macrostachya* as a new species from Puerto Rico. Mez (1896) transferred the taxon to *Vriesea*, where it has since been consistently recognized. Britton (1923) citing the earlier generic homonym *Vriesea* Hasskarl (1842) (Scrophulariaceae) of *Vriesea* Lindley (1843) (Bromeliaceae), proposed the new generic name *Neovriesea* Britton to replace *Vriesea* Lindley, ignoring the fact that *Vriesea* had been conserved (over *Hexalepis* Rafinesque (1838)) by the 1905 Vienna Congress, and published in its Proceedings

(Briquet 1906). Britton transferred a single species, *Neovriesea macrostachya* (Bello) Britton, but not *Tillandsia psittacina* W.J. Hooker (*Vriesea psittacina* (W.J. Hooker) Lindley), the type of the genus. In the two modern monographs of the Bromeliaceae, both Mez (1935) and Smith & Downs (1977) recognized *Caraguata macrostachya* in *Vriesea*. *Vriesea macrostachya* belongs to *Vriesea* sect. *Xiphion* sensu Grant (1995).

## Neotypification

*Caraguata macrostachya* was described by the Spanish botanist Domingo Bello y Espinosa (1817-1884) from plants that he and/or Carl Wilhelm Leopold Krug (1833-1898) collected in Puerto Rico between 1848-1878, or from an illustration prepared by Krug. Although the collections of both men were sent to Berlin, none of their material of this taxon is extant, nor has a Krug illustration been found. Krug prepared numerous color plates of Puerto Rican plants. If an illustration of *Caraguata macrostachya* existed, it could be considered original material and therefore a potential lectotype. However, his Krug'schen Icones (i.e. Flora Portoricensis) is no longer extant at Berlin (fide Stafleu & Cowan 1979) and verified by Peter Hirsch, Head Librarian,

Botanischer Garten und Botanisches Museum Berlin-Dahlem (B) (pers. comm., X 1993).

In spite of this apparent loss of authentic material, it is possible that there never was any original material as Urban (1: 9. 1898) states: "Die Originalien zu Bello's Arbeit sind im Herbar Krug et Urb. und in den Krug'schen Icones niedergelegt. Nur wenige Arten sind weder durch Pflanzen noch durch Abbildungen vertreten." (The originals of Bello's work (i.e. *Apuntes para la Flora de Puerto-Rico*) are in the Krug & Urban Herbarium (i.e. Berlin (B)) and in the stored Krug'schen Icones (i.e. = *Flora Portoricensis*, a number of missing colored plate drawings of Puerto Rican plants that had been prepared by Krug). Only a few species are based on plants or drawings.)

Another reason for suggesting that there was never any original material is that both Mez (1896 & 1935) and Smith & Downs (1977) were unable to find authentic material while preparing their monographic treatments of the Bromeliaceae. Therefore, if ever extant, the material either became lost between 1883-1896, or was destroyed in the 1944 bombing of the Berlin herbarium (although most if not all of the bromeliad specimens and bromeliad types did in fact survive). In May of 1992 and March of 1996, I myself searched the herbaria at Berlin, and Dr Bert Leuenberger (B) in September of 1993 to no avail. Since no material has been found, a neotype is desirable.

Instead of simply designating an already-existing specimen as the neotype, new material was collected so that fresh specimens could be examined and to insure that several sheets would be available for distribution. Dr Franklin Axelrod, University of Puerto Rico at Rio Pedras, collected and photographed plants, pickled flowers, made detailed observations on floral morphology, and recorded the nocturnal flowering period.

### **Vriesea macrostachya (Bello) Mez**

in C.DC., Monogr. Phan. 9: 601. 1896. *Neovriesea macrostachya* (Bello) Britton, Bot. Porto-Rico 5(1): 142. 1923.

Basionym: *Caraguata macrostachya* Bello, Anales Soc. Esp. Hist. Nat. (Madrid) 12: 122. 1883, not *Tillandsia macrostachya* Klotzsch ex Beer, Bromel. 164. 1857, nor *Platystachys macrostachya* Beer, Bromel. 264. 1857 (both = *Tillandsia fasciculata* Swartz, Prod. Veg. Ind. Occ. 56. 1788). – Type: United States of America. Puerto Rico. Orocovis: Bo. Ala de la Piedra, Toro Negro Forest Reserve, E end of Lago el Guineo, near houses at beginning of road to dam, disturbed wet mountain forest, ca. 920 m, 26 VIII 1993, Axelrod 6935 (neotype, designated here: US!; Isoneotypes B!, MARY!, NY!, SEL!, UPRRP!).

*Additional material examined.* United States of America. Puerto Rico. Maricao, 26 XI 1884, Sintenis 477 (US, K); Serra de Luquillo, Jimenes, XI 1885, Sintenis 2792 (US, K); Piñuelas - Adjuntas, VIII 1889, Stahl 1137 (B); Rio de Maricao, 600-720 m, 14 II 1915, Britton & Cowell 4187 (US); 7 miles from Adjuntas, 16 III 1993, Grant 93-02294 & Rundell (US); Rio Grande: Caribbean National Forest, along Quebrada Sonadora, downstream from Rt. 186, wet mountain forest, 250 m, 26 IX 1993, Axelrod 7056 (UPRRP, US).

Plants large, robust, acaulescent, usually epiphytic, but often terrestrial at disturbed sites and roadcuts in montane rainforests. Leaves entire, thin, strap-shaped, inconspicuously lepidote, polystichous, nearly all erect, only the outer ones becoming recurved in maturity; sheaths conspicuous. Inflorescence simple, distichous, stiffly erect, to 1.5-2.0 m tall with ~ 44 - 64+ flowers; scape and rachis erect, both a shiny bright grass-green, furrowed on either side between flowers. Flowers sessile, blooming roughly one a night in sequence from the base to the apex of the inflorescence. Floral bract ovate when pressed to one dimension, otherwise navicular, surrounding the flower on all sides but the dorsal side, exceeding the calyx by 1-2 mm, thick, coriaceous, acute, thickened at the base and along its dorsal side, 57-63 mm long, 46-49 mm wide at its broadest when pressed to one dimension. Calyx firm, tightly imbricated; sepals stoutly obovate in outline when pressed to one dimension, acute, just slightly longer than the petals at maximum anthesis, 45-47 mm long, 20-21 mm wide at its broadest, 7-8 mm wide at the base, free, the apex of each pressing into the space above the petal-petal overlap. Corolla zygomorphic, bilaterally symmetric, opening 0.5-1.0 cm wide at maximum anthesis; petals obovate in outline when pressed to one dimension, obtuse, free, imbricate, appendaged, fleshy, the exerted portion of each with involute margins, the adaxial pair arranged beneath the abaxial, 44-45 mm long, 8-9 mm wide at base, 16-17 mm wide at broadest above the middle, faintly yellowish-white, with faint translucent vertical striations. Petal appendages two per petal, basal, linear-oblong (tongue-shaped), obtuse to acute, minutely notched, 11-12 mm long, 2.5 mm wide at base and middle, free apically for 4-6 mm. Androecium included, zygomorphic, bilaterally symmetric, the filaments displaced such that the anthers become aligned to another above the adaxial petal pair; stamens 34-35 mm long, included; filaments 19-21 mm long, 1 mm wide; anthers linear-sagittate, basifixed dorsally, robust, 12-14 mm long, 2.5 mm wide at base, 1.5-2.0 mm wide at apex. Gynoecium 27-28 mm long, included; ovary 9 mm long, 5-6 mm in diameter at base at anthesis; style 17-17.5 mm long, 1 mm wide; stigma with the convolute-blade type morphology, 0.5 mm long, 0.5-1.0 mm wide, the

individual lobes short in respect to most species of the genus. – Fig. 1.

**Taxonomy.** *Vriesea macrostachya* belongs to a clade within *Vriesea* section *Xiphion* characterized by nocturnal flowering. In gross morphology, the taxa within the section can be easily confused with members of *Werauhia* sect. *Werauhia*. There are however, no members of *Werauhia* sect. *Werauhia* without a truly secund arrangement of flowers, and those of *V. macrostachya* are distichous rather than secund. The more defining characters of its position in *Vriesea* are its convolute-blade type stigma morphology and its simple, tongue-shaped petal appendages.

**Distribution.** *Vriesea macrostachya* occurs with certainty only in the Greater Antilles on the islands of Cuba, Hispaniola, and Puerto Rico. It likely evolved from northern extensions of either *V. platynema* Gaudichaud or *V. bituminosa* Wawra. Specimens previously identified as *Vriesea macrostachya* from Trinidad and Venezuela are likely misidentifications of either two species.

**Anthesis and flowering syndrome.** *Vriesea macrostachya* blooms nocturnally from early August through mid-September. Dr Axelrod has observed that in Puerto Rico flowers begin opening around 2400 hrs, and reach their maximum opening of 0.5-1.0 cm wide at 0400 hr, and begin to deliquesce around 0530 hr. No pollinators were observed.

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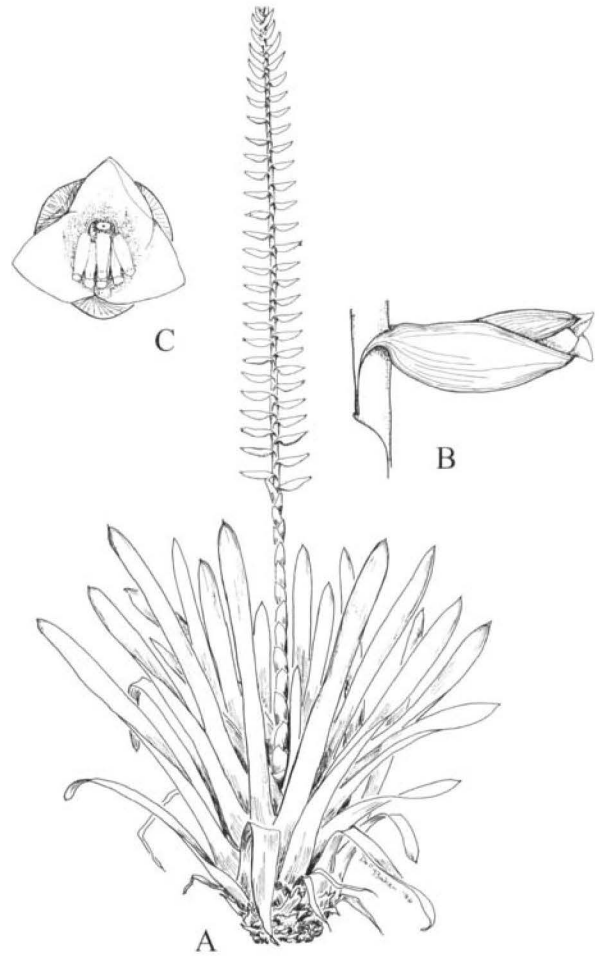


Fig. 1. *Vriesea macrostachya*. – A. Habit (Axelrod 6935). – B. Flower, side view (Axelrod 7056). – C. Flower, front view (Axelrod 7056).

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