A New Species of *Burmeistera* (Campanulaceae: Lobelioideae) from Ecuador

*Nathan Muchhala*
Department of Biology, University of Miami, P.O. Box 249118, Miami, Florida 33124, U.S.A.
n.muchhala@umiami.edu

*Thomas G. Lammers*
Department of Biology and Microbiology, University of Wisconsin Oshkosh, Oshkosh, Wisconsin 54901, U.S.A. lammers@uwosh.edu

**ABSTRACT.** *Burmeistera auriculata* is described from a cloud forest remnant in Pichincha, Ecuador. Although allied to *B. borjensis*, this new species is distinguished from all known congeners by its auriculate calyx.

**RESUMEN.** Se describe *Burmeistera auriculata* de un remanente de bosque nublado en Pichincha, Ecuador. Aunque aliado a *B. borjensis*, esta especie nueva se distingue de las demás *Burmeisteras* conocidas por su cálix auriculado.

**Key words:** *Burmeistera*, Campanulaceae, Ecuador, Lobelioideae, South America.

*Burmeistera* Triana (Campanulaceae: Lobelioideae) comprises 102 species of robust plants (herbaceous or suffruticose perennials, shrubs, and lianas) distributed from Guatemala to Peru (Lammers, 1998, 2002). The genus is distinguished by a combination of moderate-size flowers (corollas averaging 25–35 mm long) usually borne singly in the axils of the upper leaves on ebracteolate pedicels; green or yellow corolla often suffused with maroon or purple; corolla tube neither fenestrate nor cleft dorsally; dorsal corolla lobes larger than the ventral lobes and falcate or reflexed; anther tube wide open at the orifice; baccate, often inflated fruit; and oblong to fusiform seeds much longer than broad. With this circumscription, the genus is most likely monophyletic (Luteyn, 1986; Stein, 1987a, 1987b, 1987c), a hypothesis supported by preliminary molecular data (E. Knox, pers. comm.).

The senior author is currently studying the pollination biology of the genus (Muchhala & Jarrin-V., 2002). This research has revealed that, while the closely related genera *Centropogon* C. Presl and *Siphocampylus* are primarily hummingbird-pollinated, *Burmeistera* has shifted to bat pollination (Muchhala 2003, unpublished data). Although hummingbirds visit *Burmeistera* flowers in the early morning and at dusk (Feinsinger et al., 1987; Muchhala, 2003), they rarely transport pollen and only in small quantities. Meanwhile, a single visit by a bat will deposit thousands of grains on a receptive stigma.

In the course of this research, a new species was discovered in the Otonga reserve in northern Ecuador. This species, here described and named, demonstrates a number of the floral adaptations to bat pollination that are common to the genus, including nocturnal anthesis, dull coloration, rela-
tively wide corollas, a distinctive odor, and well-
exposed flowers.

**Burmeistera auriculata** Muchhala & Lammers, sp. nov. TYPE: Ecuador. Pichincha: Bosque Integral Otonga, 00°25.264'S, 79°00.779'W, cloud forest, 2233 m, 7 July 2002, N. Muchhala 120 (holotype, QCA; isotype, MO). Figure 1.

Ab omnibus caeteris speciebus *Burmeisterae* calycis lobis auriculatis differt; species sect. *Burmeisterae* afﬁnis *B. borjensi*, sed ab hac specie lamina lanceolata parviore 7.5–14 cm longa 2.8–4.4 cm lata, pedicellis pubescentibus, hypanthio breviore 5.5–6 mm longo, calycis lobis brevioribus 9–11 mm longis, antheris dorsalisibus longioribus 9.5–10.5 mm longis, et hacc globosis brevioribus 18–20 mm longis facile distinguenda.

Scandent hemi-epiphytic subshrub, 3 m tall; stems 2.0–3.8 mm diam., glabrous, occasionally branching; latex white. Leaves strictly distichous, patent; lamina lanceolate, 7.5–14 × 2.5–4.4 cm; adaxial surface minutely scabrous, dull green; ab-

[Figure 1. *Burmeistera auriculata* Muchhala & Lammers. Drawn from the holotype, Muchhala 120, and photos of live material.]
at apex; ventral lobes narrowly triangular, falcate, 11–12 × 4 mm, acuminate at apex; staminal column long-exserted; filament tube 26–28 mm long, ca. 1.8 mm diam., sparsely puberulent; anther tube curved-cylindrical, long-exserted, 5 mm diam., glabrous; dorsal anthers 9.5–10.5 mm long; ventral anthers 5.5–6.5 mm long; pollen grains tricolpate, prolate, 72 μm diam. (equatorial) × 63 μm diam. (polar), the surface reticulate. Berries inflated, globose, light green, 18–20 mm long, 17–24 mm diam., crowned by the persistent calyx lobes; seeds ellipsoid, 0.9 mm long, 0.3 mm diam.

Additional illustration. Muchhala and Jarrón-V. (2002), fig. 2A.

Distribution and ecology. Burmeistera auriculata is endemic to the Andes of northwestern Ecuador and known only from the type locality, where it grows in cloud forest at elevations of 1990 to 2250 m. It flowers throughout the year, with individual flowers opening nocturnally between 1715 and 1800 hr. and senescing after 5 to 6 days. It is pollinated by glossophagine bats of the genus Antrozous (Muchhala & Jarrón-V., 2002, as “Burmeistera sp.”).

Etymology. The name derives from the Latin adjective auriculatus, “with little ears,” given in reference to the unique calyx appendages.

Relationships. The most distinctive feature of this species is the large reflexed auricle associated with each sinus of the calyx. These appear to represent basal lobules of adjacent calyx lobes that have become connate. Though otherwise unknown in Burmeistera, similar auricles are found elsewhere in the Campanulaceae, characterizing some species of North American Lobelia L. sect. Lobelia (e.g., L. siphilitica L., L. appendiculata A. DC., L. brevifolia Nuttall ex A. DC.; McVaugh, 1943), as well as certain Eurasian genera of Campanulaeae (e.g., Fraxatia Feer, Cryptocodon Fedorov, Miichauxia L’Héritier).

In Jeppesen’s (1981) treatment of Ecuadorian Burmeistera, the new species keys readily to B. borjensis Jeppesen, known from Napo and adjacent Colombia. The two species shared the following characters: (1) glabrous scandent stems; (2) abaxially pubescent lamina with subentire margins; (3) the length of petioles and pedicels; (4) broad overlapping reticulately veined calyx lobes with sinuate margins; (5) the overall length and color of the corolla; and (6) the inflated berries. Burmeistera borjensis, however, differs in its larger (15–20 vs. 7.5–14 cm long, 5–8 vs. 2.5–4.4 cm wide) elliptic (vs. lanceolate) lamina, cuneate (vs. rounded) at base; glabrous (vs. pubescent) pedicels; longer hypanthy-um (6–8 vs. 5.5–6 mm) and calyx lobes (14–16 vs. 9–11 mm); longer corolla tube (15–18 vs. 8–9 mm); shorter dorsal corolla lobes (ca. 16 vs. 23–25 mm); shorter anthers (dorsal pair 8–9 vs. 9.5–10.5 mm); larger (30–35 vs. 18–20 mm long) ovoid (vs. globose) berry; and of course the exauriculate calyx.

In their combination of large inflated berries, curved-cylindrical anther tube, and overall floral morphology, Burmeistera auriculata and B. borjensis would appear to belong to a group of species comprising B. refracta E. Wimmer, B. ignimontis E. Wimmer, B. cuyujensis Jeppesen, B. truncaeta Zahlbruckner, B. glabra (Kunth) Bentham & Hooker f. ex B. D. Jackson, and B. ovacachensis Jeppesen. Among these, only B. cuyujensis and B. ignimontis share the abaxially pubescent lamina of B. auriculata and B. borjensis, an unusual trait in the genus. Both differ from the new species in their elliptic or obovate (vs. lanceolate) lamina cuneate (vs. rounded) at base, glabrous pedicels, longer hypanthy-thium (8–12 vs. 5.5–6 mm) with narrowly triangular or lanceolate (vs. broadly triangular) calyx lobes, longer corolla (24–35 vs. 18–20 mm) with longer tube (14–22 vs. 8–9 mm) and shorter dorsal lobes (18–22 vs. 23–25 mm).

Paratypes. ECUADOR. COTOPAXI: Bosque Integral Otonga, entre Quito y Santo Domingo, cerca de San Francisco de las Pampas, C. Nowicki & J. Mutke 1213 (QCA); Bosque Integral Otonga, N. Muchhala 24 (QCA).

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