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# A New Species of *Anthurium* sect. *Cardiolonchium* (Araceae) from the Cordillera Oriental (Napó Province), Ecuador

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**ABSTRACT.** *Anthurium bustamanteae* Croat, E. Freire, R. Bleiweiss & F. Somoza Molina is here described and illustrated. The species is an Ecuadorean member of section *Cardiolonchium* Schott and has a reddish inflorescence that is visited by birds and arthropods. The species is most similar to *A. sanguineum* Engl., another bird-visited species.

**Key words:** *Anthurium*, Araceae, bird pollination, new species, section *Cardiolonchium*.

A new species of *Anthurium* Schott sect. *Cardiolonchium* Schott was discovered in Ecuador's Napó Province by an ecologist and ornithologist, Robert Bleiweiss, who made the discovery while observing bird behavior (Bleiweiss et al., 2019). *Anthurium* sect. *Cardiolonchium* is one of the largest sections in *Anthurium*, with more than 300 species having been discovered and described. Most remain unpublished. The section is characterized by having vegetation that dries usually greenish, usually short, thick internodes, cataphyll fibers usually few, pale, and often loose, petioles often winged or heavily several-ribbed, usually sagittate blades, and often a B chromosome (Croat & Sheffer, 1983). The new species, described herein as *A. bustamanteae* Croat, E. Freire, R. Bleiweiss & F. Somoza Molina, is characterized by having both a red spathe and spadix. No other species in the section have this characteristic.

## METHODS

The species was recognized immediately as new in the field, but its distinctiveness was corroborated using the Lucid *Anthurium* key (unpublished), an electronic key

that works by excluding species selectively by using conservative taxonomic characters. The Lucid key tool we are using is a computer-generated key, which was developed by the Royal Botanic Gardens, Kew, and the Missouri Botanical Garden, that contains all important taxonomic characters of all *Anthurium* species. It works by a process of elimination using only the most conservative and least variable characters. The present key for *Anthurium* is unpublished because it still contains much unpublished work, but it is the intention to place it online for public use in the future. Morphological terminology follows that of Croat and Bunting (1979). Conservation status assessment is based on the IUCN Red List criteria (IUCN Standards and Petitions Subcommittee, 2014). Life zone description follows Holdridge et al. (1971).

## TAXONOMIC TREATMENT

***Anthurium bustamanteae*** Croat, E. Freire, R. Bleiweiss & F. Somoza Molina, sp. nov. TYPE: Ecuador. Napó: vic. of Cuyuja, 00°24'54.18"S, 78°01'35.904"W, 2733 m, 3 Feb. 2019, E. Freire & F. Sornoza Molina I2703 (holotype, QCNE-0244064!, QCNE-0244065!; isotypes, AAU!, COL!, GB!, K!, MO!, QAP!, QCA!, SI!). Figures 1–3.

**Diagnosis.** *Anthurium bustamanteae* Croat, E. Freire, R. Bleiweiss & F. Sornoza Molina differs from *A. sanguineum* Engl. in having a red (vs. dark green) spadix.

Hemiepiphytic appressed climber to ca. 15 m high in trees but also adapting well to re-establishment in open



Figure 1. *Anthurium bustamanteae* Croat, E. Freire, R. Bleiweiss & F. Somoza Molina (*Freire & F. Somoza Molina 12703*). —A. Leaf blade showing abaxial surface with immature inflorescences. Photo by R. Bleiweiss. —B. Inflorescences in different maturation stages. Photo by E. Freire.

area when fallen to ground; stems 1–2 m, clustered and probably branching, flowering at different heights on trunk of supporting trees; internodes moderately short, 3–4 cm diam.; cataphylls to 20 cm, drying light brown and persisting semi-intact with margins sometimes fragmenting and pale-fibrous; petioles slightly shorter than blades, 80–100 cm, subterete, erect to erect-spreading, medium green, weakly glossy, drying matte, faintly yellow-brown; geniculum 4.5 cm, drying blackened; blades narrowly ovate-sagittate, pendent to somewhat spreading from petiole, (80–)100–110 cm, broadest above petiolar plexus and below middle, 1.8–1.9 times longer than wide, about equaling or to 1.2 times longer than petioles, weakly acuminate at apex, deeply lobed at base, subcoriaceous, dark green and matte-subvelvety above, slightly paler and semiglossy below, drying matte to weakly glossy, greenish gray-brown above, yellowish gray-brown and semiglossy below; anterior lobe 29 cm, broadly rounded on margin; posterior lobes 18.3 × 11 cm; sinus hippocrepiform in live plant, closed with overlapping lobes when flattened and dry, narrowly ovate, to somewhat rhombic, 6 cm deep, 3–3.5 cm wide midway; basal veins 7 to 8 pairs, the 1st pair free to the

base, 2nd pair fused 1–1.3 cm, 3rd pair fused 3.8 cm, 4th and 5th pairs fused 7 cm, 6th and 7th pairs acroscopic and departing posterior rib ca. midway; posterior ribs 7 cm, scarcely curved, naked 0.5 to 0.7 its length; midrib narrowly rounded and concolorous above, narrowly round-raised and paler, drying medium brown and matte below; primary lateral veins 18 to 20 pairs, arising at a 40°–50° angle, narrowly raised and concolorous above, narrowly rounded and slightly paler below, drying bluntly acute and concolorous above, narrowly round-raised and slightly browner below; collective veins arising from the 1st to 4th pairs of basal veins, moderately loop-connected, 1–4(–5) mm from margin; tertiary veins and reticulate veins moderately prominent on lower surface. INFLORESCENCE erect, moderately short-pedunculate; peduncle (15–)21–25(–29) cm; spathe pinkish red, 15–20 × 2.5–3.5 cm, acuminate, erect but soon reflexed somewhat above base, moderately coriaceous, turning greenish in age and persisting intact in fruit; spadix cylindroid, weakly tapered, stipitate 1–1.5 cm, stipe dark red, 16–21 cm × 9–12 mm (averaging 18.5 × 0.8 cm), emerging red-orange, matte, becoming orange-red, semiglossy at anthesis; flowers 7 to 9 visible



Figure 2. *Anthurium bustamanteae* Croat, E. Freire, R. Bleiweiss & F. Sornoza Molina (Freire & F. Sornoza Molina 12703). Herbarium specimen (QCNE-0244064) showing folded leaf blade, abaxial surface on left and right, adaxial surface in center.

per spiral, broader than long, 2–2.5 × 1.8–2 mm; pollen yellowish, emerging in a complete sequence from base with lateral stamens not preceding alternate stamens by

more than 1 to 2 spirals. INFRUCTESCENCE pendent, to 30 × 2.5 cm, pale yellowish green; berries green when immature, mature fruit not seen.



Figure 3. *Anthurium bustamanteae* Croat, E. Freire, R. Bleiweiss & F. Somoza Molina (Freire & F. Somoza Molina 12703). Herbarium specimen (QCNE-0244065) showing cataphyll on left, inflorescence in center, and stem on right.

*Habitat, ecology, and distribution.* *Anthurium bustamanteae* appears to be endemic to Ecuador, where it is known only from the type locality in Napo Province at

the Guango Lodge near Cuyuja and surrounding areas, at 2733 m in elevation, in a lower montane moist forest life zone usually growing in the canopy of trees. Cuyuja

lies along the Papallacta–Baeza Highway, southeast of Papallacta (00°22'44"S, 78°08'19"W). The Guango Lodge is located 6 km from Papallacta and 6 km from Cuyuja.

*IUCN Red List category.* IUCN Red List (IUCN Standards and Petitions Subcommittee, 2014) status for *Anthurium bustamanteae* is Data Deficient (DD) owing to the fact that the species is known at present from a single area. The species is abundant locally at a privately owned reserve, so currently it appears to be well protected, and it is likely to occur at other sites of similar life zone in the region. However, additional studies are needed to determine how widespread the species really is.

*Etymology.* The species is named in honor of Irene Bustamante, proprietor of Guango Lodge, where the type specimen was collected. Irene and her family have made many important contributions to conservation and ecotourism in the area and have provided enthusiastic support for studies of birds and pollination.

*Discussion.* *Anthurium bustamanteae* is a member of section *Cardiolonchium*. It is characterized by its hemiepiphytic, climbing habit, thick stems with short internodes, persistent, moderately intact light brown-drying cataphylls with a few pale fibers along the margins, subterete petioles, narrowly ovate-sagittate acuminate blades that are matte-subvelvety above, semiglossy below with a hippocrepiform sinus in live plants, turning closed and narrowly ovate when flattened and dry, seven to eight pairs of basal veins, the first pair of which is free to the base, a well-developed posterior rib which is naked half to three quarters its length, at least 18 pairs of primary lateral veins, collective veins arising from the first to fourth pairs of basal veins and close to the margin, as well as by the moderately short-pedunculate erect inflorescence, pinkish-red erect spathe that is at least partly reflexed at anthesis, and

the red-orange to orange-red weakly tapered spadix with yellowish pollen. It is most similar to *A. sanguineum*, a widespread species sharing a similar habitat and leaves, as well as a red spathe and hummingbird visitors. However, *A. sanguineum* differs by having a dark green spadix.

The inflorescences of *Anthurium bustamanteae* are visited by several hummingbird species, a passerine (flowerpiercer), as well as a variety of arthropods (Bleiweiss et al., 2019). Studies are underway to assess the relative importance of these various visitors as true pollinators. At minimum, the hummingbirds seem likely to be major pollinators based on their visitation frequency and foraging behavior (Bleiweiss et al., 2019).

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