

## **Anthurium jaimeanum and A. pahumense (Araceae): two new species from the W slopes of the Ecuadorian Andes**

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## *Anthurium jaimeanum* and *A. pahumense* (Araceae): two new species from the W slopes of the Ecuadorian Andes

### Abstract

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*Anthurium jaimeanum* Croat & C. E. Cerón and *A. pahumense* C. E. Cerón & Croat (Araceae) are described and illustrated. The two species are members of *A.* sect. *Porphyrochitonium* Schott from the W slopes of the Ecuadorian Andes in Pichincha Province. *Anthurium jaimeanum* occurs at 1800 m in a premontane rain forest life zone, whereas *A. pahumense* is found at 1800–2200 m in a lower montane wet forest life zone. The new species are unusual in *A.* sect. *Porphyrochitonium*, a group characterized by having short internodes and glandular punctate blades, in that they have unusually long internodes.

Additional key words: *Anthurium* sect. *Porphyrochitonium*, Ecuador

### Introduction

*Anthurium* Schott consists chiefly of epiphytic, sometimes terrestrial herbs widely distributed in the neotropics, especially the Andes of South America, with Ecuador as one of its principal centres of diversity (Croat & Rodríguez de Salvador 1995). The catalogue of vascular plants of Ecuador (Croat 1999) registered 404 species of Araceae, 227 of which belonged to *Anthurium*. Only five years after the publication of this checklist the number of published species of Araceae had increased to 429 species and the genus *Anthurium* had increased to 236 species (Ulloa Ulloa & Neill 2005). There are 168 species of Araceae believed to be endemic to Ecuador, and 130 of these are species of *Anthurium* (Benavides & Croat 2000).

During recent explorations on the W slopes of the Andes in Pichincha Province, at the Reserva Orquideo-

lógica Pahuma, located above km 30 on the Quito-Nanegalito highway, 35 species of Araceae were encountered. Of these, one species each of *Anthurium* and *Philodendron* Schott were determined to be undescribed (Cerón & Reyes 2008). The new species of *Anthurium* is described here and a second, similar species is described from the Reserva Natural Río Guajalito, also in Pichincha Province.

*Anthurium jaimeanum* Croat & C. E. Cerón, **sp. nov.** – Fig. 1 & 2.

Holotype: Ecuador, Provincia de Pichincha, Reserva Natural Río Guajalito, along main entrance from Quito-Chiriboga-Santo Domingo Road, 3.5 km from highway, departing highway at km 59, 00°13'53"S, 78°48'10"W, 1800 m, 9 Feb 1992 (fl.), T. B. Croat 72037 (MO 4077287; isotypes: AAU, B, COL, K, NY, QAP, QCNE, S, US).

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Fig. 1. *Anthurium jaimeanum* – holotype specimen (MO 4077287).





Fig. 2. *Anthurium jaimeanum* – A: habit with inflorescence; B: habit with infructescence; C: infructescence. – Ecuador: Provincia de Pichincha, Reserva Natural Río Guajalito (type locality), 9 Feb 1992, photographs by C. E. Cerón.



*Description* — *Herbs* hemiepiphytic, somewhat scandent. *Internodes* yellow-green, 2–6 cm long, 1–1.7 cm in diam., drying dark brown, matte, densely pale short-lineate. *Cataphylls* 3.5–8.5 cm long, persisting as reddish brown fibres with fragments of epidermis at upper nodes. *Petiole* subterete, 9–26.5 cm long (averaging 16.5 cm), narrowly and bluntly sulcate, drying densely pale short-lineate; *leaf blade* semi-glossy, yellow-green and much paler on lower surface, dark green on upper surface, drying slightly paler and weakly glossy on lower surface, grey and matte on upper surface, oblong-elliptic, 17.5–32.5 cm long, 8.6–12.5 cm wide, 2–3.5 × longer than wide (averaging 3 × longer), 1.1–1.9 × longer than petiole (averaging 1.6 × longer), subcoriaceous, base acute to rounded, apex acuminate; *lower surface* moderately smooth, dark glandular punctate; *upper surface* smooth without minute granulations, dark glandular punctate; punctations on both surfaces raised, especially on upper surface; *midrib* prominent on both surfaces, paler than surface; *primary lateral veins* (9–)11–13(–15) pairs, arising at 65°–75° angle, narrowly prominent on lower surface, etched on upper surface, equalling collective vein; *collective veins* typically arising on each side from pair of basal veins, sometimes arising from one of lowermost primary lateral veins, 7–11 mm from margin, moderately loop-connecting primary lateral veins, sunken on upper surface. *Inflorescence* erect; *peduncle* medium green, sometimes purplish, drying dark brown, weakly glossy, c. 49 cm long, c. 5 mm in diam., much longer than leaves; *spathe* erect-spreading, green, 10.5–14 cm long, 10–13 mm wide; *spadix* olive-green, matte, long tapered, 9.5–12.8 cm long, more than 3 mm in diam. when dried, apex bluntly acute. *Flowers* 3(or 4) visible per spiral, 3.2–3.6 mm long, 2.2–2.4 mm wide, drying yellowish green, matte; *tepals* widely spaced around pistil, moderately smooth outside, densely punctate on inner surfaces; *lateral tepals* 2–2.3 mm wide, outer margin obtusely 2-sided, inner margin straight to weakly concave, thin and sometimes erose; *stamens* not emergent; *anthers* c. 0.6 mm wide; *pollen* pale yellow. *Infructescence*: peduncle arching with spadix pendent. *Berries* orange-red, depressed at apex, broader in one dimension.

*Phenology* — *Anthurium jaimeanum* was found in flower and in fruit during February of 1992.

*Distribution and ecology* — *Anthurium jaimeanum* is endemic to Ecuador, known only from the type locality on the SE slopes of Volcán Pichincha at the Reserva Natural Río Guajalito, at c. 1800 m in an area of premontane rain forest life zone (Holdridge & al. 1971).

*Eponymy* — The species is named in honour of the Ecuadorian botanist, the late Jaime Jaramillo, from the Universidad Católica in Quito. Jaramillo collected plants all over Ecuador including many new species of *Araceae* and is certainly deserving of this species which was collected on his property at Reserva Natural Río Guajalito.

Jaramillo purchased the property and built all of the facilities by hand after hauling supplies in from the highway. This excellent reserve is used for ecological studies by his former students at the Universidad Católica. Jaime's tremendous knowledge of the Ecuadorian flora was perhaps unequalled and he will be missed by all of us.

*Remarks* — The species is an unusual member of *Anthurium* sect. *Porphyrochitonium* Schott, characterized by its hemiepiphytic habit, slender, dark brown-drying stems, long internodes, persistent cataphylls, subterete, narrowly and bluntly sulcate petioles drying densely pale short-lineate, and semi-glossy, oblong-elliptic, subcoriaceous leaf blades, which are dark green on the upper surface, yellow-green and much paler on the lower surface, and dry greyish and smooth without minute granulations. The inflorescence is elongate with the peduncle much longer than the leaves, with a spreading, green spathe and an olive-green, matte spadix with orange-red, apically depressed berries.

*Anthurium jaimeanum* is most closely related to *A. pahumense* C. E. Cerón & Croat (see below), from the NW flank of Volcán Pichincha, another species with long internodes and leaves of similar size and shape. *Anthurium jaimeanum* differs from *A. pahumense* by its densely pale short-lineate stems and petioles, upper leaf blade surface drying smooth without minute granulations, collective veins more remote from the leaf blade margin and more deeply sunken on the upper leaf blade surface, and orange-red berries.

*Anthurium pahumense* C. E. Cerón & Croat, **sp. nov.** — Fig. 3 & 4.

*Holotype*: Ecuador, Provincia de Pichincha, Cantón Quito, Reserva Orquideológica Pahuma, km 30 de la vía Quito - Nanegalito, 00°01'11"N, 78°38'53"W, 2190 m, bosque de neblina montano, 25 Aug 2007 (fl.), C. E. Cerón & C. I. Reyes 60631 (QAP; isotypes: AAU, COL, GB, MO 6171469, NY, Q, QCA, QCNE).

*Description* — *Herbs* usually terrestrial, sometimes hemiepiphytic and somewhat scandent, to c. 50 cm tall. *Stem* slender. *Internodes* on adult plants 2.5–10 cm long, c. 1 cm in diam., dark brown to somewhat blackened when dried; *nodes* with several roots 5–15 cm long. *Cataphylls* 3–8 cm long, acute at apex, persisting as reticulum of fibres. *Leaves* generally erect, 30–44 cm long; *petiole* erect, subterete, 12–20 cm long, 2–4 mm in diam., obtusely and deeply sulcate, not lineate on drying; *geniculum* thicker than petiole, winged, 2–3 cm long; *leaf blade* moderately paler green and weakly glossy on lower surface, matte to weakly glossy and dark green on upper surface, tinged purplish violet on juvenile plants, yellow-brown to grey-green on lower surface on drying, oblong-elliptic, 15–22 cm long, 7–10 cm wide, subcoriaceous, base acute, margin weakly undulate on



Fig. 3. *Anthurium pahumense* – isotype specimen (MO 6171469).



drying, revolute, apex acuminate; *lower surface* smoother and densely and inconspicuously granular, glands dark brown, equally dense but slightly smaller than on upper surface, mostly less than 0.5 mm in diam; *upper surface* drying minutely granular-ridged (visible upon magnification), densely glandular punctate, glands dark brown, weakly raised and usually with a central depression, 0.75–0.1 mm in diam.; *midrib* acute on lower surface, convex on upper surface, drying slightly darker and bluntly acute on lower surface, thicker than broad and bluntly acute on upper surface; *primary lateral veins* 16–22 pairs, narrowly rounded and concolorous on lower surface, weakly raised and concolorous on upper surface; *collective veins* arising from base, 5–10 mm from blade margin, weakly raised on lower surface, sunken on upper surface, about equal in thickness to primary lateral veins. *Inflorescence* erect, medium green, 40–66 cm long, 2–3 × longer than petiole; *peduncle* 36–56 cm long, 2–5 mm in diam., thickest at base, drying brown, finely ridged; *spathe* inserted on peduncle at 20°–30° angle, erect, green, lanceolate, 4–7 cm long, 5–18 mm wide, broadest near base, generally rounded at base, weakly acute at apex; *spadix* erect, sessile, green, 4–10 cm long, 3–5 mm in diam. near base, 2–3 mm in diam. near apex. *Flowers* 4 or 5 visible per spiral, 4-lobed, 2–2.5 mm long, 1.5–4 mm wide (drying 1.9–2.2 mm long, 1.7–2 mm wide); *tepals* drying smooth, pale green; *lateral tepals* c. 1.6 mm wide, outer margin 2-sided, inner margin broadly rounded to almost straight; *pistils* held below surface of tepals, light brown with style darker brown; *stamens* included, c.  $\frac{3}{4}$  as long as tepals at pre-anthesis; *anthers* c. 0.8 mm long, c. 1 mm wide; *thecae* ovoid, c. 0.4 mm wide; *pollen* cream-colored. *Infructescence*: *berries* light yellowish brown, subquadrangular, rounded at corners, 2–4 mm long, 2–4 mm in diam.; *stigma* button-shaped; *mesocarp* gelatinous, juicy, translucent; *seeds* 1 or 2, light yellowish brown, smooth, semi-glossy, oblong to ovoid, 2–2.3 mm long, 1.6–1.8 mm wide, weakly incurved at both ends, one with a gelatinous, transparent appendage.

*Phenology* — *Anthurium pahumense* was found in flower during February and July of 2006, and in flower and fruit during August of 2007.



Fig. 4. *Anthurium pahumense* – A: Live plant, flattened; B: leaf blade, dried, showing glandular punctations; C: berry, mature. – Photographs by C. E. Cerón from the type gathering, C. E. Cerón & C. I. Reyes 60631.

*Distribution and ecology* — *Anthurium pahumense* is endemic to Ecuador, known only from the type locality on the NW flank of Volcán Pichincha. It occurs in two close populations separated by a creek in the Reserva Orquideológica Pahuma, ranging from 1800–2200 m, found on steep slopes in the understory of forest remnants in a lower montane wet forest life zone. The species is often found in association with *A. mindense* Sodiro.

*Etymology* — The specific epithet is derived from the type locality at the Reserva Orquideológica Pahuma.

*Remarks* — This is an unusual member of *Anthurium* sect. *Porphyrochitonium* characterized by its mostly terrestrial habit (sometimes becoming a hemiepiphyte by climbing onto trees), greenish, long, slender internodes, cataphylls weakly persisting as fibres, subterete, prominently sulcate petioles slightly shorter than the leaf blades, more or less oblong-elliptic leaf blades glandular punctate on both surfaces and rounded at the base, green spathe and yellowish green, weakly tapered spadix. Particularly unusual are the yellowish brown mature berries.

*Anthurium pahumense* is most closely related to *A. jaimeanum* (see above), from the SE slopes of Volcán Pichincha, another species with long internodes and leaves of similar size and shape. *Anthurium pahumense* differs from *A. jaimeanum* by its dark brown to somewhat blackened stems with more elongated internodes, petioles lacking short, pale lineations on drying and upper leaf blade surfaces drying minutely granular-ridged. The collective veins in *A. pahumense* are closer to the leaf blade margin and less deeply sunken on the upper leaf blade surface, and the berries are light yellowish brown.

*Anthurium pahumense* may also easily be confused with *A. caucanum* Engl., which shares a similar habit and similarly shaped leaf blades, which are also glandular punctate. The latter species differs in having blades that dry moderately dark yellow-brown on the lower surface and typically have a second pair of collective veins at the base with the primary pair of collective veins arising at or near the base but extending upward at an acute angle, not initially running very close to the margin. *Anthurium pahumense* is also likely to be confused with *A. aristatum*, a member of *A.* sect. *Xialophyllum* Schott with similarly shaped leaves. However, *A. aristatum* has prominent long cataphylls, which persist intact, and epunctate leaf blades, which are more ovate than elliptic. Locally *Anthurium pahumense* might be confused with other members of the flora including *A. longegeniculatum* Engl. and *A. margaricarpum* Sodiro. *Anthurium longegeniculatum*, currently placed in *A.* sect. *Xialophyllum*, ranges from 2000–3000 m and lacks glandular punctations on both leaf blade surfaces and has a spadix 1–4.5 cm long in contrast to 4–10 cm long in *A. pahumense*. *Anthurium margaricarpum*, a member of *A.* sect. *Porphyrochitonium*, is an epiphytic plant with a short stem and very short internodes and ranges from 500–2000 m.

The area where *Anthurium pahumense* grows, as well as many others in the region of Quito and elsewhere in Ecuador, is protected by the development of a strong ecotourism industry, in this case by the owners of the Reserva Orquideológica Pahuma, the Lima family. This forest remnant is not protected within Ecuador's official System of Natural and Protected Areas.

*Additional specimens seen (paratypes)* — ECUADOR: PICHINCHA: Cantón Quito, Reserva Orquideológica Pahuma, 00°01'N, 78°39'W, 2000 m, 25 Feb 2006 (fl.), C. E. Cerón & Reyes 56357 (MO, QAP, QCNE); *ibid.*, 00°01'N, 78°38'W, 1800 m, 22 Jul 2006 (fl.), C. E. Cerón, Reyes & Yáñez 57582 (AAU, COL, K, MO, NY, Q, QAP, QCA, QCNE, US); *ibid.*, C. E. Cerón, Reyes & Yáñez 57594 (LOJA, MO, Q, QAP, QCA, QCNE).

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