A Review of *Anthurium* Species with "Black" Spathes

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ABSTRACT

Species with dark purple-black spathes have been found in several sections, sect. *Belolonchium*, *Calomystrium*, *Pachyneurium* and *Polyneurium*. Thus the character of a blackish spathe is plesiomorphic. The distribution of species with purple-black spathes is centered on Colombia and Panama. A review of the known species with purplish black spathes is presented and one new species, *Anthurium bantanum* Croat & J. Deal is proposed. Species with purple-black spathes are *A. atramentarium* Croat & Oberle, *A. bantanum* Croat & J. Deal from Antioquia, *A. cabrerense* Engl, from the Cordillera Central, *A. caramantae* Engl. from both the Cordillera Occidentale and the Cordillera Central, *A. cupreonitens* Engl. in Norte de Santander Department in the Cordillera Oriental, *A. flavolineatum* Sodiro from southern Colombia to Ecuador and *A. watermaliense* L. H. Bailey & Nash in L. H. Bailey which ranges from Costa Rica to Panama.

KEY WORDS

Anthurium, new species, black spathes, sect. *Belolonchium*, *Calomystrium*, *Pachyneurium*, *Polyneurium*, Colombia, Panama.

INTRODUCTION

Among the most popular of *Anthurium* species are those with seemingly black spathes. In South America there is frequently talk among plant collectors of the so-called "Anturio negro" as if there were but one species with a so-called "black" spathe. Since most of the species with a dark purple-black spathe have been poorly known there has been a lot of taxonomic confusion regarding these plants. Investigations of species which have such spathes have proven that not only are there several species involved, the species with blackish spathes are not even closely related but instead they fall in four separate sections of *Anthurium*, namely section *Belolonchium*, section *Calomystrium*, section *Cardiolonchium* and section *Pachyneurium*.

DISCUSSION

Anthurium caramantae Engl. was the first species described with a blackish spathe, published in 1889 The species was discovered in Colombia in southern Antioquia Department in the vicinity of Caramanta at 2,200 m. The species was originally placed in *Belolonchium* by Engler (1906) but instead it belongs in *Cardiolonchium* owing to its thin cataphylls with pale fibers and pale green-drying leaves. Plants collected in the Cordillera Central, where the species also occurs, are somewhat variable with some populations having a smooth spathe (Fig. 1A) and others with a somewhat "hammered" spathe (Fig. 1B). Flowers of *A. caramantae* from the Cordillera Central sometimes expel a tenuous odour halfway between raw fish and fermented oranges. This smell is noticeable only in the morning during anthesis and when the sun shines (Calderón, pers. comm.) A population in the Cordillera Central near Manizales (Figs. 1C and 1D) differs in having the spadix longer and somewhat twisted but the dried specimens appear to be identical to the type from the Cordillera Occidental.

Anthurium cabrerense Engl. (Fig. 2A) was described originally as *Anthurium*

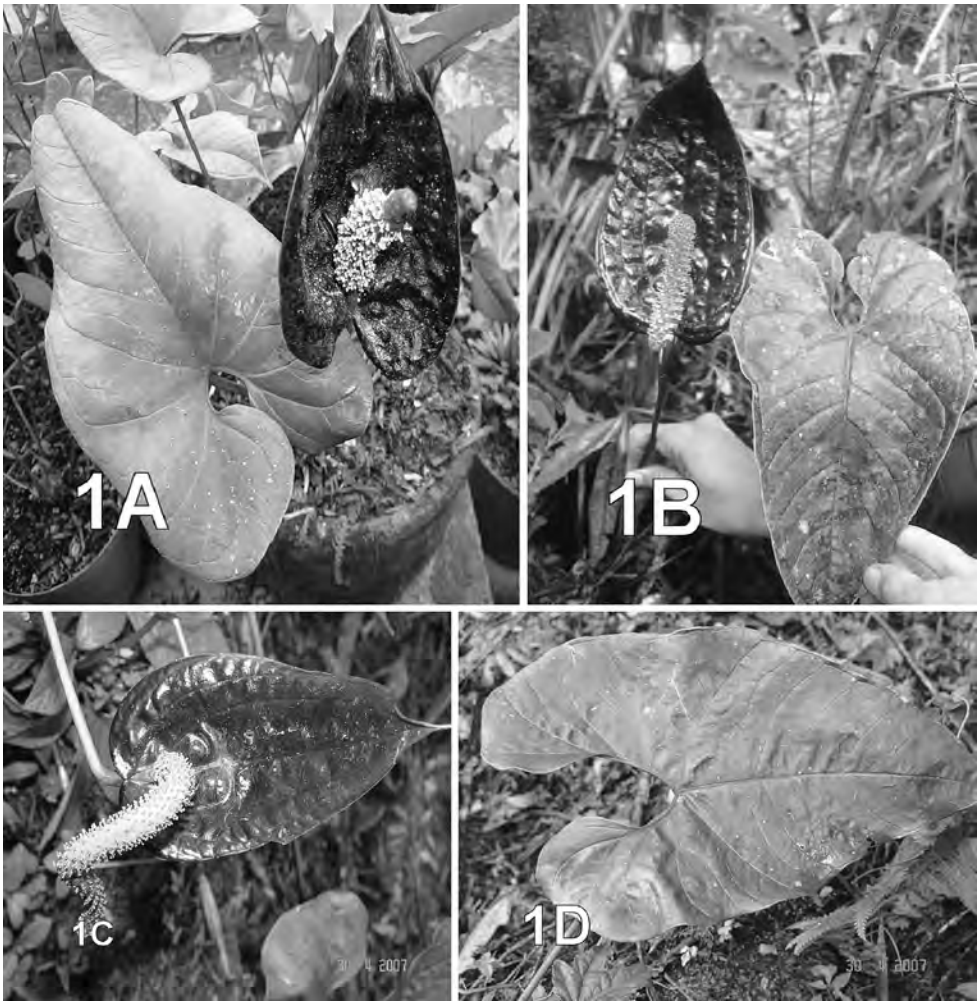

Fig. 1. A–D. *Anthurium caramantae* Engl. A, B. Cultivated plants from Cordillera Central, Cultivated by E. Calderon. A. Habit of flowering plant. B. Leaf blade adaxial surface, inflorescence in face view. C, D. *Croat 97992*, Colombia. Caldas, Manizales. C. Inflorescence with glossy dark purple spathe and whitish long-exserted spadix. D. Leaf blade adaxial surface.

lehmannii Engl. var. *cabrerense in 1898* (Engler, 1898) but was elevated to the species level in 1905 in his revision of the Araceae in *Das Pflanzenreich* (Engler, 1905). The species is known only from the type specimen which consists of three separate inflorescences but without an accompanying leaf. The leaf specimen is apparently lost but in his 1905 treatment Engler did produce a line drawing of the leaf as well as an inflorescence and details of the flower and pistil. Although this species is very poorly known it reportedly has a dark purple-black spathe and has been confused with *A. caramantae*. It is a rather typical member of sect. *Belolonchium*, especially owing to its decidedly concave margined anterior lobe.

Another species, *Anthurium cupreonitens* Engl. was published in 1905. It was discovered in Departamento de Norte de Santander at Ocaña, also on the Cordillera

Fig. 64. *Anthurium cabrerense* Engl. *A* Folium cum inflorescentia. *B* Spadix cum spatha *C* Flos. *D* Tepalum. *E* Stamen. *F* Pistillum. *G* Id. longitudin. sectum. — Icon origin.

Fig. 2. A. *Anthurium cabrerense* Engl. Figure 64 from Engler's *Das Pflanzenreich* (1905). [Figure legend for Engler drawing. a. Leaf and inflorescence. b. Spadix with spathe. c. Apex of flower. d. Tepal e. Stamen. f. Pistil longitudinal section, g. Pistil cut away to show ovules]. B–D. *Anthurium cupreonitens* Engl. Cundinamarca Dept., Colombia. Cultivated by N. Castaño. B. Leaf blades showing adaxial surface. C. Inflorescence showing near face view of spathe showing adaxial surface and long-tapered white spadix. D. Inflorescence with side view and spadix displaying exserted stamen.

Oriental at 2,000–3,000 m. The species was also collected at Finca Americais, near San Francisco in Cundinamarca by Natalia Castaño (Fig. 2B–D). The species is a typical member of sect, *Belolonchium* and it is characterized by its long slender blackish spathe and long slender white spadix.

Anthurium flavolineatum Sodiro (Fig. 3 A and 3B), a species ranging from southern Colombia to Ecuador was described by Sodiro in 1905 and qualifies as a black-spathed anthurium but is further distinguished by having several green lines extending from the base to the tip. Some living plants are not so distinctively black owing to part of the spathe being tinged with green. The species is a typical member of sect. *Belolonchium* with decidedly concave margins on the anterior lobe.

The most recently published species with a blackish spathe is *Anthurium atramentarium* Croat & Oberle (Figs. 3C and 3D), a species occurring in the Cordillera Occidental in Antioquia Department of Colombia, occurring at 2,980–3,680 m. It is a typical member of sect. *Calomystrium*.

A more widely-grown dark-spathed species *Anthurium watermaliense* Bailey & Nash in Bailey (Figs. 4A–D) was purported to have been collected from Colombia but is known only from Panama and Costa Rica. It appears that the collection was made at a time when Panama was still a part of Colombia so it is assumed that the material was actually collected in Panama. The species ranges from 750 to 2,400 m and is an atypical member of sect. *Pachyneurium* with ovate-triangular blades but possessing the typical involute vernation of sect. *Pachyneurium*.

In addition to the species already listed above an additional new species is recognized here. The species is known from Antioquia Department in the vicinity of Medellín.

Anthurium bantanum Croat & J. Deal, **sp. nov**. Type: COLOMBIA. Antioquia. E of Medellin, along road between Limón and Río Piedras; 06°13′N, 75°29′W, elev. 2,600 m, 23 April 1983, *T. B. Croat 56304* (holotype, MO-3117234). (Figs. 5A and 5B).

The species is a member of *Belolonchium* characterized by its terrestrial habit, short internodes, cataphylls persisting intact at apex but otherwise fibrous and reddish brown, petioles terete midway and obscurely sulcate toward apex, moderately coriaceous narrowly ovate-triangular-sagittate blades which dry grayish green-brown above, weakly paler and grayish- green brown below with a weakly hippocrepiform sinus the collective veins arising from the 2nd pair of basal veins, a single pair of free basal veins, a well developed posterior rib as well as by the long-pedunculate inflorescence with an erect hooding dark purple-black ovate-elliptic spathe and a white bluntly tapered spadix.

The species is closest to *A. cupreonitens* Engl. from similar elevations in the Cordillera Oriental in Cundinamarca Department which differs in having blades usually conspicuously constricted along the anterior lobe, less conspicuous tertiary veins, a longer more slender spadix with the stamens prominently exserted at anthesis and with often a much longer stipe (up to 5 cm long).

Terrestrial; **internodes** 1–2 cm long, 3.5 cm diam.; **cataphylls** persistent, semi intact at their apex, with a fibrous network at the base, drying 13.9–14.4 cm long, with fragments of reddish brown epidermis, the fibers reddish brown, mostly closely parallel; **petioles** terete midway, obscurely sulcate near apex, drying 50.7–56.6 cm long, 4 mm diam. cm long, drying yellowish brown; **geniculum** 2.6–2.8 cm long, drying darker than petioles; **blades** ovate-triangular-sagittate, 27.5–32.8 cm long, 18.7–21.7 cm wide (averaging 30 × 20), 1.47–1.51 (averaging 1.495) times longer than broad, broadest below petiole attachment, 0.5–0.6 (averaging 0.6) times long as petioles, abruptly acuminate at apex, coriaceous, semiglossy, drying gray-brown above, drying subcoriaceous, grayish-green brown, moderately smooth and weakly semiglossy below, epunctate; **anterior lobe** 20.1–24.9 cm long, with

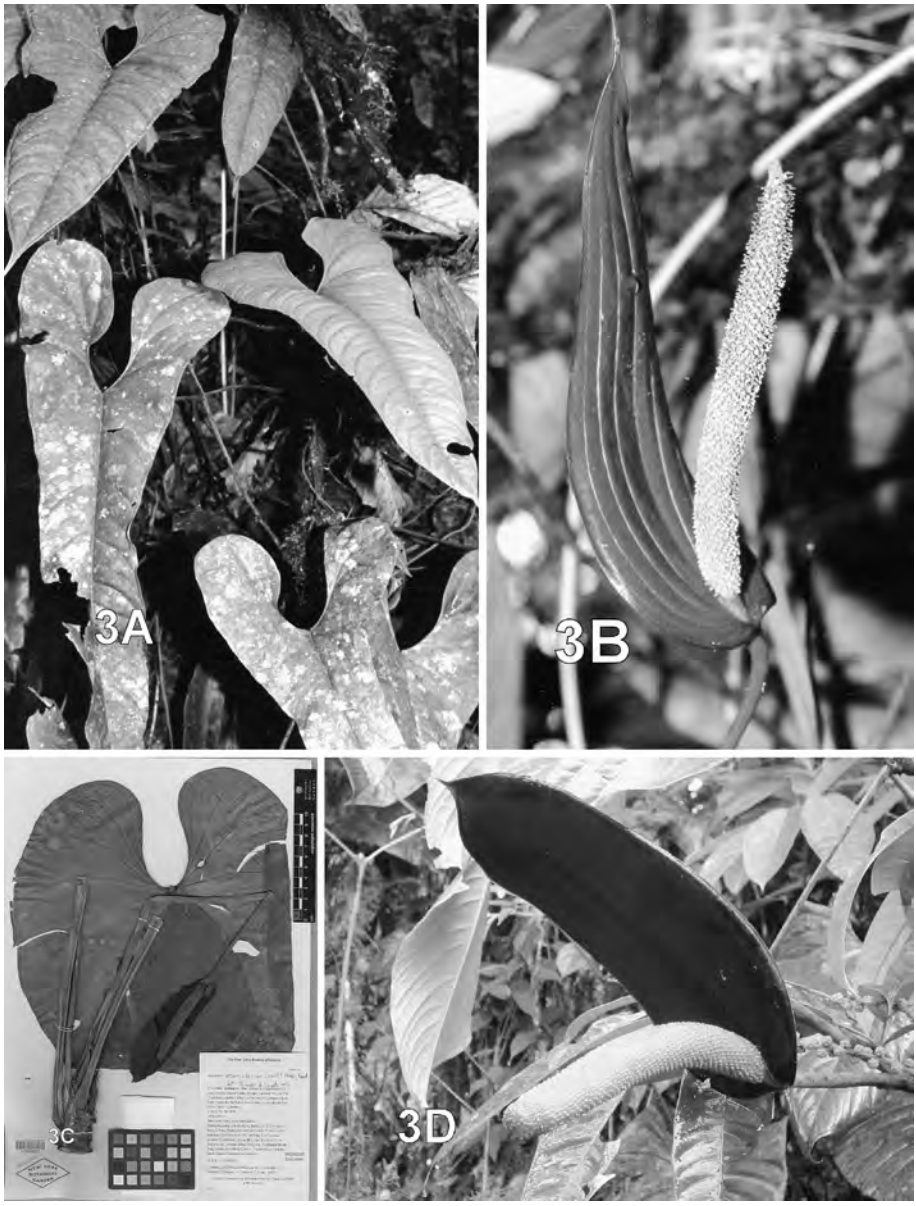

Fig. 3. A, B. *Anthurium flavolineatum* Sodiro. Ecuador, *Croat 100718*, Ecuador, Cordillera de Cutucú. A. Habit showing several leaves, adaxial surface, B. Inflorescence with dark red-purple spathe with yellowish veins. C, D. *Anthurium atramentarium* Croat & Oberle, *Betancur 14833*, Colombia, Antioquia, Parque Nacional Natural Las Orquideas. photo Julio Betancur. C. Herbarium specimen, D. Inflorescence with hooding purple spathe and pale orange cylindroid spadix.

Fig. 4. A–D. *Anthurium watermaliense* L. H. Bailey & Nash. A. Blade showing adaxial surface. Cultivated at Franklin Park Conservatory, Columbus photo John Ingram. B. Leaf blade abaxial surface with inflorescence with dark purple spadix. Cultivated at NY Bot. Garden. Photo Don Martinson. C. Stem showing petioles and 3 inflorescences, one at top left at anthesis, the other two in early fruit. Costa Rica, cultivated and photo by S. F. Trajan. D. Infructescence with orange berries. Cult. Franklin Park Conservatory, Columbus, Ohio, photo John Ingram.

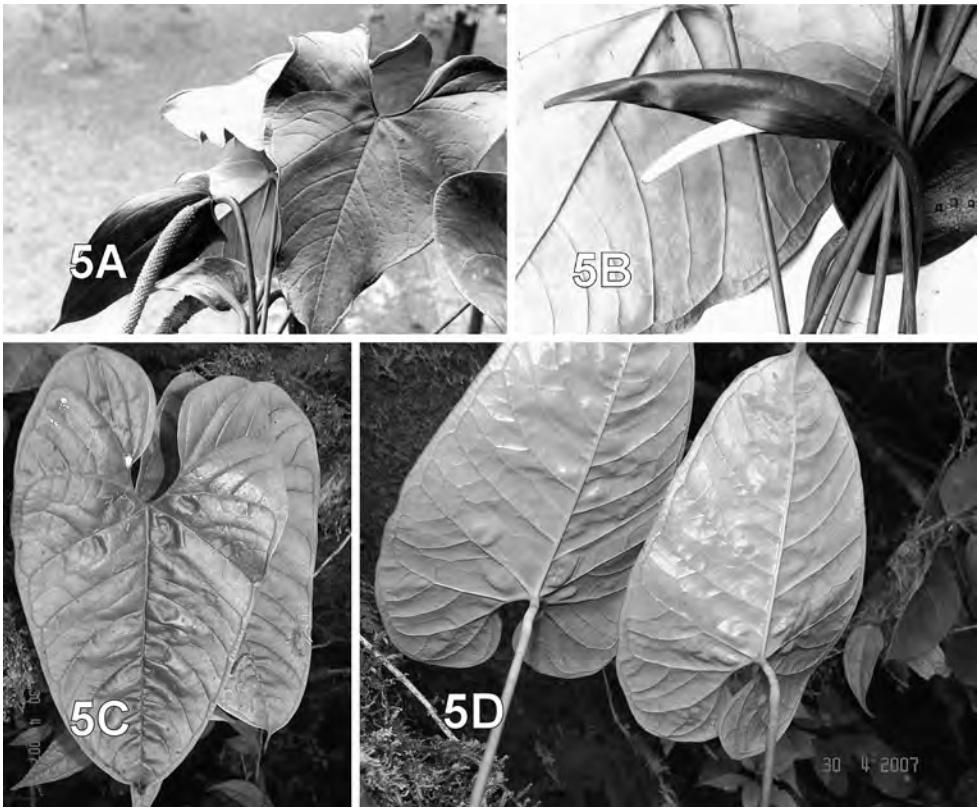

Fig. 5. A, B. *Anthurium bantanum* Croat & J. Deal. (Antioquia Dept., vic. Medellín, Colombia, *Croat 56304*). A. Plant showing adaxial blade surface in center and 2 inflorescences. B. Inflorescence in side view C, D. *Anthurium* from Manizales, *Croat 97988*. C. Leaf blade adaxial surface. D. Leaf blades abaxial surfaces.

straight to slightly concave margins, the distil margin rounded; **posterior lobes** 10.7–11.8 cm long, 7.1–7.8 cm wide, directed downward and inward; **midrib** narrowly rounded and slightly paler above, drying bluntly acute and concolorous above, narrowly rounded and slightly paler below, drying acutely several-ribbed and darker below; **primary lateral veins** 6 pairs, arising at 55–60° angle, weakly raised in valleys above, drying weakly and narrowly raised, concolorous above, narrowly raised, acutely several-ribbed and darker below; tertiary veins etched above, prominent below, drying weakly raised and concolorous below; **collective veins** arising 2nd pairs of basal veins 3–7 mm from margin, etched above, prominently raised below; **basal veins** 6 pairs, 1st pair free to base, 2nd pair fused to 3–4 mm, 3rd pair fused to 2.2 cm, 4th and 5th pair fused to 4.1 cm; **posterior rib** gradually curved, naked 2 cm; **sinus** hippocrepiform, 7.1–7.7 cm deep, 4.7–5.2 cm wide. INFLORESCENCE with **peduncle** 38.8–46.5 cm long; **spathe** hooding, glossy, dark black-purple, 18.6–20.7 cm long, 5.6–6.7 cm wide, ovate-elliptic, drying moderately coriaceous, medium reddish brown; **spadix** white at anthesis, stipitate 1.5 cm, bluntly tapered, 13.2–14.9 cm long 1.1–1.2 mm diam., medium brown; **flowers** 6 visible per spiral, drying 3.1–3.2 mm long and 2.9–3 wide; tepals matte, minutely granular on drying; lateral tepals 1.7 mm wide, the outer margins 2-sided, inner margin round-

ed; pistils green, uniformly weak-emergent; stamens weakly emergent, held on all 4 sides of the pistil and widely spaced, 0.45 mm long, 0.6 mm wide, thecae not divergent.

Anthurium bantanum is endemic to Colombia, known only from the type locality in Antioquia Department near Medellin on the eastern slope of the valley of the Río Cauca at 2,600 m in a *Montane moist forest* life zone (Holdridge, 1971).

The species is named in honor of my old friend John Banta who has spent much of his career growing and researching Araceae. He had collected and studied large numbers of interesting and new species of Araceae from both the new world and the old world. John Banta spent many of his early years as a teacher, later becoming a plant inspector for the USDA before retiring to Alva Florida where he cares for a fantastic collection of ornamental plants. He has been a strong promoter of the International Aroid Society, serving as the Editor of *Aroideana*, a member of the IAS Board and a participant in the presentation program for the IAS Show and Sale in Miami. John was one of the earliest members of the IAS and participated in the 1st International Aroid Conference at Selby Garden in Sarasota. It pleases me to be able to honor John with this new and attractive species.

In addition to the above species there are two additional collections that appear to be new species which will be mentioned here but not formally described owing to a lack of herbarium material. An interesting collection was found in the Department of Caldas in the valley of the Río Chinchiná east of Manizales at Vereda Las Palomas in the Reserva Río Blanco, Sitio Mirador at 2,560 m. The plant appeared to be closely related to *A. caramantae* (which also was found in the same region- See Figs. 1A–C). Though it appeared to have very similar leaves the inflorescence of this plant (Figs. 5C and 5D; Fig. 6A) has a spathe that is green on the outside, matte and purplish on the inside with several prominent yellowish veins as well as a shorter subcylindroid spadix. In contrast the spathe of *A. caramantae* is typically dark purple-black on both surfaces and glossy at least on the inner surface.

Another collection made in the Cordillera Orientale in Colombia, Cundinamarca Department in the Farallones de Medina south of Gachetá (4°38′11.2″N, 73°32′W) is related to *A. cupreonitens* but differs in having a much shorter more ovate spathe and a much shorter spadix (Figs. 6B–D).

CONCLUSIONS

Although spathe color is typically a very good character for distinguishing and separating species and also that spathe color is typically highly consistent from species to species, this study clearly shows that spathe color is a highly pleisiomorphic character at the sectional level.

That said it is interesting to speculate about the biological significance of the blackish spathe. I have not detected any specific aromas on any of the species during my field work, neither pleasant nor foul aromas. While the blackish spathe is often associated with a foul aroma in other genera it is possible that the dark spathe in these species is simply to generate warmth since most of these species occur in cool habits and the warmth resulting from the absorption of the sun's heat and protection afforded by the broad dark spathe might induce floral visitors to stay longer at the inflorescences, thus giving them the opportunity to pollinate more flowers on the spadix. It is hoped that this article might generate field observations or even to induce someone to study the systems of pollination involved.

To my knowledge none of these black-spathed anthurium species (with the exception of *A. watermaliense*) have yet been used in any hybridization projects. Indeed, most of the species are pretty rare. They mostly occur at high elevations and thus are not really suited to places like Miami where most of the experimentation goes on. It really would be interesting to see how these different species, in what I consider unique sections, interact with one another and with other species in their given

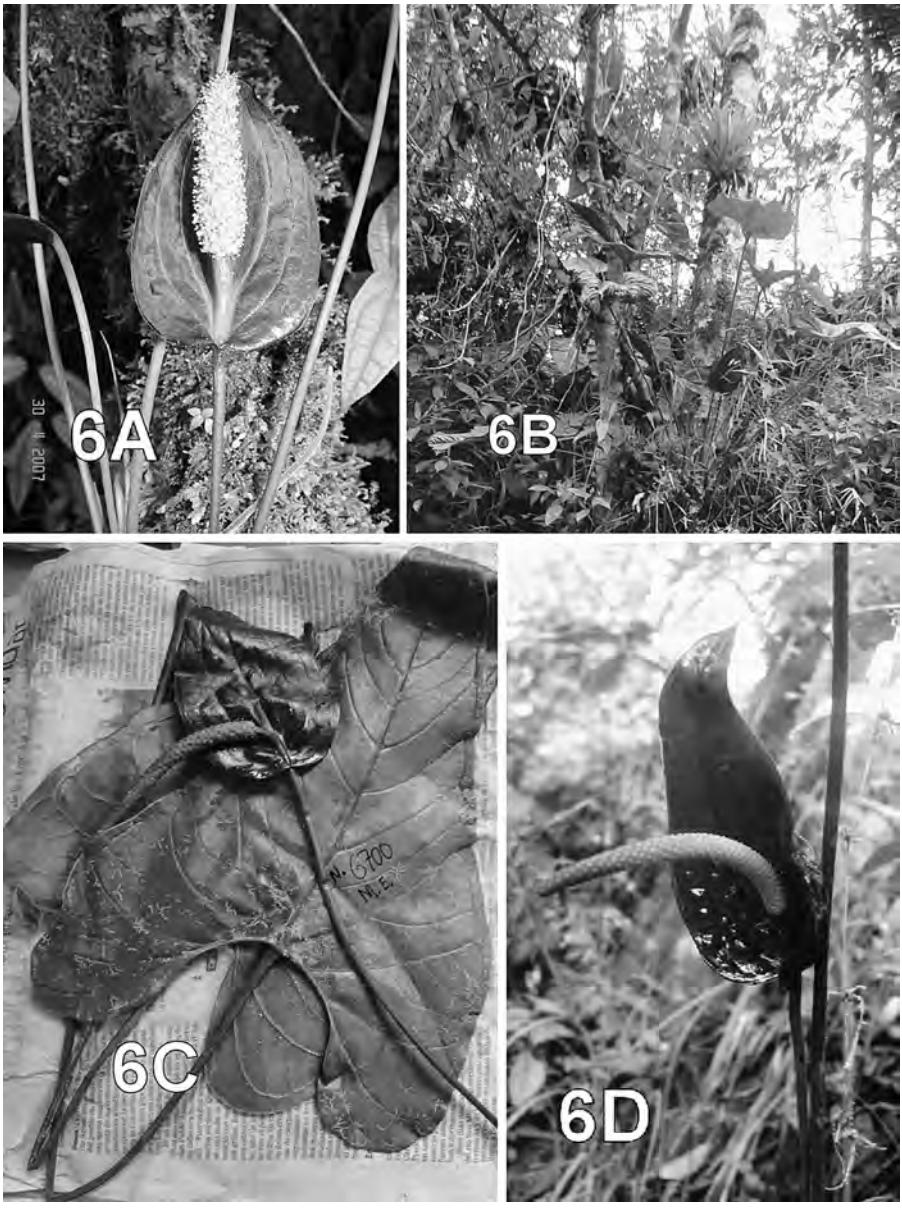

Fig. 6. A. *Anthurium* from Manizales, *Croat 97988*. Inflorescence with spathe in face view and stipitate spadix with stamens exserted; B–D. *Anthurium* from Farallones de Medina, Cundinamarca Department, Colombia; *E. Vargas 6700*, B. habit of flowering plant at site C. Undried but pickled specimens, two leaves with adaxial surface on top and an entire inflorescence. D. Erect inflorescence, spathe semi-erect, spadix white, tinged violet-purple near tip. All photos E. Vargas.

sections. Typically you can't make intersectional crosses though the Dutch (Anthura, Inc.) have created a hybrid between a *Calomystrium* and *Belolonchium*. They would not divulge the secret or even what the two parents were.

ACKNOWLEDGMENTS

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