

A NEW SPECIES OF *CATASETUM* (ORCHIDACEAE: CATASETINAE) FROM CASANARE, COLOMBIA

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ABSTRACT. A new species of *Catasetum* was found in eastern Colombia, Casanare Department, in the Orinoquía bioregion. The species is described and illustrated, and data associated with its phenology, distribution and conservation status are discussed. The new species, *C. lucisuareziae*, is related to other species found in the same region, like *C. rectangulare* and *C. callosum*, from which it mainly differs by the three-lobed labellum and the presence of two subglobular calli at the base.

RESUMEN. Una nueva especie de *Catasetum* fue encontrada en el departamento de Casanare hacia el oriente de Colombia, en la bioregión de la Orinoquía. Se describe e ilustra la especie y se estipulan parámetros asociados a su fenología, distribución y estado de conservación. La nueva especie, *Catasetum lucisuareziae*, es comparable con otras especies que se encuentran en la misma región, como *C. rectangulare* y *C. callosum*, pero difiere de ellas principalmente por su labelo trilobulado y la presencia de dos callos subglobulares en la base.

KEY WORDS / PALABRAS CLAVE: biodiversidad, biodiversity, *Catasetum bicolor*, *Catasetum lucisuareziae*, conservación, conservation, Cymbidieae, Epidendroideae, Orinoquía

Introduction. Orchidaceae include about 28,000 species and, together with Asteraceae, it is the most diverse group of angiosperms (Chase *et al.* 2015). Colombia is one of the countries with the greatest diversity of Orchidaceae, with 4,270 species in 270 genera; about 35% of the species are endemic (Betancourt, Sarmiento, Toro-González & Valencia 2015). Most of the endemic species are native to the Andean bioregion. The areas with the lowest diversity are the Orinoco river basin and the Atlantic slopes, with only 143 species recorded (Betancourt *et al.* 2015, Sarmiento 2007).

The genus *Catasetum* includes about 140 species distributed throughout the Neotropics (Romero & Jenny 1993, Romero 2012), although Chase *et al.* (2015) accept up to 176 taxa. For Colombia, Ortiz and Uribe (2007, 2014), Bonilla, Mosquera and Otero (2013a), Ortiz (2015) and Betancourt *et al.* (2015) recognize 37 species.

Materials and methods. Casanare is one of the least studied departments of Colombia (Usma & Trujillo

2011). In the Orchidaceae, 32 genera and 58 species have been recorded from this area (Betancourt *et al.* 2015). However, recent studies conducted in the Orinoco river basin addressed the importance of the region's biodiversity, showing that 77 orchid species were recorded in the Meta Department alone (Jiménez 2011). Two years after the start of the explorations in this region, the number of documented orchid species already overcome the 300 taxa (Bonilla *et al.* 2013b).

The material examined for this study was collected in 2013, during the exploration of Casanare, when a population of a unidentified species of *Catasetum* was found in the town of Hato Corozal. The plants were cultivated in a greenhouse at Villavicencio (Meta), in the farm of Luci Suárez, for their documentation and study.

Results. Based on floral morphology, the new species described hereafter, *Catasetum lucisuareziae*, belongs to a small group of species that in Colombia includes *C. bicolor* Klotzsch, *C. callosum* Lindl. and *C. rectangulare* G.F.Carr.

KEY TO THE COLOMBIAN SPECIES OF *CATASETUM* RELATED TO *C. LUCISUAREZIAE*

1. Petals linear to oblong-lanceolate 2
 2. Lateral sepals falcate, labellum rectangular *C. rectangulare*
 2'. Lateral sepals reflexed or oblique, labellum lanceolate, ovate or trilobed 3
 3. Labellum lanceolate, ovate or slightly off site with a central callus apiculate *C. callosum*
 3'. Labellum trilobed, without a callus *C. boyi*
 1'. Petals elliptic or elliptic-lanceolate 4
 4. Labellum trilobed, the mid-lobe slightly elliptic *C. lucisuareziae*
 4'. Labellum pentalobed, the mid-lobe triangular *C. bicolor*

Catsetum lucisuareziae M. Bonilla, J. Mosquera & Benelli, *sp.nov.* Fig. 1–2.

TYPE: Colombia. Casanare: Hato Corozal, Bosque de Sabana, 6.133541° -71.728464°, 222 m, 26-VI-2013, M Bonilla-M., J Mosquera, A Velázquez & L Suárez, s.n. (holotype, LLANOS!).

DIAGNOSIS: *Catsetum lucisuareziae* is similar to *C. bicolor*, from which it mainly differs by the 3-lobed labellum (vs. 5-lobed) and the two subglobular calli at the base of the lip (vs. two ligules); it also resembles *C. rectangulare* and *C. callosum*, from which it differs by the ovate-lanceolate bracts, elliptic petals, 3-lobed labellum with 2 basal subglobular calli, and erect staminal column.

Epiphytic, caespitose herb, 15–40 cm tall when leafy. *Pseudobulb* ca. 13 × 6 cm, terete, elliptical-spindle, of 1–9 internodes. *Leaves* ca. 25 × 4 cm, oblong-lanceolate, distichous, plicate, deciduous. *Inflorescence* basal, 1–2 simultaneous, many-flowered (12–20) racemes, straight or curved at the apex, ca. 25 cm long, provided with basal bracts. Male *flowers* resupinate, fragrant, brown, the labellum yellow-green. *Pedicel* ca. 45 mm long, including the short ovary. *Floral bracts* lanceolate-ovate, 9 × 3 mm. *Dorsal sepal* oblong-elliptic, acute, concave, membranous, ca. 29 × 7 mm. *Lateral sepals* elliptic, acute, convex, membranous, ca. 30 × 7 mm. *Petals* elliptic, convex, membranous, ca. 26 × 5 mm. *Labellum* 3-lobed, sacciform, cordate when spread, fleshy, 6–7 mm long, 10.0–10.8 mm wide, 9 mm deep, the lateral lobes elliptic with the margin sometimes undulate, the midlobe triangular, round, with two subglobular calli at the base. *Column* trigonous, erect, ca. 18 mm long, 3–4 mm wide toward the apex, yellowish-green stained brown; rostellum 6–8 mm,

slim and projected forward and backward. *Anther* operculate, apiculate, unilocular, ca. 9 × 3 mm, the apex yellowish-green. *Pollinia* 2, elliptic-obovate, flattened dorsiventrally, split, yellow, ca. 3 × 1 mm, on a oblong stipe and sticky viscidium. Female *flowers* not observed. Immature *fruit* green, trilocular.

DISTRIBUTION: The species has been hitherto recorded only from the municipality of Hato Corozal (Fig. 3).

EPONYMY: In honor of Luci Suárez, who has taken charge of the conservation and management of native orchid species of Meta.

PHENOLOGY: This species flowered in January in cultivation.

CONSERVATION STATUS: According to the criteria of the IUCN (2014), *C. lucisuareziae* is characterized as Data Deficient (DD). The only known population of the species is not located within any conservation unit. However, *ex situ* conservation management performed by Mrs. Luci Suárez and his son on their farm is highly relevant for its preservation.

Catsetum lucisuareziae belongs to subgenus *Catsetum* section *Isoceras* (Mansf.) Senghas, characterized by symmetrical antennae (Senghas 1990, Romero 2009).

Among the species found in the bioregion of the Orinoco (Bonilla *et al.* 2014), the most alike are *C. rectangulare* and *C. callosum*. The three species can be easily distinct, however, on the basis of their characteristic floral morphology (Table 1). *Catsetum rectangulare* and *C. callosum* have linear and oblong-lanceolate floral bracts, respectively, while *C. lucisuareziae* has ovate-lanceolate bracts. While in *C. lucisuareziae* the petals are elliptic, they are linear to oblong-lanceolate in *C. rectangulare* and *C. callosum*.

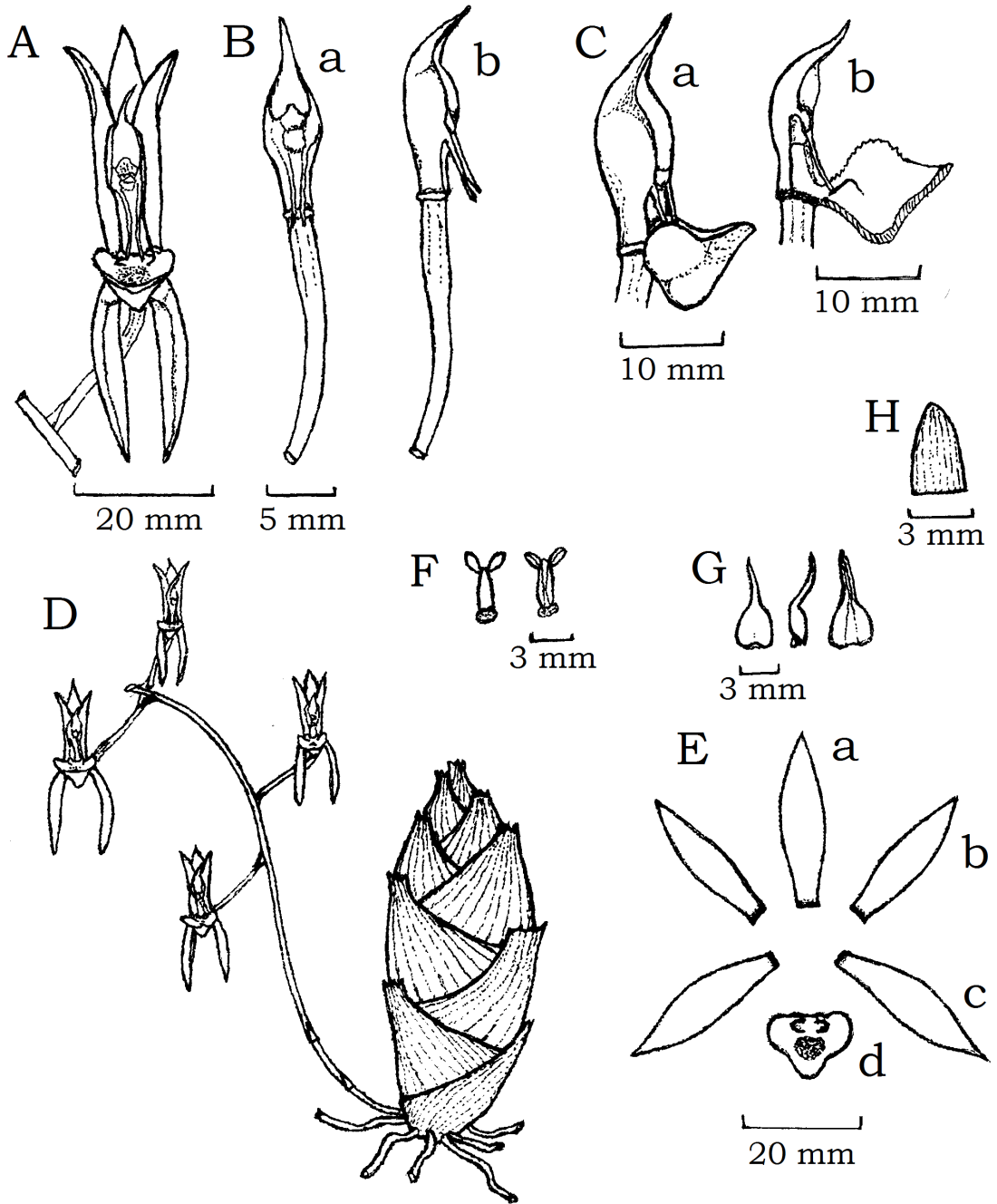


FIGURE 1. *Catasetum lucisuareziae*. A. Male flower, frontal view. B. Column set: a, frontal view; b, lateral view. C. Column with labellum set: a, lateral view; b, same, with the labellum longitudinally sectioned. D. General view of the plant habit without leaves, the inflorescence with male flowers. E. Male flower, dissected perianth: a, dorsal sepal; b, petal; c, lateral sepal; d, labellum, frontal view. F. Pollinarium, two views. G. Anther cap in frontal, lateral and dorsal views. H. Floral bract. Illustration by M. M. Bonilla-M. from the type.

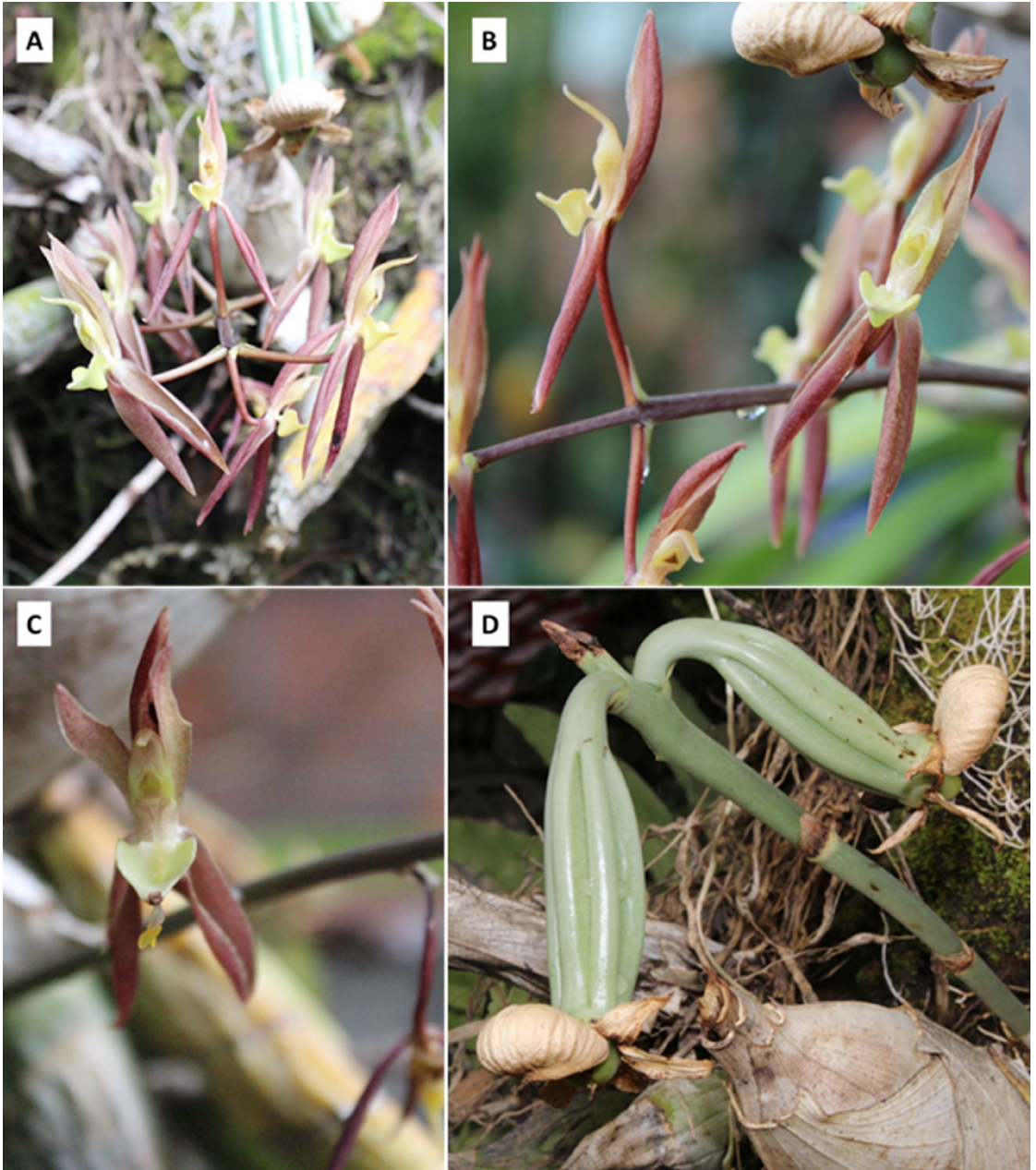


FIGURE 2. *Catasetum lucisuareziae* M. Bonilla, J. Mosquera & Benelli. A. Inflorescence. B. Male flower, lateral view. C. Male flower, frontal view. D. Immature fruit. Illustration by M. M. Bonilla-M.

In addition, *C. lucisuareziae* has a lobed labellum with two subglobulares calli (vs. entire with a single callus), and the apex straight basck (vs. arched and slightly curved) (Table 1).

Catasetum lucisuareziae can also be compared to *C. bicolor*, which is recorded for Colombia in the

bioregion of the Atlantic and the Middle Magdalena valley between the Cordillera Central (CC) and the Cordillera Oriental (CO), on the western flank. However, it was not registered from the eastern flank of the CO or the bioregion of the Orinoco (Bonilla *et al.* 2013b, Ortiz 2015). Nevertheless, the 3-lobed labellum

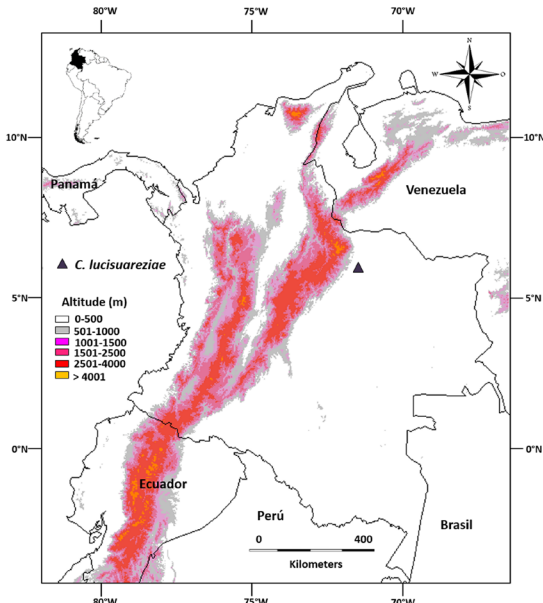


FIGURE 3. Distribution of *C. lucisuareziae* in Colombia. Illustration by M. M. Bonilla-M.

with elliptical lobes distinguishes this species, whereas in *C. bicolor* the lip is 5-lobed with three lobes at the apex (the triangular central lobe triangular and the other two linear), and the lateral lobes are upright. Moreover, instead of the two subglobular calli at the base of the lip, *C. bicolor* presents two ligules, one on each side lobe.

The new species and *C. bicolor* can also be compared to *C. boyi* Mansf. However, while *C. bicolor* is distributed from Panama to Venezuela, *C. boyi* is exclusively known

from Brazil (Govaerts *et al.* 2015), in regions quite distant from the area of occurrence of *C. lucisuareziae* in the Colombian Orinoquia. The main morphologic differences between the species of this complex can be observed in Figure 4, where the flowers of the four species related to *C. lucisuareziae* are shown. *Catasetum lucisuareziae* differs from *C. boyi* by its elliptic oblong, 2.9 cm long dorsal sepal *versus* elliptic-lanceolate, 2.5 cm long. The lateral lobes of the labellum are suberect in *C. lucisuareziae*, *vs.* distinctly erect in *C. boyi* (Fig. 5); in the first species they have slightly undulate margins and the mid-lobe is smooth, whilst in the latter the margins of the lateral lobes and the midlobe are strongly undulate; in the central portion, the labellum of *C. lucisuareziae* is 9 mm depth, while in *C. boyi* it is only 3 mm depth; the calli of the lip are subglobular in *C. lucisuareziae*, but they are triangular and obliquely erect in *C. boyi*.

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TABLE 1. Comparison of floral details between *Catasetum lucisuareziae* and its closest relatives.

	<i>Catasetum lucisuareziae</i>	<i>C. rectangulare</i>	<i>C. callosum</i>	<i>C. boyi</i>
Bract	Oval-lanceolate	Lanceolate	Oblong	Ovate-lanceolate
Peduncle	30 × 4–5 mm	25–30 × 3.5–4 mm	25–30 × 3.5–4 mm	40 × 2–3 mm
Dorsal sepal	29 × 7 mm	25–31 × 5–6 mm	25–42 × 6–8 mm	25 × 8 mm
Lateral sepal	30 × 7 mm, reflexed	23–27 × 5–7 mm, falcate	24–4 × 8–9 mm, reflexed somewhat oblique	38 × 4 mm, reflexed
Petals	26 × 5 mm, elliptic	22–25 × 5–7 mm, linear to oblong-lanceolate	22–38 × 5–55 mm, linear to oblong-lanceolate	25 × 8 mm
Labellum	6 mm long × 10 mm wide × 9 mm deep	17 mm long × 6 mm wide × 4 mm deep	13–21 mm long × 8–10 mm wide × 5–6 mm deep	6 mm long × ca 4 mm wide × ca 3 mm deep
Labellum ornament	Trilobed, lateral lobes with denticulate margin, slightly elliptical margin entire central lobe and two subglobular calluses, smooth, basal	Entire, rectangular, margin entire or denticulate, triangular apex, callus I dispersed in the base with a central uplift.	Entire, lanceolate, ovate or slightly pandurate, smooth or irregularly toothed margin, acute apex, central callus and a lifting apiculate	Trilobed, lateral lobes with filiform margin, semiovate margin filiform central lobe and two erect triangular calluses, basal
Staminate Column	Erect, 18 × 3–4 mm	Arched, 14 × 7 mm	Slightly curved, 12 × 5–6 mm	Erect, 20 × 4 mm

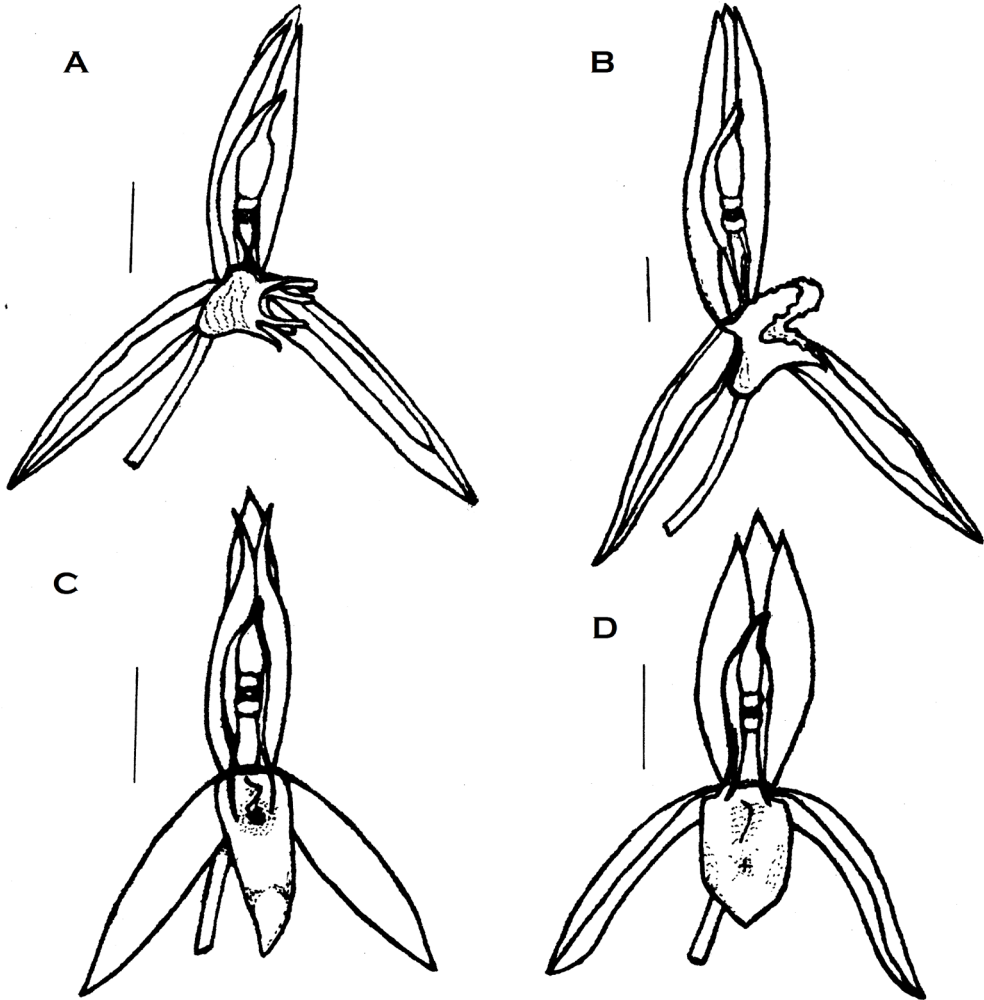


FIGURE 4. Comparison of the flowers between A. *Catasetum bicolor*, B. *C. boyi*, C. *C. callosum* and D. *C. retangulare*. Illustration by M. M. Bonilla-M. and A. Petini-Benelli.

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FIGURE 5. *Catasetum boyi*, frontal and lateral view, with closeups of the labellum. Photography by A. Petini-Benelli.

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