



ANGEL  
ANDRETTA  
FUNDACIÓN PARA LA INVESTIGACIÓN,  
CONSERVACIÓN & DESARROLLO

# ANDRETTANA

TROPICAL ANDES BIODIVERSITY AND CONSERVATION

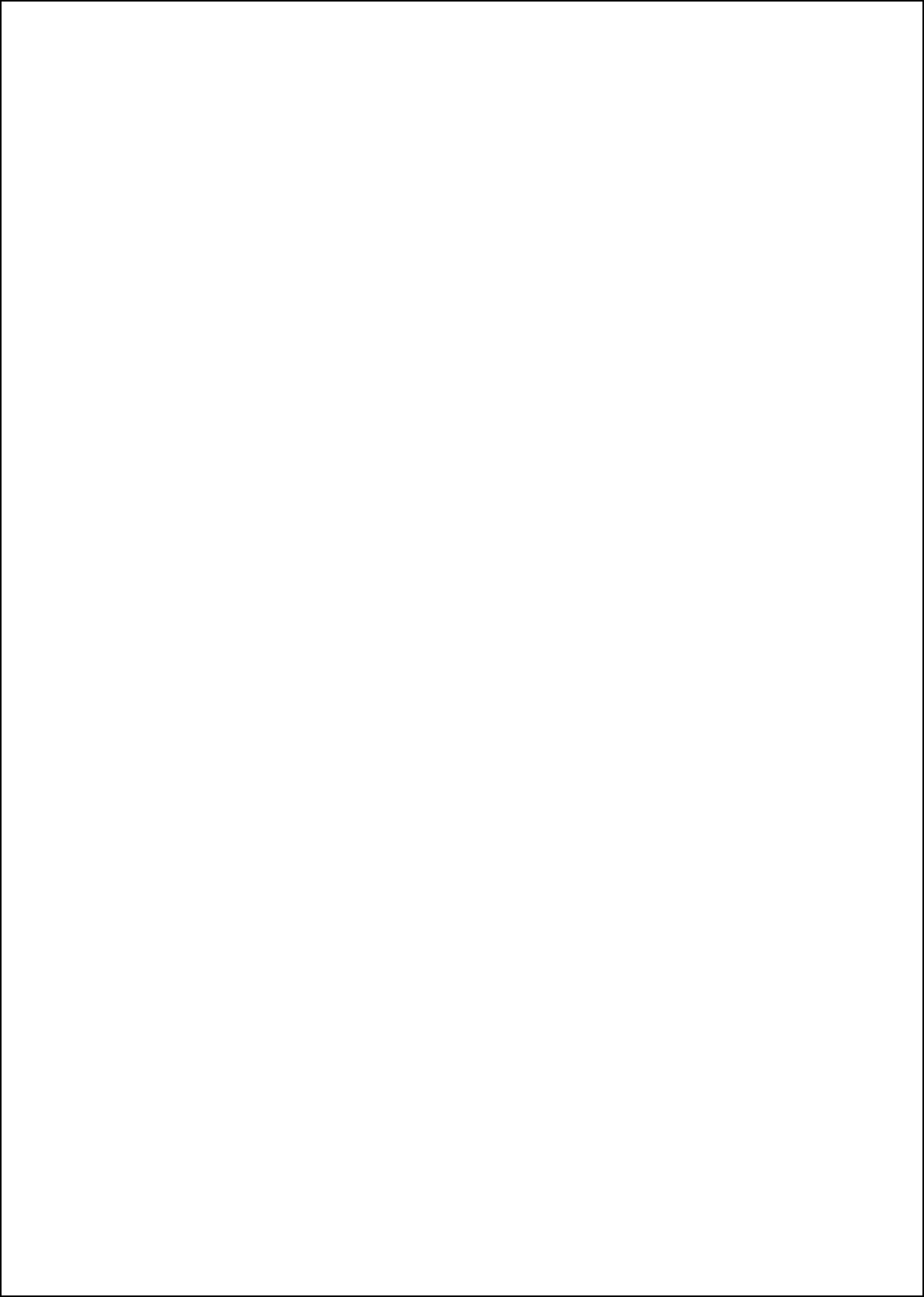
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ANDRETTANA, publicación de la FUNDACION PARA LA INVESTIGACION, CONSERVACION, DE LA BIODIVERSIDAD Y DESARROLLO DE LOS ANDES TROPICALES "ANGEL ANDRETTA" es una revista científica dedicada a la publicación de investigaciones originales sobre la biodiversidad de la región neotropical, con énfasis en los Andes tropicales. La revista recibe trabajos en las áreas de taxonomía (descripción y revisión de especies), biodiversidad, ecología, biogeografía, restauración ecológica, usos culturales de la biodiversidad, así como horticultura de plantas tropicales, haciendo especial énfasis en orquídeas. Los manuscritos que ofrezcan aportes relevantes al conocimiento taxonómico y ecológico, así como a la conservación y el manejo sostenible de la biodiversidad andina, tendrán prioridad.

Se publican tanto estudios empíricos como revisiones, ensayos y comunicaciones breves que presenten nuevos métodos, enfoques conceptuales o aplicaciones prácticas. Se valoran contribuciones que trasciendan casos específicos y planteen soluciones o reflexiones aplicables a otras regiones y contextos.

"ANDRETTANA," a publication of the Foundation for Research, Conservation, and Development of the Tropical Andes "Angel Andretta," is a scientific journal dedicated to publishing original research on the biodiversity of the Neotropical region, with an emphasis on the Tropical Andes. The journal welcomes submissions in the areas of taxonomy (species description and revision), biodiversity, ecology, biogeography, ecological restoration, cultural uses of biodiversity, as well as the horticulture of tropical plants, with a special focus on orchids. Manuscripts offering relevant contributions to taxonomic and ecological knowledge, as well as to the conservation and sustainable management of Andean biodiversity, will be prioritized.

Both empirical studies and reviews, essays, and short communications presenting new methods, conceptual approaches, or practical applications are published. Contributions that transcend specific cases and propose solutions or reflections applicable to other regions and contexts are valued.

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**EDITORIAL**

Presentamos el cuarto número de Andreettana, una edición que no solo cierra nuestro primer volumen, sino que también corona un año de extraordinarios descubrimientos y consolida nuestro compromiso con la ciencia y la conservación. Nos llena de orgullo compartir que a lo largo de este primer año hemos documentado para la ciencia un total de 50 nuevos taxones, un hito que incluye 43 especies, 5 variedades, una forma y un híbrido natural.

Este significativo aporte al conocimiento de la flora andina será celebrado en un escenario de excepción, ya que el lanzamiento de este número se desarrollará en la VIII Conferencia científica de orquídeas andinas. Este evento nos brindará la oportunidad de compartir estos hallazgos con la comunidad científica internacional, reafirmando la importancia de la colaboración y la investigación continua.

Extendemos nuestro más profundo agradecimiento a los autores, ilustradores, revisores y a todo el equipo editorial. Su rigurosidad y pasión han sido la fuerza motriz detrás del éxito y la calidad de este primer volumen.

José Portilla Andrade  
Director

**EDITORIAL**

We present the fourth issue of Andreettana, an edition that not only closes our first volume but also culminates a year of extraordinary discoveries and consolidates our commitment to science and conservation. We are filled with pride to share that throughout this first year, a total of 50 new taxa have been documented for science, a milestone that includes 43 species, 5 varieties, one form, and a natural hybrid.

This significant contribution to the knowledge of Andean flora will be celebrated in an exceptional setting, as the launch of this issue will take place at the VIII Scientific Conference on Andean Orchids. This event will provide us with the opportunity to share these findings with the international scientific community, reaffirming the importance of collaboration and continuous research.

We extend our deepest gratitude to the authors, illustrators, reviewers, and the entire editorial team. Their rigor and passion have been the driving force behind the success and quality of this first volume.

José Portilla Andrade  
Director

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## A new species of *Cischweinfia* (Orchidaceae: Oncidiinae) from Southeastern Ecuador: Morphological Description

Hugo Medina, José Portilla & Iván Portilla<sup>1</sup>

**ABSTRACT;** A new species of *Cischweinfia*, (*Oncidiinae* *Orchidaceae*), *Cischweinfia leucocheila*, collected for the first time in the province of Zamora Chinchipe, Ecuador, from material collected under the research permit "Rescue, conservation, reproduction and ex situ management of the flora of Ecuador," No. 004-2016-IC-FLO-FLO-DNB/MA, authorized by the Ministry of Environment of Ecuador under The Codification to the Forestry and Conservation of Natural Areas and Wildlife Law, granted to Ecuagenera Cia. Ltda.

**Keyword:** Ecuador, new species for Ecuador, *Oncidiinae*, miniature plants, discovered by Ecuagenera.

**INTRODUCCIÓN;** *Cischweinfia* Dressler & N.H. Williams, *gen. nov.*, was established in 1970 by Robert Louis Dressler and Norris Hagan Williams in the Bulletin of the American Orchid Society. (Vol. 39, N. ° 11, págs. 988-994), by transferring species previously classified within the genus *Aspasia* Lindl. The generic epithet *Cischweinfia* commemorates Charles Schweinfurth, Harvard orchidologist. The type species, designated as *Cischweinfia pusilla* (C. Schweinf.) Dressler & N.H. Williams, was originally described as *Aspasia pusilla* C. Schweinf., and was later recognized and formally included in the new genus *Cischweinfia*.

*Cischweinfia* is classified within the family *Orchidaceae* Juss., subfamily *Epidendroideae* Lindl. ex Endl. and tribe *Cymbidieae* Benth., subtribe *Oncidiinae* Benth. & Hook.f. previously some of its species were previously classified within the genera, *Aspasia* Lindl., *Trichopilia* Lindl., *Leucohyle* Klotzsch and *Miltonia* Lindl. Dressler and Williams' publication establishing *Cischweinfia* is seminal in the botanical literature of orchids. Their rigorous analysis and clear rationale for the creation of the new genus have withstood scientific scrutiny and continue to be the basis for taxonomic, floristic, or phylogenetic classification involving the genus *Cischweinfia*.

Currently, there are approximately eleven recognized species within the genus. Their distribution is neotropical, restricted to Central America and northwestern South

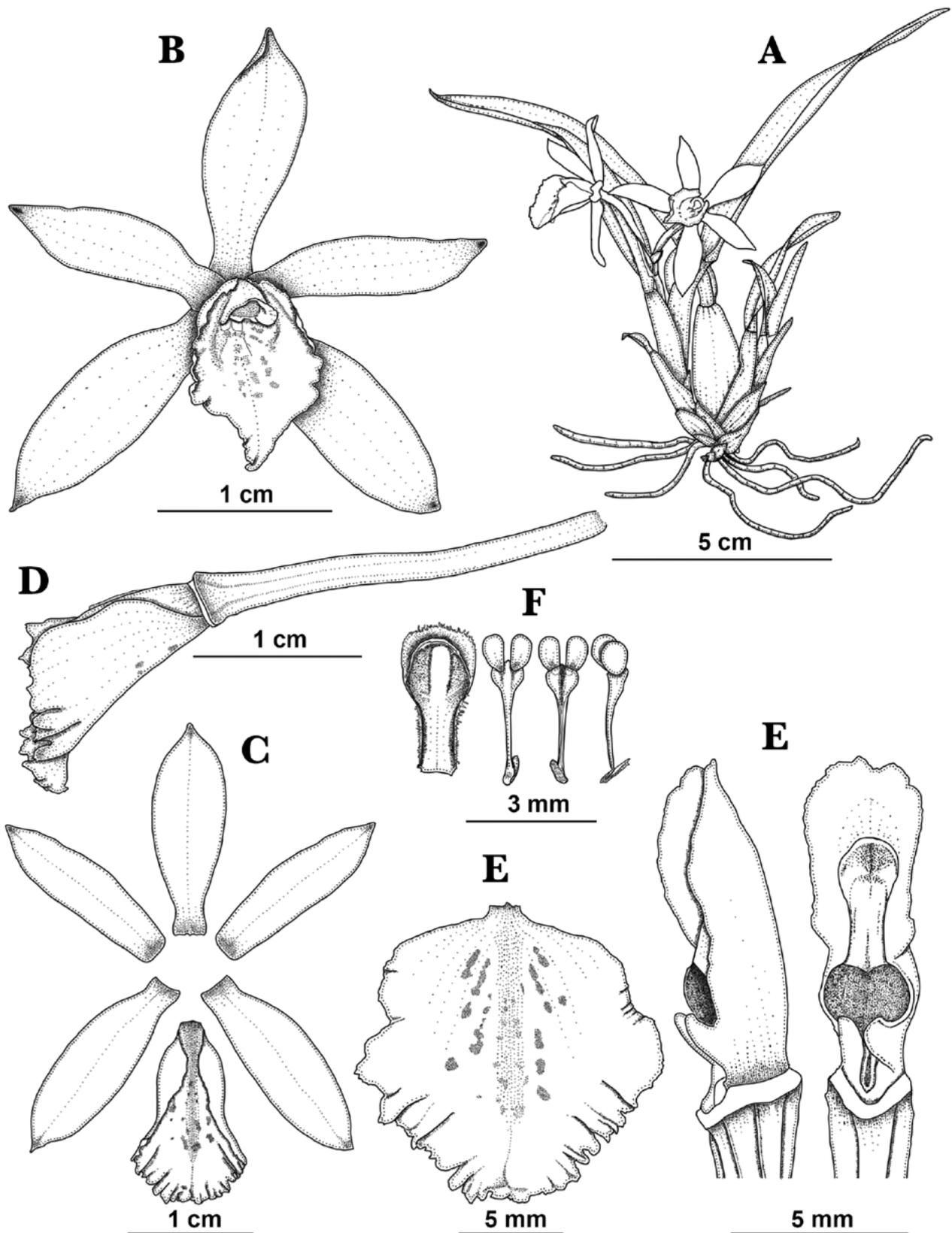


**Figure 1.** *Cischweinfia leucocheila* in bloom exsitu

America. They are found mainly in humid mountainous areas and cloud forests, at elevations that vary considerably depending on the species. Countries where *Cischweinfia* species have been recorded include Costa Rica, Panamá, Colombia, Ecuador, Perú and Bolivia.

*Cischweinfia* is a genus of epiphytic orchids, of caespitose habit. They have ellipsoid and laterally compressed pseudobulbs, which are subtended by imbricate foliar bracts. The leaves are usually single per pseudobulb, slender and often lanceolate. The inflorescence occurs as a short axillary raceme, emerging from the base of the pseudobulb or from the bract axils. The flowers are resupinate, small and delicate, with free, spreading, subsimilar sepals and petals. The labellum is simple, without distinct lobes and tubular in shape, lacking prominent callus. The column is straight, without foot, but has prominent basal wings shaped like teeth or processes. The clinandrium is conspicuously hooded. The pollinaria consists of two pollinia on a common spatulate stipe and a minute viscidium. The new species published here is compared with *Cischweinfia parva* (C. Schweinf.) Dressler & N.H. Williams.

1. Ecuagenera "Orchids from Ecuador" [produccionyge@ecuagenera.com](mailto:produccionyge@ecuagenera.com)



**Figure 2.** *Cischweinfia leucocheila* H.Medina et al. A. Habit. B. Three quarter profile of the flower. C. Dissected perianth. D. Detail of the column and lip profile view. E. Lip front and profile view. F. detail of the anther and pollinia, front and back view, drawing by Hugo Medina.

**TAXONOMY:** *Cishweinfia leucocheila* H.Medina, J.Portilla *sp. nov.*

**TIPE:** ECUADOR. Zamora Chinchipe, canton Zamora, parish San Carlos de Las Minas, near the creek Del Fierro, 4°04'59.84" S 78°49'20.97" O, ca. 650 m. grows under the canopy of trees on thin branches, flourished in cultivation in Ecuagenera Gualaceo 2024 EG 0573 (holotipo: HA). Fig. 1-2. Fig. 3 A-B. 4 A-B

**DIAGNOSIS:** *Species nova similis est Cishweinfia parva* (C. Schweinf.) Dressler & N.H. Williams. *Sed differt praecipue floribus pallidoribus et labello apice magis acuminato*

### DESCRIPTION:

**Plant;** Epiphytic herb, caespitose, small 12.0–15.0 cm long; **roots** appear at the nodes of rhizomes, glabrous, white, elongated, green coppice 10.0–12.0 cm long, 0.1 cm in diameter; **pseudobulbs** elliptic to ovoid-elliptic, flattened, monophyletic, 3–3.5 cm long, 0.9–1.2 cm wide, appears from a rhizome of 0.8–1.0 cm long, 0.3–0.5 cm in diameter, wrapped at the base by 3–5 foliaceous sheaths, sheaths articulated with cataphylls, erosive-hyaline margins, pseudobulbs covered by two lateral leaves and one apical leaf, the lateral leaves fall off as they mature, leaving only the apical leaf.; **leaf** light green, conduplicate at base, narrowly elliptic to lanceolate-elliptic, acute, mucronate, coarse, subcoriaceous, 3.0–13.0 cm long, 0.6–1.9 cm wide, with an abaxially prominent midrib, acuminate apex, truncate base, are provided by a basal bract of 2.2–2.8 cm long, 1.0–1.4 cm wide; **inflorescence** lateral, emerging from the axil of one of the pods when tender, in a short, semi-erect raceme, with 2 flowers that open at the same time; **terete peduncle**, cylindrical, 3.0 cm long, 0.13 cm diameter, provided with a lanceolate bract, acuminate apex, truncate base, 0.85 cm long, 0.19 cm diameter; **bracts** florets broad, obtuse, hyaline, loose, 0.8 cm long, 0.4 cm wide; **pedicel** erect, greenish, glabrous, 3.0 cm long, 0.2 cm diameter; **ovari** pedicellate, hexamerous. 2.4 cm long, 0.2 cm diameter, base covered by an acuminate bract 0.5 cm long, 0.4 cm wide, light green, apex acuminate, base truncate; **flowers** small with barely perceptible fragrance, 2.8–3.0 cm diameter, open, with yellowish-green sepals and petals, white lip, yellow hypocotyl with spaced brown macules; **dorsal sepal** 1.7 cm long, 0.6 cm wide, and 0.3 cm at the base, similar in shape and color to the laterals, apex acute, barely bent forming an apiculus, slightly deflexed backwards, base cuneate; **lateral sepals** bright green, lanceolate, entire margin, acute apex, 3-veined, barely discernible, base cuneate, apex acuminate, barely deflexed backward, 1.7 cm long, 0.6 cm wide, and 0.3

cm at base; **petals** lancéoles, flat, entire margin, similar color to sepals, 1.6 cm long, 0.4 cm wide, apex acuminate, slightly bent and deflexed backwards, base truncate; **labellum** semi-orbicular, 1.4–1.5 cm in diameter, tubular from base to hypocotyl ca 0.8 cm covering column halfway, lateral view, margin wavy, marked with a yellow stripe from base to hypocotyl, with linearly formed light purple macules, apex acute, base obtuse-truncate; **column** white, spatulate, 0.9 cm long, 0.3 cm wide at apex including wings, 0.15 cm wide at base; slightly tinged with yellow and provided with two velutinous wings on the stigma side, barely covered by hairs, inclined towards the apex 0.2 mm long, 0.07 cm diameter; **cavity** stigmatic oval, widens at the margins, 0.21 cm in diameter, narrows to give rise to the winged cuculla that covers the pollinia, 0.5 cm long, 0.2–0.3 cm wide, crenulate apex. **clinandrio** oval, shallow, shorter than the anther; la **anther** cuculate, solid purple, covered with hairs, 0.3 cm long, 0.2 cm wide at apex, 0.08 cm at basal end; **polynyas** in pairs, elongated, slit, yellow, 0.08 cm long, 0.05 cm wide each, 0.08 cm long, 0.05 cm wide each; **stipe** elongated hyaline, ribbed at base, widened apex giving shape of a cobra snake head 0.25 cm long, with a long yellow-orange viscid 0.07 cm long, 0.02 cm diameter, reaching 0.3 cm long; **seed** not seen.

### ETYMOLOGY

Named from the Greek "**leukos**" (λευκός) meaning "white" and from the Greek word "**cheilos**" (χείλος) meaning "lip" in reference to the labellum of the flower.

### DISTRIBUTION

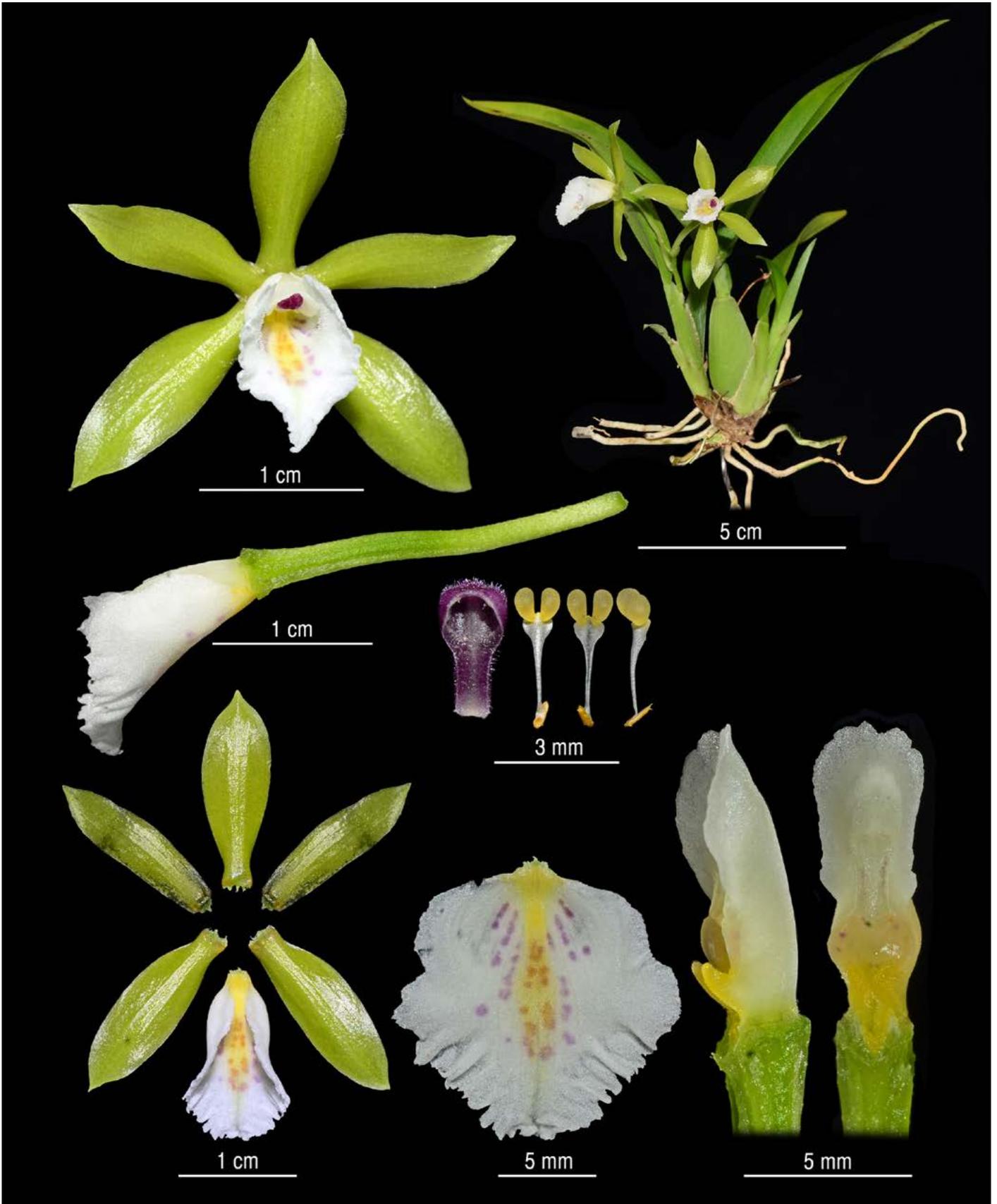
*Cishweinfia leucocheila*, only known from the Ecuadorian Amazon in the province of Zamora Chinchipe, gold mining sector.

### PHENOLOGY

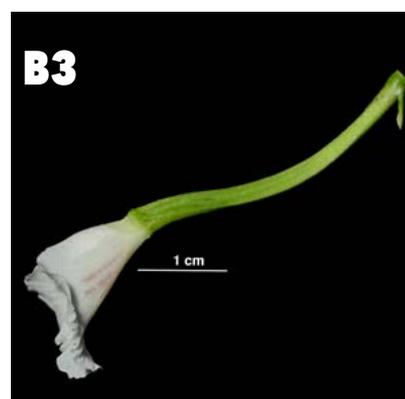
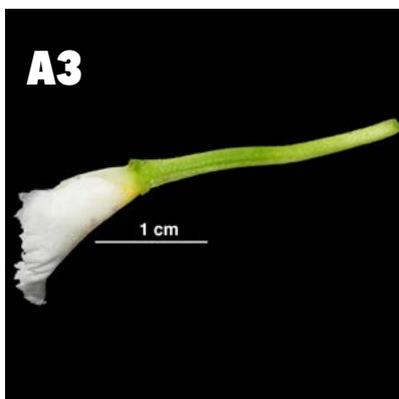
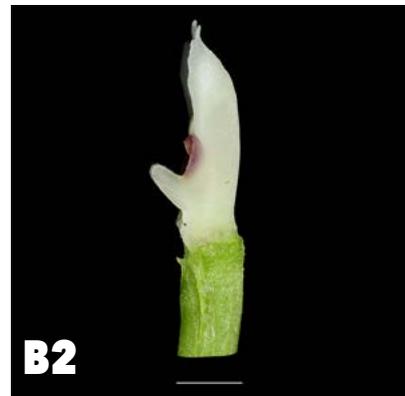
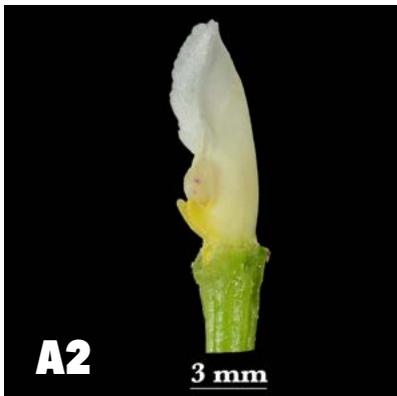
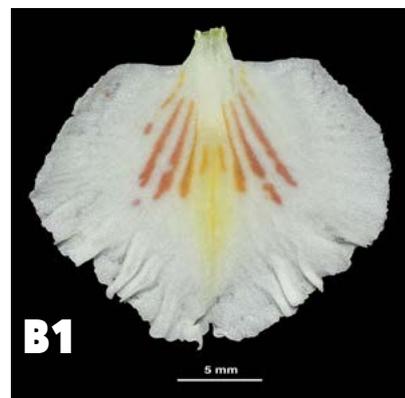
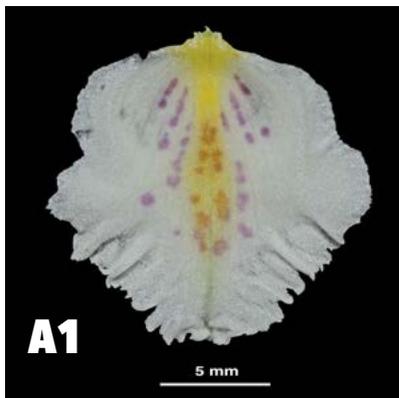
In cultivation this species has been seen in flower in January and July.

### HABITAT AND ECOLOGY:

Found growing epiphytes in primary forest, under the tree canopy, in association with lichens and mosses in an altitudinal range of 1000 to 1200 meters above sea level.



**FIGURE 3:** *Cischweinfia leucocheila* Medina et al. Plant used for the elaboration of a laminate, used to describe the species and later deposited in the herbarium, by Hugo Medina.



**Figure 4.** Comparison of the new specimen with *Cischweinfia parva* (C. Schweinf.) Dressler & N.H. Williams  
A. *Cischweinfia leucocheila*, B. *Cischweinfia parva* A-1 B-1 flattened labellum front view in 5 mm scale, A-2 B-2 column profile view, in 3 mm scale, A-3 B-3 column and labellum in their natural form, profile view in 1 cm scale.

## DISCUSSION

The new species compares with *Cischweinfia parva* (C. Schweinf.) Dressler & N.H. Williams, but differs in coloration of flowers light green, apex lip apiculate with reddish macules, arranged linearly on a yellow base on the hypocotyl vs. yellow-brown flowers, apex lip rounded with reddish lines on a faintly yellowish base; column whitish, cucula crenulate, wings yellow, sloping toward apex, stigmatic cavity yellow vs. column white, cucula dentate, wings white nearly horizontal, stigmatic cavity light brown in *Cischweinfia parva*.

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## Three species of *Specklinia* (Orchidaceae: Pleurothallidinae) of the Amazon and northwestern Ecuador: Morphological Description

Hugo Medina, José Portilla & Iván Portilla<sup>1</sup>

**ABSTRACT:** Three new species of *Specklinia*, (*Pleurothallidinae* Orchidaceae), *Specklinia byronanguisacae*, *Specklinia kakabadsei* and *Specklinia leptosepala*, collected for the first time in the province of Morona Santiago, Zamora Chinchipe and Esmeraldas Ecuador, from material collected under the research permit "Rescue, conservation, reproduction and ex situ management of the flora of Ecuador," No. 004-2016-IC-FLO-FLO-DNB/MA, authorized by the Ministry of Environment of Ecuador under The Codification to the Forestry and Conservation of Natural Areas and Wildlife Law, granted to Ecuagenera Cia. Ltda.

**Keyword:** Ecuador, epiphyte, new species for Ecuador, *Pleurothallidinae*, miniature plants, discovered by Ecuagenera.

**INTRODUCTION:** The genus *Specklinia* was proposed by Lindley (1830) and stands as a lineage of miniature orchids within the subtribe *Pleurothallidinae*. Historically, it was relegated as a synonym of *Pleurothallis* *sensu lato*, until its status was rehabilitated at the beginning of the 21st century based on morphological diagnoses and phylogenetic evidence. This paper presents a synthesis of the taxonomic history of the genus, its distinctive characters, and its infrageneric and phylogenetic delimitation, emphasizing the integration of morphological and molecular evidence as a pillar in the systematics of *Pleurothallidinae*. The subtribe *Pleurothallidinae* Lindl. stands out as one of the most diverse clades within the family Orchidaceae, comprising more than 4,000 species. Although Lindley established *Specklinia* in 1830, the genus was quickly subsumed under the broad conceptualization of *Pleurothallis*. In 1972, Garay & Sweet designated *Epidendrum lanceola* Sw. (= *Specklinia lanceola*) as the lectotype, providing a crucial nomenclatural anchor. The seminal taxonomic work of C.A. Luer, particularly in his series *Icones Pleurothallidarum*, was instrumental in reexamining the morphological variation of the subtribe and rehabilitating *Specklinia* as a distinct entity. Confirmation of its status came from molecular studies by Pridgeon and Chase (2001-2005), which demonstrated the polyphyly of *Pleurothallis* s.l.,

validating the delimitation of *Specklinia*.

*Specklinia* is characterized by its tufted, miniature habit, with short ramicaules and leathery leaves that vary from linear to oblong-lanceolate. Its flowers are small, with free or slightly connate sepals and entire, obtuse petals. The narrow-ligulate, generally mobile labellum and the short column with lateral wings are consistent features. A key diagnostic character is the presence of four naked pollinia, without caudicles or viscidia, which distinguish *Specklinia* from related genera such as *Muscarella* and *Acianthera*.

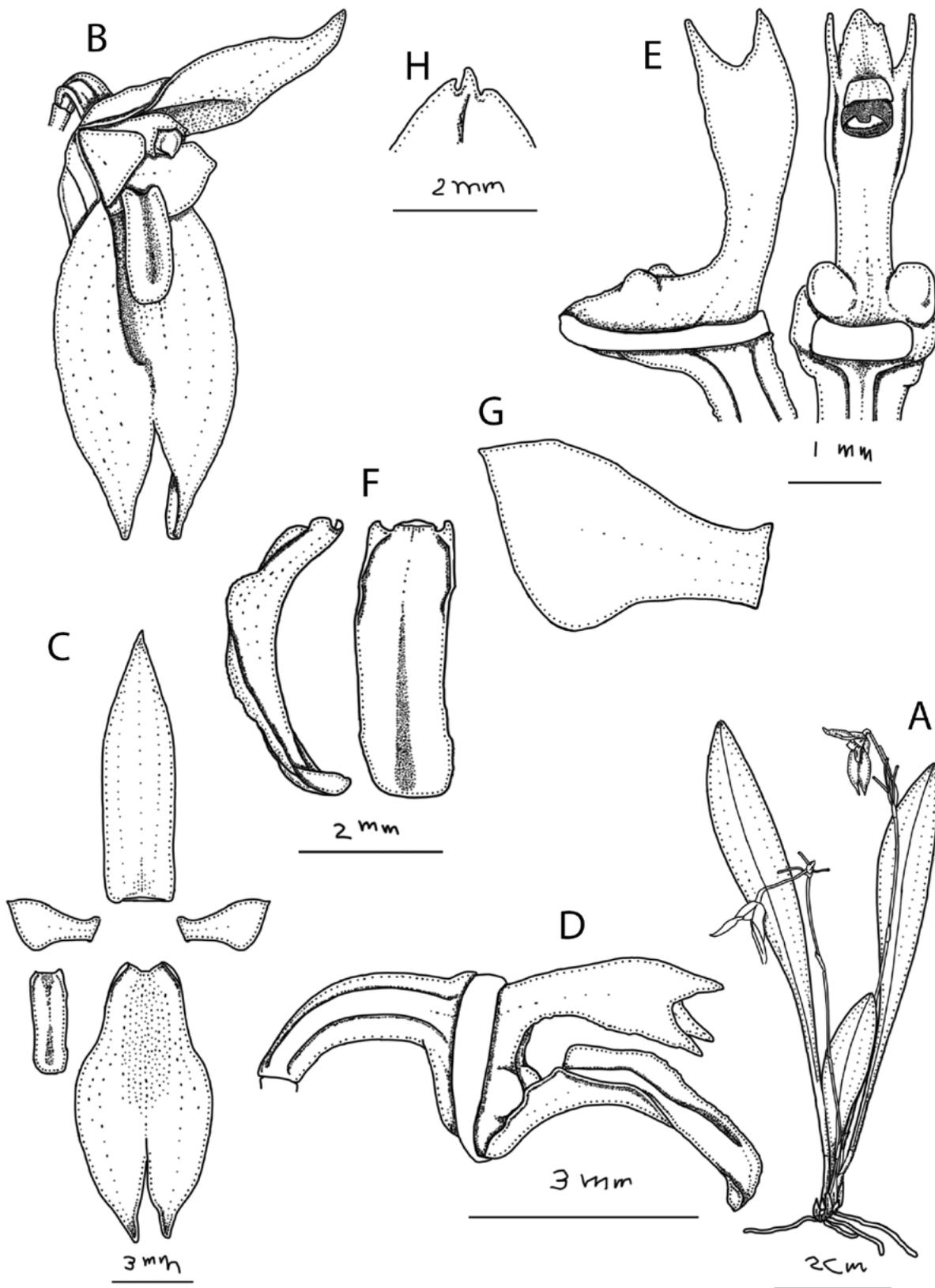
Anatomical evidence reinforces its phylogenetic position, and floral characters are useful for delimiting its subgenera:

***Specklinia*:** Free sepals.

***Sarcinula*:** Fleshy, imbricate sepals.

***Sarracenella*:** Sepals fused together to form a tube.

Recent phylogenetic analyses (based on markers such as ITS and matK) have consolidated the monophyly of *Specklinia*, provided that *Muscarella* is excluded. Although some vegetative characters show homoplasy, classic floral traits remain excellent diagnostic features. The genus currently comprises between 100 and 110 species, with a wide distribution from Mexico and the Caribbean to southern Brazil and the Andes. Despite molecular circumscription, the delimitation of species complexes, such as *S. grobyi* and *S. endotrachys*, remains an active taxonomic challenge, with descriptions of new species constantly refining knowledge of the genus. This underscores the need to integrate morphology, phylogeny, and ecology for a robust taxonomy. The combination of these approaches has consolidated *Specklinia* as a valid, coherent, and monophyletic genus, highlighting its importance in the conservation and study of Orchidaceae diversity. The three new species of *Specklinia* presented in this work are compared with *Specklinia grobyi* Bateman ex Lindl, *Specklinia calderae* Luer, and *Specklinia corniculata* (Sw.) Mutel *Specklinia calderae* Luer.



**Figure. 1.** *Speclinia byronanguisacae* H.Medina et al. A. Habit. B. Three quarter profile of the flower. C. Dissected perianth. D. Detail of the column and lip profile view. E. front and side view of the column. F. side view and front view of the labellum. G. side view of the left petal. H. Approach of the leaf apex. drawing by Hugo Medina.

**TAXONOMY:** *Specklinia byronanguisacae* H.Medina, J.Portilla *sp. nov.*

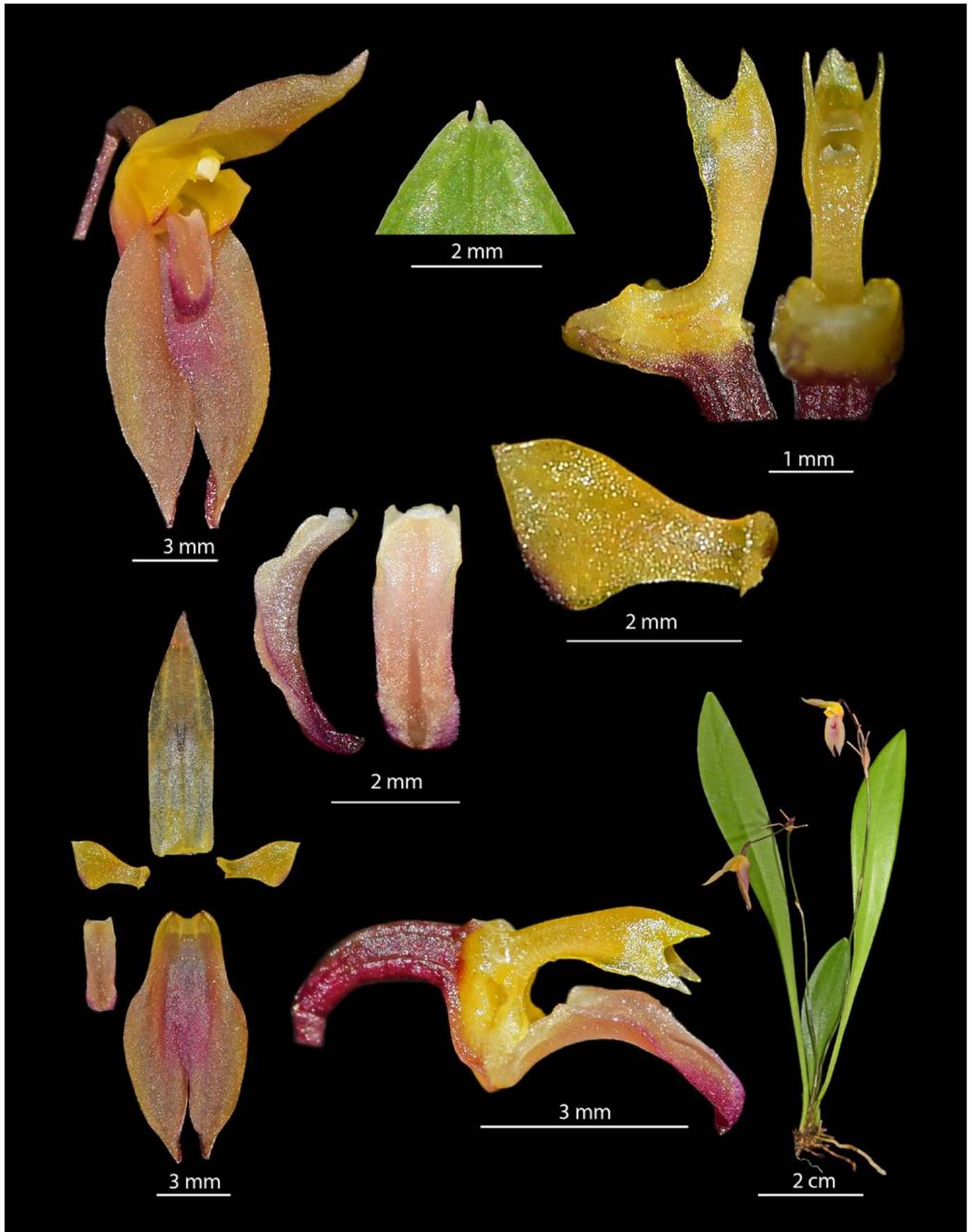
**TYPE:** ECUADOR. Morona Santiago, Macas canton, San Isidro parish between the Abanico and Upano rivers, 2°06'55.21"S 78°09'33.99" O, ca. 1400 m. grows under the canopy of trees on thin branches, flourished in cultivation in Ecuagenera Gualaceo 2024 EG 0689 (holotipo: HA). Fig. 1-2. Fig. 3 A-B. 4 A-B

**DIAGNOSIS:** *habitus caespitosus, folia elliptica, inflorescentia cum racemo laxo, flores colore distinctivo inter flavum pallidum et roseos ad purpureos tonos, sepala lateralia omnino coalita in synsepalum ellipticum, sepalum dorsale colore et forma simili, petala parva, carnosa, oblanceolata, labellum lanceolato-ovale, bicolorum, cum basi flava et parte distali intense purpurea, lobus medius notabiliter incrassatus, columna robusta, brevis, et alis latis quae per latera extenduntur.*

**DESCRIPTION:** **Epiphytic**, tufted plant, erect to ascending herb, up to 9.0 cm long, excluding the inflorescence; yellowish-white roots 2.0 cm long, 0.1 cm in diameter; **rhizome** 0.1 cm long, 0.1 cm in diameter; Stems 0.3 cm long, 0.06 cm in diameter, with two internodes, scarios sheaths 1.0 cm long, 0.4 cm wide, acuminate apex, truncated base, with a ring near the base of the upper internode; **Unifoliate leaves** 3.05–6.8 mm long, 0.7–1.0 cm wide, linear to oblanceolate in shape, obtuse-acute, mucronate at the apex (mucro 0.1 cm long), entire margins, glossy, leathery, with a longitudinal groove along the midrib on the upper surface, olive green in color, abruptly tapering into a petiole 1.0 cm long and 0.1 cm in diameter; **inflorescence** 7.0–8.0 cm long, simple raceme, sessile, arising from the base of the leaf, emerging from the ring, erect, glabrous; spatulate bract 0.3–0.6 cm long, 0.2–0.4 cm wide; peduncle filiform, longer than the leaf, 7.8 cm long, 0.02 cm in diameter, greenish in color, with 3 internodes covered by tubular-infundibuliform bracts, oblique, acute, spatulate, 0.3–0.4 cm long, 0.6 cm wide; the rachis is 0.2 cm long, divided by 5 internodes 0.03–0.06 cm in diameter, with up to 5 flowers, solitary, ascending, successive; **loral bracts** 0.4–0.5 cm long, 0.12 cm wide, obliquely broad, obtuse, with an acuminate and apiculate apex, leafy becoming papery, glabrous; **ovary** 0.25 cm long, 0.09 cm wide, obconical, hexamerous, reddish in color; pedicel 1.5 cm long, 0.06 cm in diameter; **Flowers** semi-open, 1.3–0.4 cm in diameter; sepals orange-brown, darker on the underside; petals yellow, barely tinged with brown on the wings; labellum orange-brown, with two keels; column ochre yellow; base of column ochre yellow;



**Figure. 2.** Comparison of the new specimen with the most similar species. **A.** *Specklinia byronanguisacae*, photographed by Hugo Medina, **B.** *Specklinia calderae* Luer. Photo courtesy of © Santiago Mesa, taken from the IOSPE website.



**Figure 3.** *Speclinia byronanguisacae* Medina et al. Plant used for the elaboration of a laminate, used to describe the species and later deposited in the herbarium. by Hugo Medina.

anthers white; **sepals** slightly concave, more noticeable at the base, with entire margins; the **dorsal sepal** 1.0 cm long, 0.3 cm wide, lanceolate, acuminate, with 3 barely visible veins, thickened and glabrous margin, acuminate apex stained brown, truncate base; **lateral sepals** connate, fused, open at the apex, oblanceolate, obtuse, 1.02 cm long, 0.5 cm wide, without veins, entire margin, thickened and glandular-papillose towards the acuminate apex, narrow truncated base; **petals** 0.34 cm long, 0.08 cm wide at the base, 0.2 cm wide near the apex, spatulate, apex acuminate, base truncate, without veins, margin slightly dentate; **label** 0.4 cm long, 0.12 cm wide, fleshy, blade lanceolate-obovate, slightly arched, glandular-papillose, with a groove along the middle, slightly wider toward the apex; **Column** 0.4 cm long, 0.1 cm wide at the winged part, slightly arched, with a ventral concavity 0.07–0.1 cm in diameter, two vertical wings, entire, 0.2 cm long, 0.03 cm wide, apically bidentate, acute and falcate 0.03 cm wide ending in a point; the clinandrium ovate; the base of the column 0.1 cm long, 0.09 cm wide, fleshy, curved, solid yellow; the stigmatic cavity 0.05 cm in diameter, semi-orbicular; the rostellum is laminar, oblong; **capsule** not seen..

**ETYMOLOGY:** Named in honor to Byron Anguisaca, Ecuagenera staf, miniature orchid lover, and live sales expert.

**DISTRIBUTION:** *Specklinia byronanguisacae*, only known from the Ecuadorian Amazon in the province of Morona Santiago.

**PHENOLOGY:** In cultivation this species has been seen in flower in April to August.

**HABITAT AND ECOLOGY:** found growing epiphytes in primary forest, under the tree canopy, in association with lichens and mosses in an altitudinal range of 1400 meters above sea level.

**DISCUSSION:** The new species is compared with *Specklinia calderae* Luer, from which it differs mainly in its orange-yellow flowers on a brown background, arched dorsal sepal deflexed at the apex, fused lateral sepals forming an open synsepal at the apex, broadly winged spatulate petals, bilobed lip with apex deflexed toward the base, broadly winged column at the apex with a foot with two protuberances on the sides, in *Specklinia byronanguisacae*. Vs. yellow flowers on an orange-brown base, with dark brown lines, dorsal sepal, barely deflexed at the apex, lateral sepals noticeably narrower, petals crossed

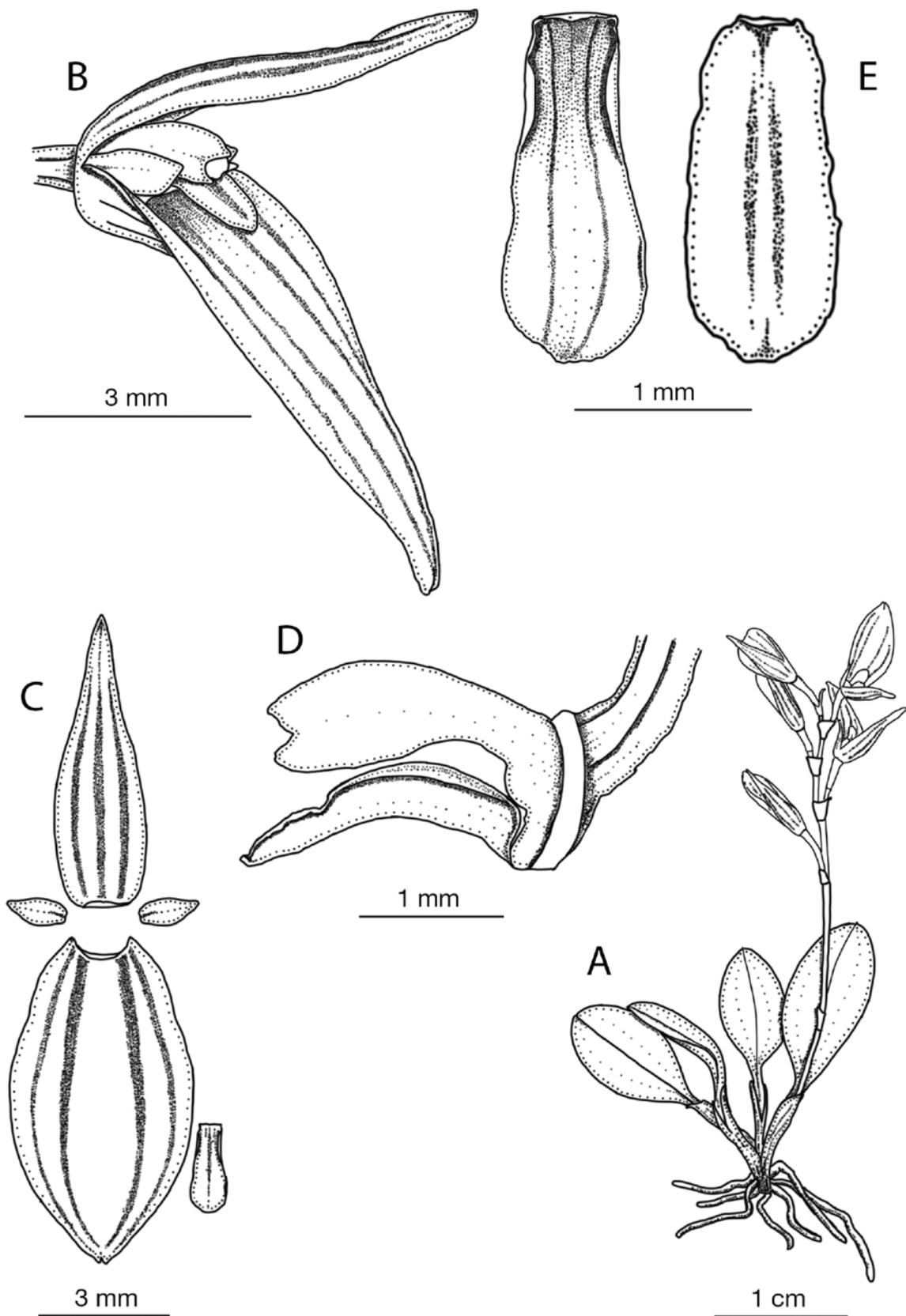
from base to apex by a brown line, lip barely deflexed at the apex, column without lateral wings with a very short foot, without protuberance, in *Specklinia byronanguisacae*

**TAXONOMY:** *Specklinia kakabadsei* H.Medina, J.Portilla *sp. nov.*

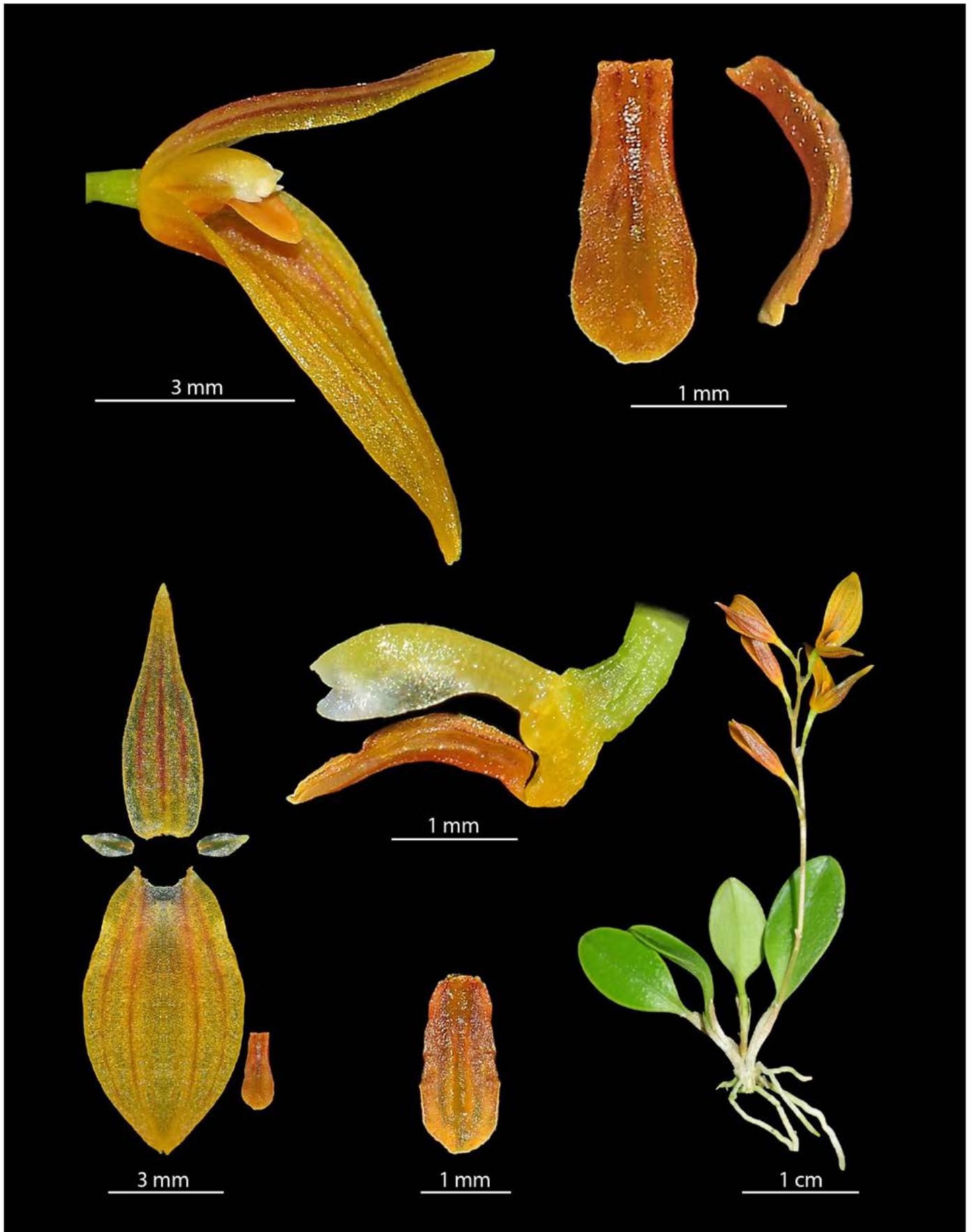
**TYPE:** ECUADOR. Esmeraldas, canton San Lorenzo, parish Alto Tambo, near the Mira River 0°55'52.41" N 78°32'03.12" O, ca. 400 m. grows under the canopy of trees on thin branches especially on old fallen trees, flourished in cultivation in Ecuagenera El Panguí 2024 EG-0426 (holotipo: HA). Fig. 4–5. Fig. 6 A–B.

**DIAGNOSIS:** *Species haec floribus luteo-aurantiacis vel fulvo-aurantiacis distinguitur; sepalis luteo-aurantiacis, striis longitudinalibus brunneis vel purpureis notatis; sepalis lateralibus connatis, synsepalis concavo et lato formantibus; petalis brevissimis et falcatis; labello intense luteo, quattuor lineis longitudinalibus brunneis ornato; columna brevi, robusta, colore pallido.*

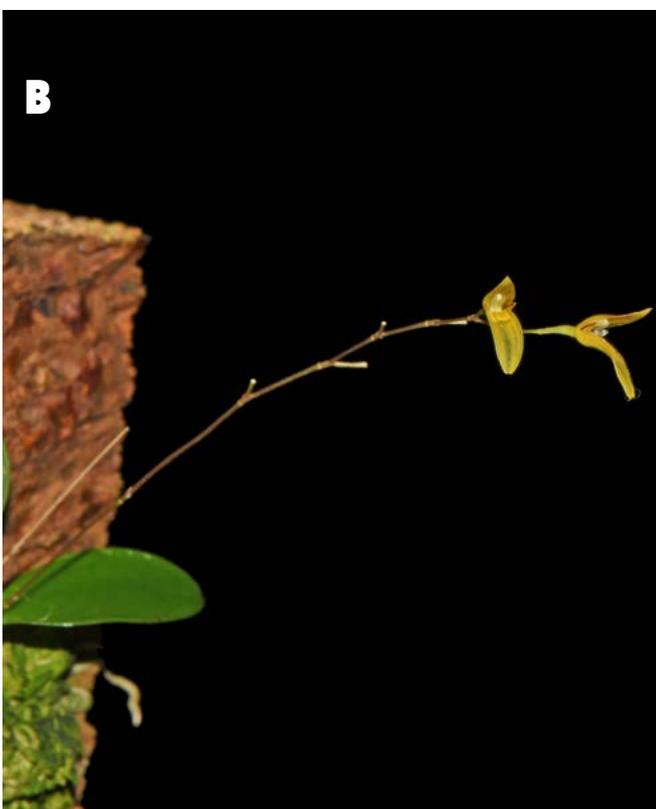
**DESCRIPTION:** **Cespitose plant**, erect to ascending grass, up to 2.0 cm long, excluding the inflorescence, including the inflorescence 4.5 cm long; greenish-white roots 1.5 cm long, 0.05 cm in diameter; **rhizome** 0.14 cm long, 0.07 cm in diameter. Stems 1.0 cm long, 0.6 cm in diameter, with two internodes, scarious sheaths 0.3–0.8 cm long, 0.2–0.3 cm wide, apex acuminate, base truncate, with a ring near the base of the upper internode; **leaves** 1.0–1.5 cm long, 0.5–0.6 cm wide, elliptical to elliptical-obovate, obtuse, mucronate at the apex (mucro 0.04 cm long), margins entire, glossy, leathery, with a longitudinal groove along the midrib on the upper surface. slightly glandular, olive green in color, tapering abruptly into a petiole 0.5 cm long and 0.06 cm in diameter; **Inflorescence** 2.2 cm long, racemose, arising from the ring, erect, glabrous; bract spatulate, 1.17 cm long, 0.1 cm wide; peduncle filiform, longer than the leaf, 2.3 cm long, 0.05 cm in diameter, greenish in color, with 2 tubular-infundibuliform bracts, oblique, acute, membranous, 0.1–0.2 cm long, 0.16–0.2 cm wide, hyaline; the rachis is 1.2 cm long, with 4 to 7 secondary flowers, ascending and simultaneous; **Floral bracts** 0.14 cm long, 0.08 cm wide, obliquely tubular-infundibuliform, acute, with a short, apiculate apex, membranous, glabrous, hyaline; **pedicellate ovary** 0.2 cm long, 0.05 cm wide, obconical, hexamerous, greenish in color; pedicel 0.25 cm long, 0.04 cm in diameter, greenish-yellow in color; **Flowers**, semi-open, 0.5–0.8 cm in diameter; sepals orange-yellow to orange-brown, with three longitudinal lines, petals hyaline



**Figure. 4** *Specklinia kakabadsei* H.Medina et al. A. Habit. B. Three quarter profile of the flower. C. Dissected perianth. D. Detail of the column and lip profile view. E. view of the labellum, front in natural position and flattened. drawing by Hugo Medina.



**Figure. 5.** *Specklinia kakabadsei* Medina et al. Plant used for the elaboration of a laminate, used to describe the species and later deposited in the herbarium. by Daniela Tacuri.



**Figure 6.** Comparison of the new species. **A.** *Specklinia kakabadsei*, photographed by H. Medina. **B.** *ASpecklinia grobyi* (Bateman ex Lindl, Photo courtesy of © Flickr orchids species, taken from the IOSPE website.

tinged with yellow, streaked with orange, more noticeable at the base, labellum orange, with two keels, column yellowish, column foot yellow, anther white; **sepals** slightly concave, more noticeable at the base, with cellular-papillose margins; **dorsal sepal** 0.7 cm long, 0.2 cm wide, lanceolate, acute, 3-nerved, thickened and margin slightly dentate, glandular-papillose, apex acuminate, base truncate; **lateral sepals** completely fused into an oblong-lanceolate, obtuse synsepal, 0.75 cm long, 0.4 cm wide, 4-nerved, margin slightly dentate, thickened and glandular-papillose towards the apex; **petals** hyaline, 0.14 cm long, 0.06 cm wide, obliquely lanceolate, acute, with 1 vein, with entire margin, acuminate apex, truncate base; **Labellum** 0.2 cm long, 0.08 cm wide, fleshy, blade oblong-ovate, rounded, slightly pandurate, 2-veined, glandular-papillose, with a groove along the middle, with a pair of submarginal and longitudinal thickenings covering its entire length, with a depression near the apex, with a short channel in the basal part on the central vein; **column** 0.2 cm long, 0.08 cm wide in the winged part, slightly arched, with a ventral concavity and two vertical wings, broad, entire, 0.14 cm long, 0.03 cm wide, apically bidentate, acute and falcate; the clinandrium is ovate; the foot of the column is 0.1 cm long, 0.4 to 0.06 cm wide, fleshy, incurved, with two hemispherical calluses, thickened and papillose near the base; the ventral **stigmatic** cavity, measuring 0.05 by 0.04 cm, is semi-orbicular; the rostellum is laminar and oblong; the **capsule** is not visible.

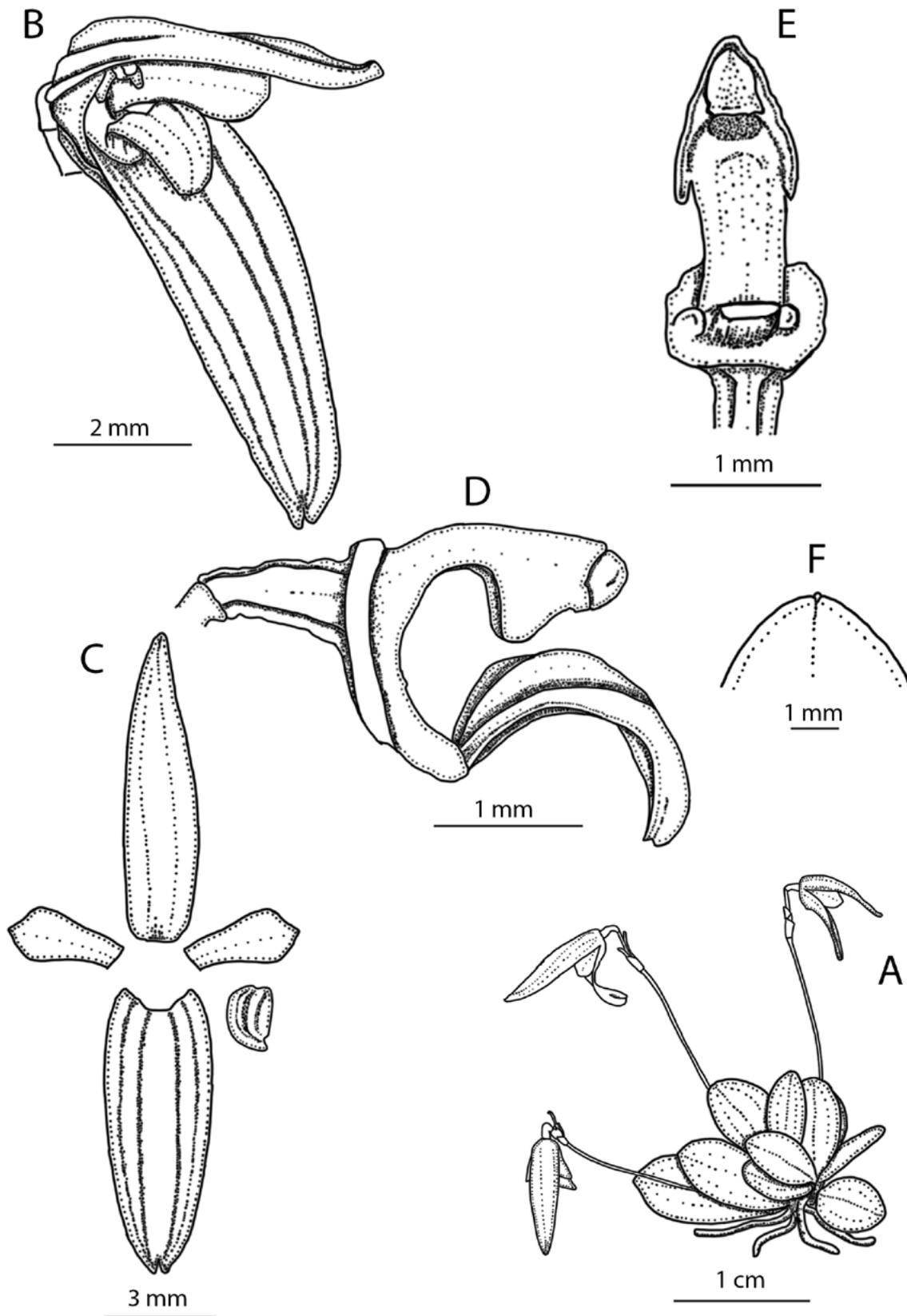
**ETYMOLOGY:** Named for Yolanda Kakabadse, an Ecuadorian conservationist, currently founder and director of Fundación Natura (Quito). She has also served as minister of Medio Ambiente in Ecuador from 1998 to 2000, as president of Unión Internacional para la Conservación de la Naturaleza (UICN), and as president of Fondo Mundial para la Naturaleza.

**DISTRIBUTION:** *Specklinia kakabadsei*, well-known in northwestern Ecuador in the province of Esmeraldas.

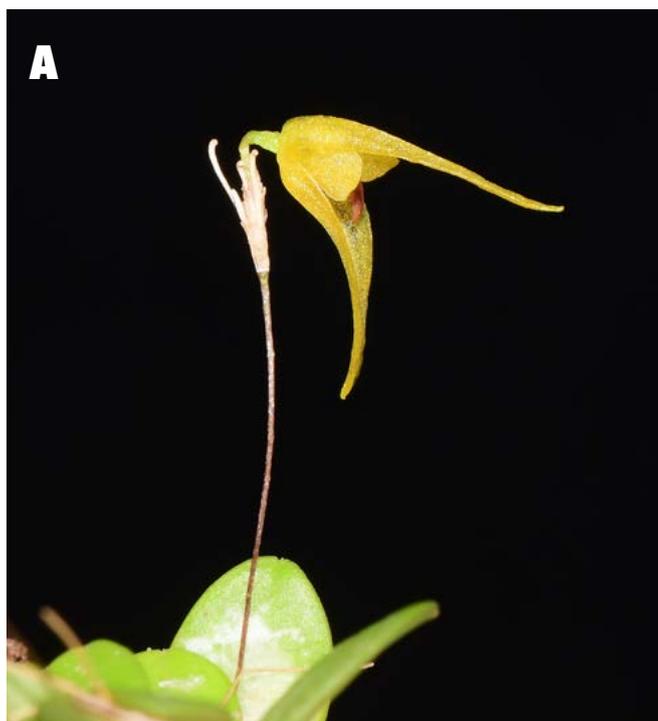
**PHENOLOGY:** In cultivation this species has been seen in flower in February, March, June and September.

**HABITAT AND ECOLOGY:** It likes warm habitats, grows in primary forests, on trees without moss, with high environmental humidity, in an altitudinal range of 300 to 400 meters above sea level.

**DISCUSSION:** The new species compares with *Specklinia grobyi* Bateman ex Lindl. but differs in coloration of flowers Yellow-orange to brownish-orange vs. greenish-yellow. Lateral sepals are completely fused, forming a concave synsepalum; both lateral and dorsal sepals often have prominent veins. Vs. Lateral sepals connate, fusion less



**Figure 7.** *Specklinia leptosepala* H.Medina et al. A. Habit. B. Three quarter profile of the flower. C. Dissected perianth. D. Detail of the column and lip profile view. E. Front view of the column. F. Approach of the leaf apex. drawing by Hugo Medina.



**Figure 8.** Comparison of the new specimen with the most similar species. A. *Specklinia leptosepala*, Lindl photographed by Daniela Tacuri. B. *Specklinia corniculata* [Sw.] Lindl, Photo courtesy of © Ruth Guillard, taken from the IOSPE website.

complete, and overall shape of synsepalum narrower and more elliptical. The veins on the dorsal and lateral sepals of *S. grubyi* are noticeably less pronounced. The petals in *Specklinia kakadadsei* are shorter vs. in *S. grubyi*, covering the column. Labellum with more prominent lateral lobes, papillose surface, vs. lip with short lateral lobes, no papillae on the surface.

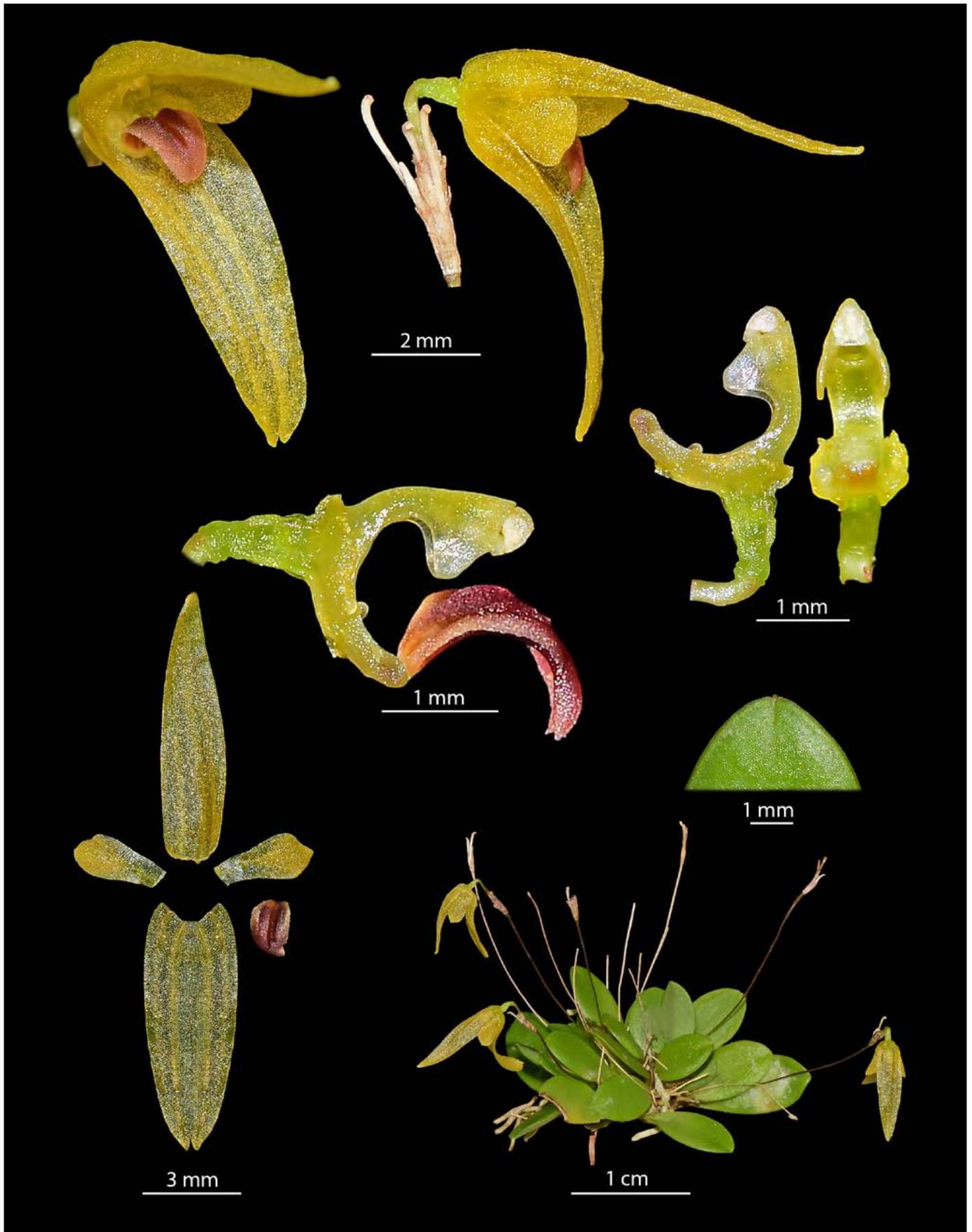
**TAXONOMY:** *Specklinia leptosepala* H.Medina, J.Portilla *sp. nov.*

**TYPE:** ECUADOR. Imbabura: Cotacachi canton, Cielo Verde parish, near Magdalena River, 0°16'22.91" N 78°50'52.65" O ca. 850 m. grows in primary forest, cultivated in the Ecuagenera El Pangui collection 2024. EG 0688 (holotipo: HA). Fig. 7-9. Fig. 8 A-B.

**DIAGNOSIS:** *Planta epiphyta nana, caespitosa. Folia coriacea, oblonga ad obovato-elliptica. Inflorescentia solitaria, terminalis, erecta, filiformis et folio longior, cum flore terminali luteo. Sepala lateralia connata, sinsepalum concavum et acuminatum formantia. Sepalum dorsale ellipticum, apice acuto. Petala falcata. Labellum bilobatum, lobis lateralibus erectis et lobo centrali parvo. Columna brevis, arcuata, ad apicem dilatata, duas alas formans, ubi stigmata et anthera sita sunt.*

**DESCRIPTION:**

**Cespitose plant**, erect to ascending grass, up to 1.04–1.35 cm long, excluding the inflorescence, including the inflorescence 2.45 cm long; greenish-white roots 1.45 cm long, 0.06 cm in diameter; **rhizome** 0.12 cm long, 0.06 cm in diameter; **stems** 0.80 cm long, 0.5 cm in diameter, with two internodes, scarios sheaths 0.3–0.8 cm long, 0.2–0.3 cm wide, apex acuminate, base truncate, with a ring near the base of the upper internode; **leaves** 0.6–1.2 cm long, 0.4–0.5 cm wide, elliptical to elliptical-obovate, obtuse, mucronate at the apex (mucro 0.009 cm long), margins entire, leathery, with a longitudinal groove along the midrib on the upper surface, abscissal layer barely glandular, olive green in color, tapering abruptly into a petiole 0.4 cm long and 0.05 cm in diameter; **inflorescence** 2.0 cm long, racemose, arising from the ring, erect, glabrous; bract spatulate, 0.2 cm long, 0.12 cm wide; **peduncle** filiform, much longer than the leaf, 1.8 cm long, 0.02 cm in diameter, brown, without bracts; rachis 0.08 cm long, with 4 to 5 solitary, ascending, successive flowers; **floral bracts** 0.2 cm long, 0.12 cm wide, obliquely campanulate-infundibuliform, obtuse, with a short, apiculate apex, truncate base, papery; **ovary** 0.1 cm long, 0.045 cm wide, obconic, hexamerous, lemon green in color; **pedicel** 0.34 cm long, 0.03 cm in diameter, greenish-yellow, tinged with brown, **flowers**, semi-open, 0.2–0.7 cm in diameter; **sepals** solid yellow, with two longitudinal lines, petals



**Figure 9.** *Specklinia leptocepala* Medina et al. Plant used for the elaboration of a laminate, used to describe the species and later deposited in the herbarium. by Hugo Medina.

intense yellow at the apex, labellum orange-brown, with two keels, column yellow, base of column yellow, anther yellowish; **sepals** slightly concave, more noticeable at the base, with entire margins; **dorsal sepal** connate, forming a synsepal 0.8 cm long, 0.2 cm wide, linear, acute, with two barely perceptible veins, entire margin, glandular-papillose, acute apex, truncated base; lateral sepals completely fused into a linear-oblong synsepal, obtuse, 0.8 cm long, 0.3 cm wide, 2-nerved, entire margin, thickened and glandular-papillose towards the apex; **petals** yellow, fleshy, 0.3 cm long, 0.13 cm wide, oblanceolate-ovate, rounded-obtuse, with 1 barely perceptible vein, entire margin, broadly obtuse apex, truncated base; **labellum** 0.23 cm long, 0.12 cm wide, fleshy, blade oblong-obovate, rounded, glandular-papillose, with a groove along the middle, with a pair of longitudinal thickenings covering its entire length, with a depression near the apex; column 0.2 cm long, 0.07 cm wide at the winged part, slightly arched, with prominent wings 0.04–0.36 cm in diameter at the apex, with a ventral concavity 0.08–0.05 cm in diameter, two vertical wings, broad, entire, 0.04 cm long, 0.02 cm wide, apically bidentate, acute and falcate; the clinandrium is ovate; the foot of the **column** is 0.2 cm long, 0.03 cm wide, fleshy, curved, with a concave margin, thickened and papillose near the base, with two bulges on the sides in the shape of water drops 0.02 cm in diameter; the **stigmatic** cavity is ventral, 0.03–0.025 cm in diameter, semi-orbicular; the rostellum is laminar, oblong; **capsule** not seen.

**ETYMOLOGY:** Named after the Latinized word “leptos,” meaning (thin, slender, or fine, and “sepala” from modern Latin (derived from the ancient Greek skepas), it refers to sepals, alluding to thin or slender sepals.

**DISTRIBUTION:** *Specklinia leptosepala*, only known from the Ecuadorian Amazon in the province of Zamora Chinchipe, gold mining company sector.

**PHENOLOGY:** In cultivation, it has been documented flowering from April to August.

**HABITAT AND ECOLOGY:** Epiphytes have been found growing in primary forests, on the tops of trees, difficult to observe. This species was found on a piece of dry trunk fallen from giant trees, at an altitude range of between 1400 meters above sea level.

**DISCUSSION:** The new species compares with *Specklinia corniculata* (Sw.) Mutel, but it differs basically in the plant with elliptical-obovate leaves, yellow flowers, wide semi-folded brown lip, long thin sepals, the lateral ones fused

and barely open at the apex, bat-shaped petals, column with prominent wings and elongated foot, in *Specklinia leptosepala*. vs. *Specklinia corniculata*, with elliptical leaves, orange flowers, a thin erect lip, short sepals, the lateral ones completely fused, petals with an acuminate apex, a winged column, and a short foot.

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## ***Lepanthes chrysopyra* (Orchidaceae, Pleurothallidinae), a new species from Ecuador**

Alfonso Doucette<sup>1</sup>, Hugo Medina<sup>2</sup>, & José Portilla<sup>2</sup>

**ABSTRACT:** A new species of *Lepanthes* from the Andes of Ecuador, *L. chrysopyra*, is described and illustrated. The species is similar to *L. ctenophora* but differs in the vegetative and floral morphology. Comparisons with morphologically similar species from Ecuador, Colombia, Bolivia, and Peru are provided. The etymology, morphology, and diagnostic characters of the species are discussed.

**KEYWORDS:** Pleurothallidinae; epiphytic orchids; Andes Mountains; *Lepanthes* ser. *Lepanthes*; floral morphology

**INTRODUCTION:** *Lepanthes* Sw. (Orchidaceae: Pleurothallidinae) is a hyperdiverse genus of epiphytic orchids, with over 1,200 species described primarily from the Neotropics. The genus is characterized by small, often intricate flowers, highly specialized vegetative structures, and a remarkable diversity of floral morphologies, which frequently complicates species delimitation. Treatments of *Lepanthes* in Ecuador (Luer 1996), Colombia (Luer 2012), Bolivia (Luer 2010), and Peru (Ocupa-Horna et al. 2023) have documented hundreds of species from the Andes, yet ongoing fieldwork continues to reveal previously undescribed taxa. During cultivation of material collected in Tzachilas, Ecuador, we identified a distinctive *Lepanthes* species with orange flowers with petals arranged like a little flame. Morphological analysis and comparison with the regional floras indicate that this represents a new species, which we describe below.

**TAXONOMY:** *Lepanthes chrysopyra* A. Doucette, H. Medina, & J. Portilla, *sp. nov.*

**TYPE:** ECUADOR. Tzachilas, cantón Santo Domingo, old road to Santo, El Paso sector. 0°15'09.42" S 78°51'39.06" O, ca. 2000 m. on thin branches; flowered in cultivation at Ecuagenera Gualaceo, 2024, EG-0623 (holotype: HA). Fig. 1, 2, 3.

**DIAGNOSIS:** The new species is similar to *Lepanthes ctenophora* Luer & Hirtz, but distinguished by the orbicular leaves (vs. elliptical), shorter stems (141.8–158.4 mm long vs. 300.0–900.0 mm long), orange-brown sepals (vs. light yellow), the apices of the lateral sepals diverging >100°

(vs. ca. 50°), and the lower portion of the lip blade's lobes rounded, not extending past the anther cap (vs. extended into subfalcate extensions extending to the tip of the column).

**DESCRIPTION:** Plants: erect, herbaceous, epiphytes under 200.0 mm tall. Roots beige, filiform, 0.6 mm in diameter. Stems terete, erect, 141.8–158.4 mm long, 0.9 mm in diameter, enveloped by ca. 10–12, papery, tubular, lepanthiform sheaths, 2.0–16.5 mm long, 1.0–3.6 mm wide; leaf coriaceous, erect to horizontal, orbicular, petiolate, 40.0–45.0 mm long, 39.7–44.5 mm wide. Inflorescence racemose, producing solitary flowers in a slow succession, peduncle terete, 16.4–20.0 mm long, 0.5 mm in diameter, pedicel terete, 2.3–2.5 mm long, 0.6 mm wide, enveloped by papery, tubular bracts, 0.9–2.9 mm long, 0.6–1.5 mm wide; ovary clavate with low crests along the upper third, 2.7 mm long, 0.7 mm wide, fruit not seen. Flowers without a detectable odor; dorsal sepal dull orange suffused with purple at the base, ovate, entire, acute, 3-veined, 5.0 mm long, 3.8 mm wide, the lateral sepals similar in morphology to the dorsal sepal, 3-veined, 4.8 mm long, 3.6 mm wide, the petals orange, trilobed, acute, the lobes filiform, the shortest lobe in the center, 2.0 mm long, 7.3 mm wide; the lip purple with yellow-orange margins, bilobed, each lobe obovate, 1.2 mm long, 1.4 mm wide (unexpanded), appendix whitish, pubescent, apiculate; the column semiterete, rose, 1.6 mm long, 0.8 mm wide, anther dorsal, anther cap purple, housing two, yellow, clavate, pollinia.

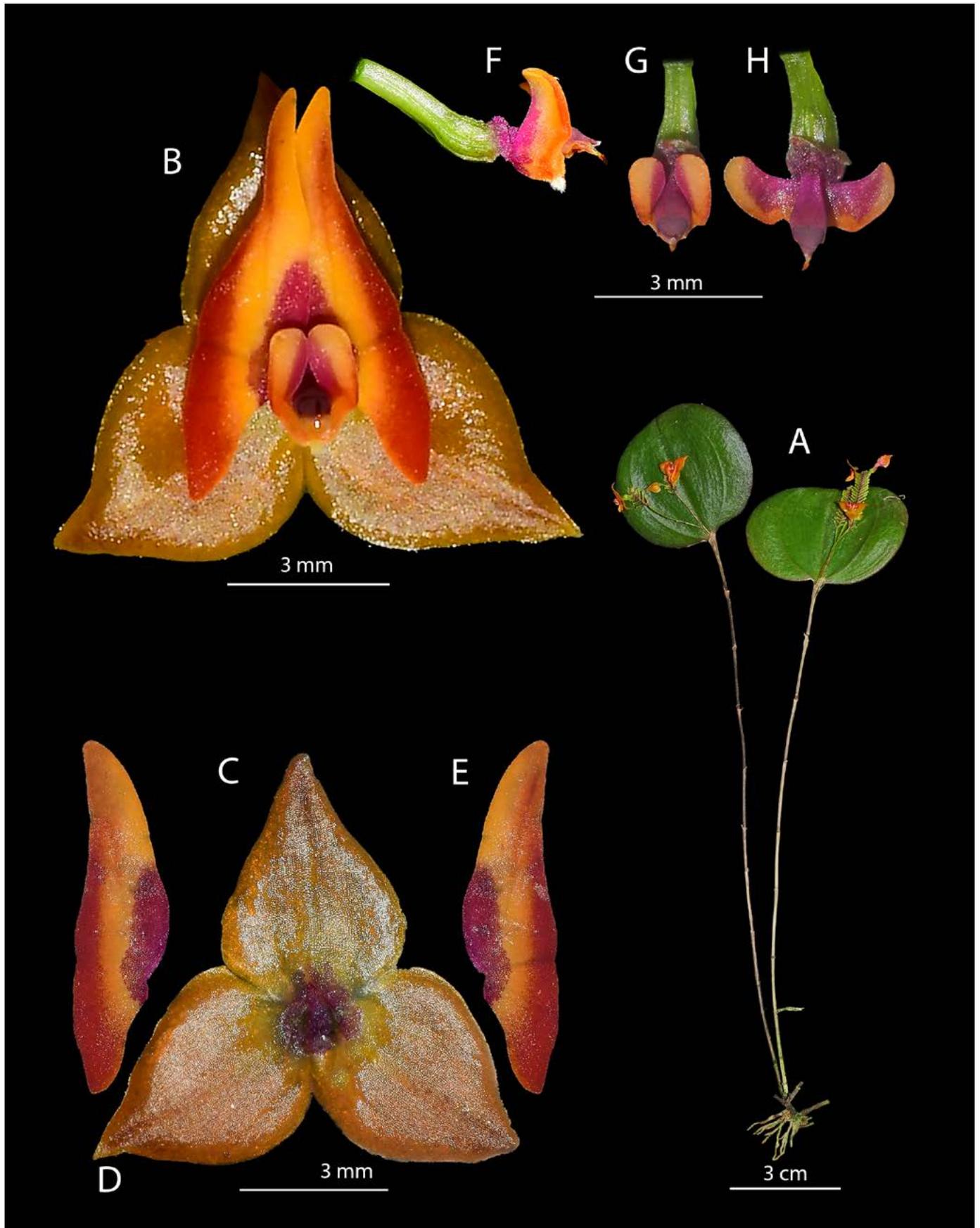
**ETYMOLOGY:** The epithet *chrysopyra* is from the greek *chryso* (gold or golden) + *-pyra* (fire or flame), in fanciful allusion to the yellow orange- and red-colored petals held in a flame-like arrangement.

**DISCUSSION:** In the *Lepanthes* of Ecuador key "Inflorescences short, congested; plant medium-sized, 10–20 cm tall excluding inflorescence" (Luer 1996), the new species excluded at couplet 38; from line 38 because the column is not "enlarged," and from line 38' because the blades of the lip are not larger than the column.

In *Lepanthes* of Colombia, Key VII (Luer 2012), is excluded at couplet 35, from line 35 because the lateral sepals diverge >100 degrees, from line 35' because the lateral sepals diverge more than 90 degrees.

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**Figure 1.** Photo plate from material used to prepare the holotype specimen. A. Habit to 3 cm scale. B. Flower detail to 3 mm scale. C–E to 3 mm scale. C. Dorsal sepal. D. Lateral sepal. E. Petal. F–H to 3 mm scale. F. Column with sepals and petals removed in profile. G. Column with sepals and petals removed viewed from above. H. Column with sepals and petals removed viewed from above and lobes parted to reveal the column.

In *Lepanthes* of Bolivia, Key 3 (Luer 2010), the new species keys out to *L. croatii* Luer but can be distinguished by the shorter stem length (141.8–158.4 mm long vs. 30.0–60.0 mm long), the orbicular leaves (vs. elliptical), and the abbreviated, apiculate appendix (vs. well developed, oblong).

A review of species described after Luer (1996) and those reported from Peru (Ocupa-Horna et al. 2023) did not reveal any matching taxa.

**ACKNOWLEDGEMENTS:** Generative AI tools were used to assist with language and editing. All content, taxonomic decisions, and conclusions remain the responsibility of the authors.

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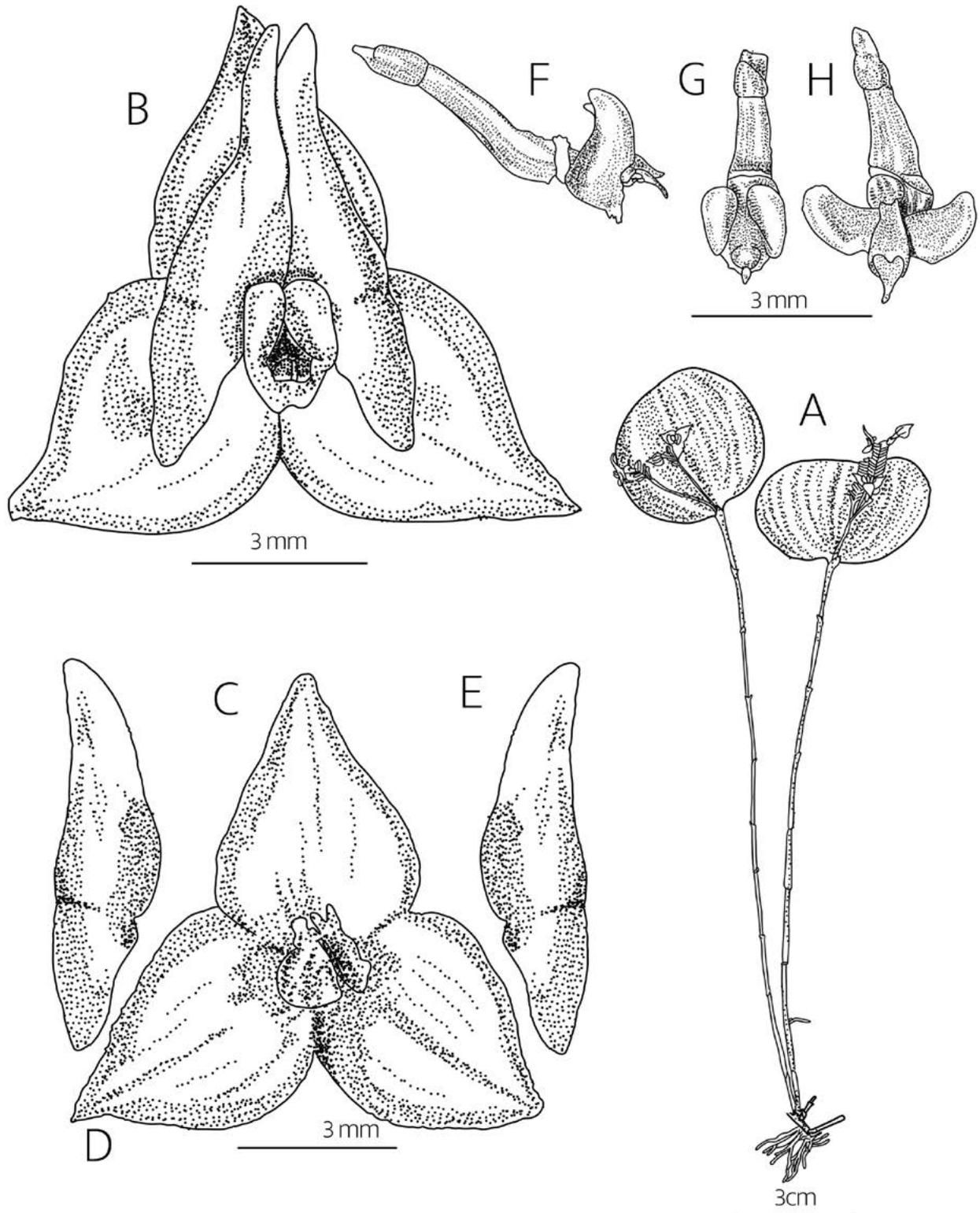
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**Figure 2.** *Lepanthes chrysopyra* in bloom exsitu



**Figure. 3** *Lepanthes chrysopyra* A. Habit to 3 cm scale. B. Flower detail to 3 mm scale. C–E to 3 mm scale. C. Dorsal sepal. D. Lateral sepal. E. Petal. F–H to 3 mm scale. F. Column with sepals and petals removed in profile. G. Column with sepals and petals removed viewed from above. H. Column with sepals and petals removed viewed from above and lobes parted to reveal the column. drawing by Juan Pablo Martínez

## ***Lepanthes microzoa* (Orchidaceae, Pleurothallidinae), a new species from Ecuador**

Alfonso Doucette<sup>1</sup>, Hugo Medina<sup>2</sup>, & José Portilla<sup>2</sup>

**ABSTRACT:** A new species of *Lepanthes* from the western Andes of Ecuador, *L. microzoa*, is described and illustrated. The species is similar to *L. pelorostele* but differs in the vegetative and floral morphology. Comparisons with morphologically similar species from Ecuador, Colombia, Bolivia, and Peru are provided. The etymology, morphology, and diagnostic characters of the species are discussed.

**KEYWORDS:** Pleurothallidinae; epiphytic orchids; Andes Mountains; leaf patterning; floral morphology

**INTRODUCTION:** *Lepanthes* Sw. (Orchidaceae: Pleurothallidinae) is a hyperdiverse genus of epiphytic orchids, with over 1,200 species described primarily from the Neotropics. The genus is characterized by small, often intricate flowers, highly specialized vegetative structures, and a remarkable diversity of floral morphologies, which frequently complicates species delimitation. Treatments of *Lepanthes* in Ecuador (Luer 1996), Colombia (Luer 2012), Bolivia (Luer 2010), and Peru (Ocupa-Horna et al. 2023) have documented hundreds of species from the Andes, yet ongoing fieldwork continues to reveal previously undescribed taxa.

During cultivation of material collected in Imbabura, Ecuador, we identified a distinctive *Lepanthes* with unusually small, intricate flowers reminiscent of tiny creatures. Morphological analysis and comparison with the regional floras indicate that this represents a new species, which we describe below.

**TAXONOMY:** *Lepanthes microzoa* A.Doucette, H.Medina, & J.Portilla, *sp. nov.*

**TYPE:** ECUADOR. Imbabura, Cotacachi canton, Garcia Moreno parish, growing on thin branches near Rio Manduriaco, 0°18'25.21" N, 78°50'49.21" W, ca. 1400 m., flowered in cultivation at Ecuagenera Gualaceo, 2024, EG-0613 (Holotype: HA). Fig. 1.

**DIAGNOSIS:** The new species is similar to *Lepanthes pelorostele* Luer & Hirtz, but distinguished by reticulate leaf blades (vs. uniformly colored), minutely denticulate sepal margins (vs. entire), yellow sepals suffused with purple

along the midveins (vs. white, unpatterned), orange petals (vs. purple), and the central petal lobe being the shortest (vs. the upper lobe).

**DESCRIPTION:** Plants erect, herbaceous, epiphytic, <30 mm tall. Roots rose, filiform, 0.6 mm in diameter. Stems terete, erect, 14.6–19.2 mm long, 0.4 mm in diameter, enclosed by ca. seven papery, tubular, lepanthiform sheaths, 1.5–2.5 mm long, 0.7–1.4 mm wide. Leaves coriaceous, erect, orbicular, petiolate, 7.9–8.5 mm long, 6.0 mm wide. Inflorescence racemose, producing solitary flowers in slow succession; peduncle terete, 5.2–5.5 mm long, 0.3 mm in diameter; pedicel terete, 1.6 mm long, 0.3 mm in diameter, enveloped by papery, tubular bracts, 0.5–0.8 mm long, 0.5 mm wide; ovary terete, 1.2 mm long, 0.5 mm in diameter; fruit not observed. Flowers without detectable odor. Dorsal sepal yellow suffused with two purple stripes, lanceolate, acute, minutely denticulate along margin, 3-veined, 4.0 mm long, 1.1 mm wide. Lateral sepals similar to dorsal sepal, 2-veined, 3.8 mm long, 1.0 mm wide. Petals orange, trilobed, acute; lobes filiform, central lobe shortest, 0.2 mm long, 1.3 mm wide. Lip orange, suffused with purple, bilobed, 0.4 mm long, 0.7 mm wide (unexpanded); lobes reniform; appendix filiform, yellow. Column terete, rose, 1.9 mm long, 0.4 mm wide; anther dorsal; anther cap rose, containing two yellow, clavate pollinia.

**ETYMOLOGY:** From the Greek *mikros* (small) and *zōon* (animal, creature), in reference to the flowers resembling little creatures.

**DISCUSSION:** In *Lepanthes* of Ecuador (Luer 1996), the new species keys to *L. dictydion* Luer & Hirtz but differs in having lanceolate sepals (vs. ovate-triangular), trilobed petals (vs. transversely bilobed), and a linear appendix (vs. sigmoid).

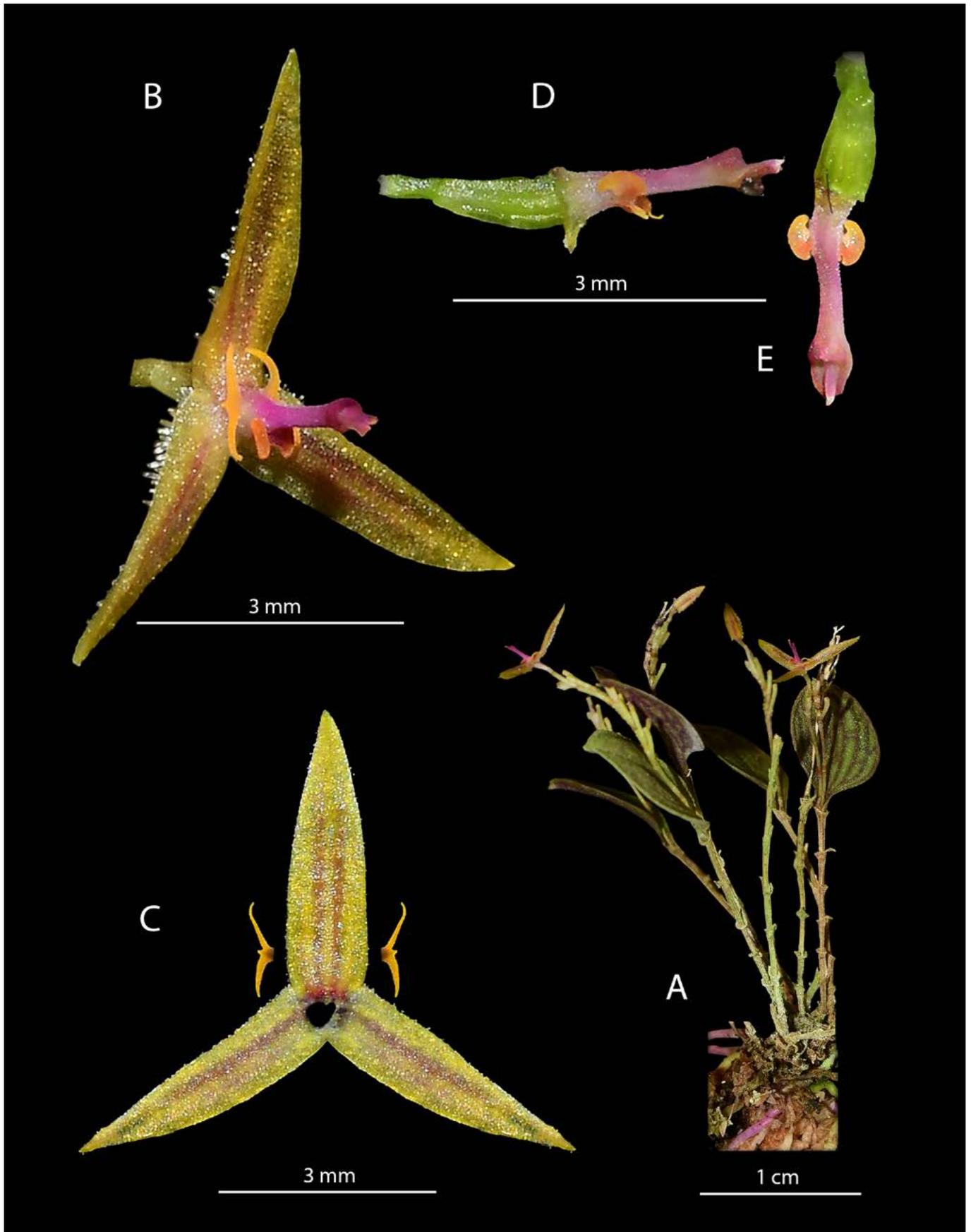
In *Lepanthes* of Colombia (Luer 2012), it keys to *L. aguirrei* Luer but can be distinguished by a lanceolate dorsal sepal (vs. subcircular), 3-veined (vs. 5-veined), acute (vs. caudate); an abbreviated central petal lobe (vs. long, filiform); and a highly reduced lip leaving most of the column exposed (vs. well-developed lip hugging the column).

In *Lepanthes* of Bolivia (Luer 2010), the new species keys to *L. acarina* Luer but differs in its lanceolate dorsal sepal (vs. ovate-triangular), trilobed petals (vs. transversely bilobed), and column exposed (vs. lip well developed, hugging the column).

Among species described after Luer (1996), the new species is most similar to *L. equus-frisiae* Pupulin but can be distinguished by reticulate patterned leaves (vs.

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**Figure. 1.** Photo plate from material used to prepare the holotype specimen. A. Habit to 1 cm scale. B. Flower detail in three quarter profile to 3 mm scale. C. Sepals and petals to 3 mm scale. D-E to 3 mm scale. D. Column with sepals and petals removed in profile. E. Column with sepals and petals removed viewed from above.

solid colored), trilobed petals (vs. transversely reniform-suborbicular), and a bilobed lip (vs. subspherical).

A review of species reported from Peru (Ocupa-Horna et al. 2023) did not reveal any matching taxa.

**ACKNOWLEDGEMENTS:** Generative AI tools were used to assist with language and editing. All content, taxonomic decisions, and conclusions remain the responsibility of the authors.

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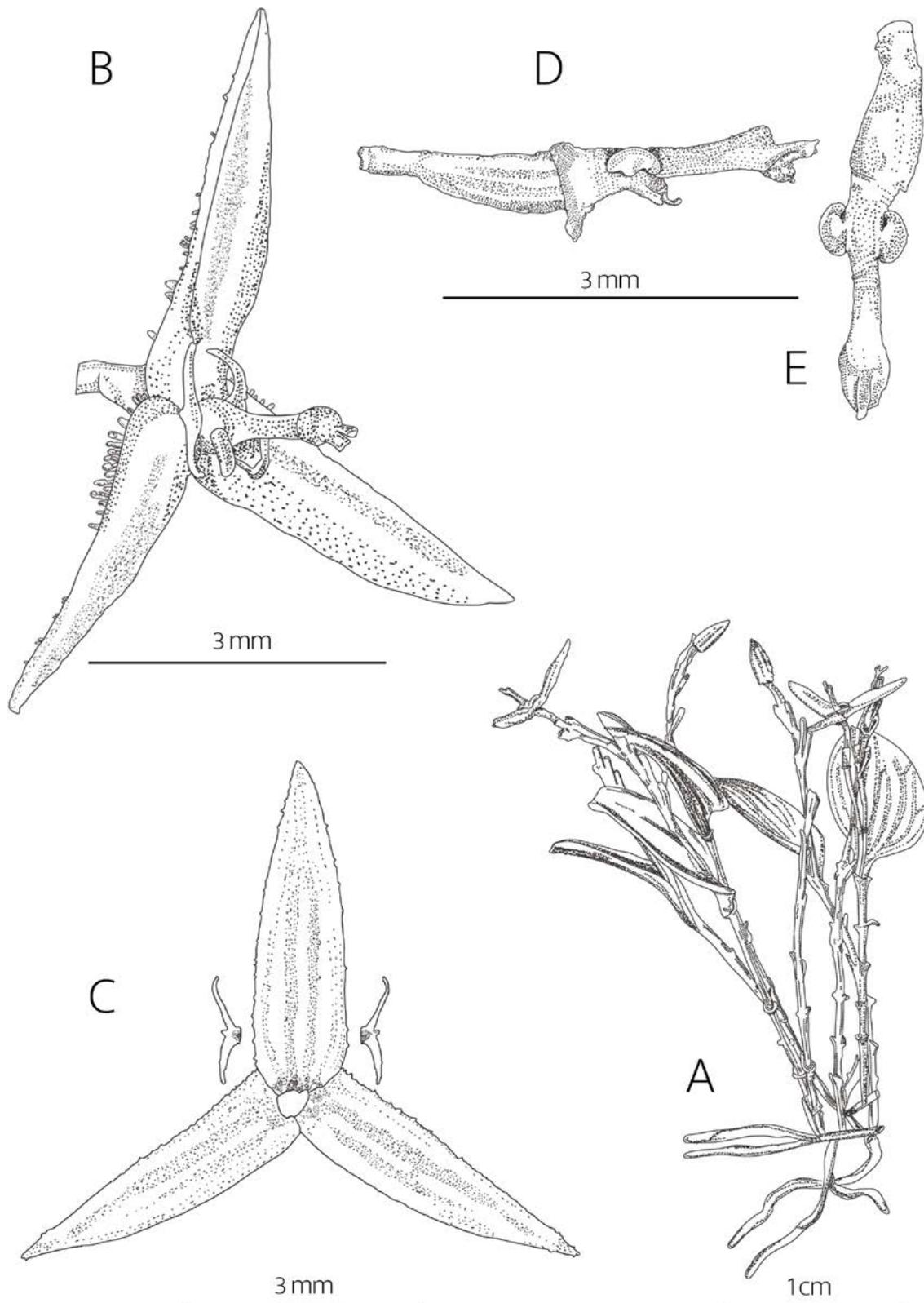
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**Figure 2.** *Lepanthes microzoa* in bloom exsitu



**Figure. 3** *Lepanthes microzoa* A. Habit to 1 cm scale. B. Flower detail in three quarter profile to 3 mm scale. C. Sepals and petals to 3 mm scale. D-E to 3 mm scale. D. Column with sepals and petals removed in profile. E. Column with sepals and petals removed viewed from above. drawing by Juan Pablo Martínez

## ***Lepanthes diacantha* (Orchidaceae, Pleurothallidinae), a new species from Ecuador**

Alfonso Doucette<sup>1</sup>, Hugo Medina<sup>2</sup>, & José Portilla<sup>2</sup>

**ABSTRACT:** A new species of *Lepanthes* from the eastern Andes of Ecuador, *L. diacantha*, is described and illustrated. The species is similar to *L. pelyx* but differs in the vegetative and floral morphology. Comparisons with morphologically similar species from Ecuador, Colombia, and Bolivia are provided. The etymology, morphology, and diagnostic characters of the species are discussed.

**KEYWORDS:** Pleurothallidinae; epiphytic orchids; Andes Mountains; *Lepanthes* ser. *Mucronatae*; floral morphology

**INTRODUCTION:** *Lepanthes* Sw. (Orchidaceae: Pleurothallidinae) is a hyperdiverse genus of epiphytic orchids, with over 1,200 species described primarily from the Neotropics. The genus is characterized by small, often intricate flowers, highly specialized vegetative structures, and a remarkable diversity of floral morphologies, which frequently complicates species delimitation. Treatments of *Lepanthes* in Ecuador (Luer 1996), Colombia (Luer 2012), Bolivia (Luer 2010), and Peru (Ocupa-Horna et al. 2023) have documented hundreds of species from the Andes, yet ongoing fieldwork continues to reveal previously undescribed taxa.

During cultivation of material collected in Zamora Chinchipe, Ecuador, we identified a distinctive *Lepanthes* with distinctive brown flowers with uncinata petal lobes. Morphological analysis and comparison with the regional floras indicate that this represents a new species, which we describe below.

### **TAXONOMY**

*Lepanthes diacantha* A.Doucette, H.Medina, & J.Portilla, *sp. nov.*

**TYPE:** ECUADOR. Zamora Chinchipe, Yanzaza canton, Los Encuentros parish, Muchime sector, 3°40'53.94" S, 78°40'59.56" O, ca. 1530 m, growing on slender branches, flowered in cultivation at Ecuagenera Gualaceo, 2024, EG-0630 (Holotype: HA). Fig. 1.

**DIAGNOSIS:** The new species is similar to *Lepanthes pelyx* Luer & Hirtz, but distinguished by the green leaves (vs.

purple, lightly reticulate), inflorescences held on the upper side of the leaf (vs. beneath), denticulate sepal margins (vs. ciliate), orange-brown petals (vs. green), glabrous lip (vs. minutely ciliate), lip blades obtuse (vs. acute and incurved).

**DESCRIPTION:** Plants: erect, herbaceous, epiphytes under 150 mm tall. Roots cream to rose, filiform, 0.8 mm in diameter. Stems terete, erect, 64.7–108.0 mm long, 0.6–1.3 mm in diameter, enveloped by ca. 11, papery, tubular, lepanthiform sheaths, 2.5–12.6 mm long, 0.9–2.6 mm wide; leaf coriaceous, erect, orbicular, petiolate 36.7–41.8 mm long, 16.0 mm wide. Inflorescence racemose, producing solitary flowers in a slow succession, peduncle terete, 9.4–19.7 mm long, 0.5 mm in diameter, pedicel terete, 0.9–1.3 mm long, 0.3 mm wide, enveloped by papery, tubular bracts, 0.8–1.0 mm long, 0.5 mm wide; ovary terete, 1.5 mm long, 0.5 mm wide, fruit not seen. Flowers without a detectable odor, dorsal sepal brown suffused red towards the base and along the primary veins, ovate, acute, minutely denticulate along the margin, 3-veined, 4.1 mm long, 3.8 mm wide, the lateral sepals transversely ovate, acute, slightly acuminate, minutely denticulate along the margins, 2-veined, 3.8 mm long, 2.5 mm wide, the petals brown, trilobed, the upper lobe subquadrate, suffused with green and purple, the apical lobe uncinata, the lower lobe triangular, acuminate, 1.4 mm long, 3.6 mm wide; the lip orange-brown, bilobed, each lobe thin, membranous, oval, connate medially over the column, 1.1 mm long, 0.8 mm wide, appendix white, scoop-shaped, apiculate, minutely pubescent; the column orange-brown suffused with rose towards the base, flabellate, 1.2 mm long, 0.8 mm wide, anther dorsal, anther cap rose, housing two, yellow, clavate, pollinia.

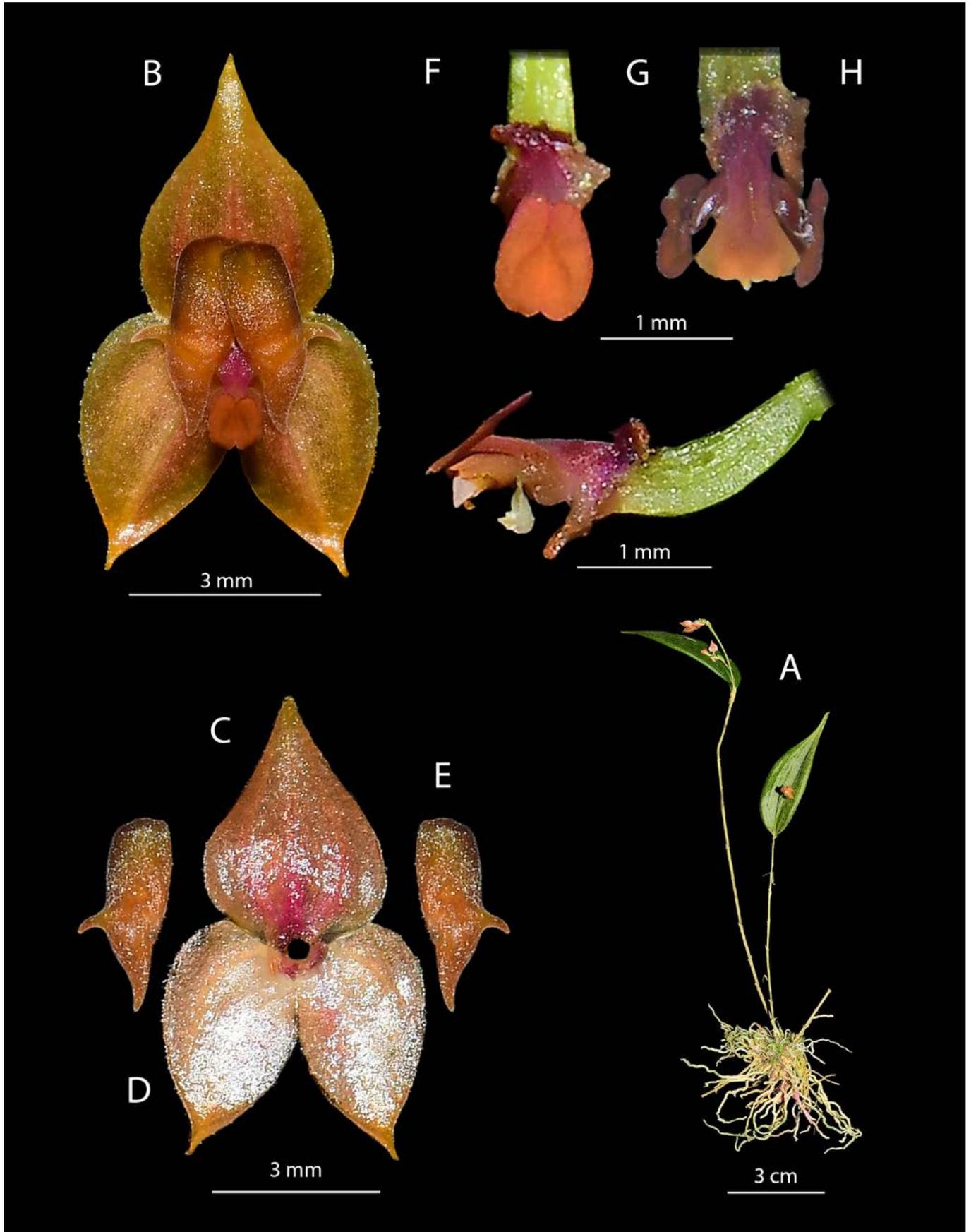
**ETYMOLOGY:** From the Greek di- (two) and acantha (thorn, spine), in reference to the flower petals with uncinata lobes on either side of the column.

**DISCUSSION:** In the *Lepanthes* of Ecuador, key "Series *Mucronatae*" (Luer 1996), the new species keys out to *L. pelyx* Luer & Hirtz. The two species are similar and a comparison is provided in the diagnosis above.

In *Lepanthes* of Colombia, Key 3 (Luer 2012), the new species keys out to *L. janitor* Luer & R.Escobar but can be distinguished by shorter stems (64.7–108.0 mm long vs. 100.0–180.0 mm long), brown sepals (vs. translucent light yellow green), brown (vs. green) and glabrous (vs. pubescent petals), orange-brown lip (vs. translucent green, suffused with red-purple), and the apiculate appendix (vs. truncate, long-ciliate, with two small papillae).

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**Figure. 1.** Photo plate from material used to prepare the holotype specimen. A. Habit to 3 cm scale. B. Flower detail to 3 mm scale. C–E to 3 mm scale. C. Dorsal sepal. D. Lateral sepal. E. Petal. F–H to 3 mm scale. F. Column with sepals and petals removed in profile. G. Column with sepals and petals removed viewed from above. H. Column with sepals and petals removed viewed from above and connate lobes parted to reveal the column.

In *Lepanthes* of Bolivia, Key 3 (Luer 2010), the new species keys out to *L. orchestris* Luer but can be distinguished by Erect to ascending stems (vs. more or less horizontal), sheath ostia enveloping the stem (vs. markedly dilated), green leaves (vs. suffused with purple beneath), trilobed petals (vs. bilobed) with an uncinata process (vs. absent), the lobes of the lip connate to one another (vs. free), and the scoop-shaped appendix (vs. small, subquadrate with an equally long apiculum).

A review of species described after Luer (1996) and those reported from Peru (Ocupa-Horna et al. 2023) did not reveal any matching taxa.

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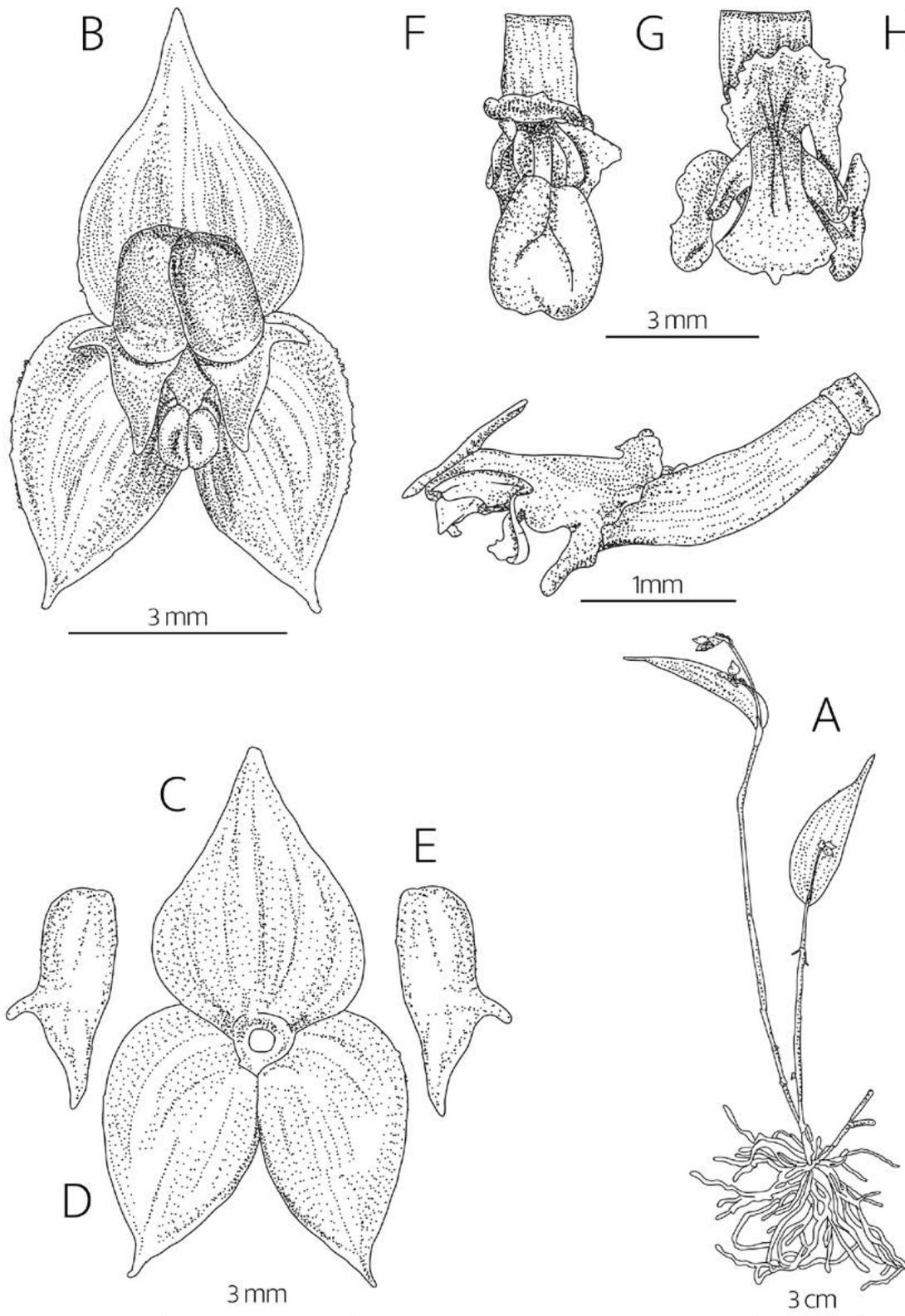
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**Figure 2.** *Lepanthes diacantha* in bloom exsitu



**Figure. 3** *Lepanthes diacantha* A. Habit to 3 cm scale. B. Flower detail to 3 mm scale. C–E to 3 mm scale. C. Dorsal sepal. D. Lateral sepal. E. Petal. F–H to 3 mm scale. F. Column with sepals and petals removed in profile. G. Column with sepals and petals removed viewed from above. H. Column with sepals and petals removed viewed from above and connate lobes parted to reveal the column.. drawing by Juan Pablo Martínez

## ***Lepanthes chrysokallos* (Orchidaceae, Pleurothallidinae), a new species from Ecuador**

Alfonso Doucette, Hugo Medina, & Jose Portilla

**ABSTRACT:** A new species of *Lepanthes* from the eastern Andes of Ecuador, *L. chrysokallos*, is described and illustrated. The species is similar to *L. setifera* but differs in the vegetative and floral morphology. Comparisons with morphologically similar species from Ecuador, Colombia, Bolivia, and Peru are provided. The etymology, morphology, and diagnostic characters of the species are discussed.

**KEYWORDS:** Pleurothallidinae; epiphytic orchids; ex-situ conservation; Andes Mountains; floral morphology

**INTRODUCTION** *Lepanthes* Sw. (Orchidaceae: Pleurothallidinae) is a hyperdiverse genus of epiphytic orchids, with over 1,200 species described primarily from the Neotropics. The genus is characterized by small, often intricate flowers, highly specialized vegetative structures, and a remarkable diversity of floral morphologies, which frequently complicates species delimitation. Treatments of *Lepanthes* in Ecuador (Luer 1996), Colombia (Luer 2012), Bolivia (Luer 2010), and Peru (Ocupa-Horna et al. 2023) have documented hundreds of species from the Andes, yet ongoing fieldwork continues to reveal previously undescribed taxa.

During cultivation of material collected in Zamora Chinchipe, Ecuador, we identified a distinctive *Lepanthes* with beautiful, golden flowers. Morphological analysis and comparison with the regional floras indicate that this represents a new species, which we describe below.

### **TAXONOMY:**

*Lepanthes chrysokallos* A.Doucette, H.Medina, & J.Portilla, *sp. nov.*

**TYPE:** ECUADOR. Zamora Chinchipe: El Panguí canton, Los Encuentros parish, Zarza community, in a primary forest near Rio Manchinaza, 3°49'39.58" N, 78°30'31.49" W, ca. 1500 m, flowered in cultivation at Ecuagenera, Gualaceo, 2024, EG-0601 (Holotype: HA).

**DIAGNOSIS:** The new species is similar to *Lepanthes setifera* Luer & R.Escobar, but differs in having yellow sepals (vs. translucent greenish white), acute sepal apices

(vs. slightly acuminate), a triangular upper petal lobe (vs. oblong), and a convex lip lamina lacking long trichomes (vs. concave with long trichomes).

**DESCRIPTION:** Plants erect, herbaceous, epiphytic, <200 mm tall. Roots white, filiform, 0.5 m in diameter. Stems terete, erect, 112.5–119.1 mm long, 1.0 mm in diameter, enclosed by ca. 13 papery, tubular, lepanthiform sheaths, 3.0–18.9 mm long, 1.8–7.4 mm wide. Leaves coriaceous, erect, ovate, petiolate, 57.4–66.3 mm long, 30.4–34.2 mm wide. Inflorescence racemose, producing solitary flowers in slow succession on the underside of the leaf; peduncle terete, 29.7–34.0 mm long, 0.3 mm in diameter; pedicel terete, 1.8–1.4 mm long, 0.3–1.0 mm in diameter, enveloped by papery, tubular bracts, 1.0–1.9 mm long, 0.3 mm wide; ovary terete, 1.5 mm long, 0.7 mm in diameter; fruit not observed. Flowers without detectable odor. Dorsal sepal yellow, ovate, acute, entire margin, 3-veined, 4.2 mm long, 3.6 mm wide. Lateral sepals similar to dorsal sepal, 2-veined, 3.8 mm long, 3.4 mm wide. Petals bilobed, 1.0 mm long, 5.3 mm wide; the upper lobe triangular, green suffused with purple below the upper half; the lower lobe oblong, yellow-green suffused with purple. Lip yellow, suffused with reddish brown, bilobed, 0.4 mm long, 1.6 mm wide (unexpanded); lobes transversely rectangular; appendix filiform, white. Column terete, rose, 1.0 mm long, 0.3 mm wide; anther dorsal; anther cap rose, containing two yellow, clavate pollinia.

**ETYMOLOGY:** From the Greek *chrysos* (gold) and *kallos* (beauty), referring to the beautiful golden flowers. The compound *chrysokallos* is treated as an indeclinable noun in apposition.

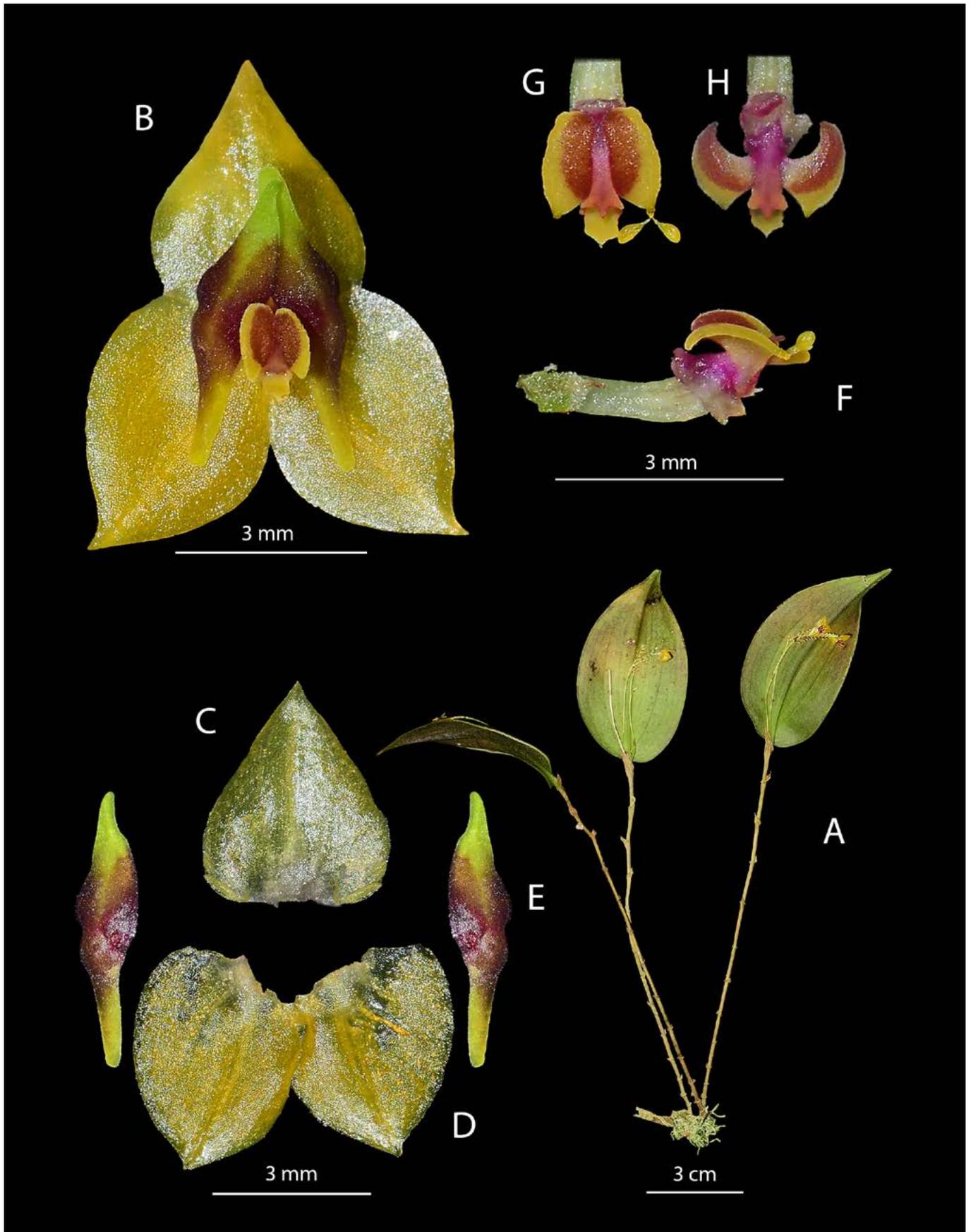
**DISCUSSION:** In the *Lepanthes* of Ecuador (Luer 1996), the species keys out to *L. setifera* Luer & R.Escobar, but can be distinguished from that species by the floral morphology. The diagnosis above provides more detail.

In *Lepanthes* of Colombia (Luer 2012), the new species keys out to *L. cingens* Luer & R.Escobar but can be distinguished by the ovate dorsal sepal (vs. triangular), triangular upper lobe of the petal (vs. oblong-ovate), the shallowly emarginate petal apex (vs. contracted into a narrowly oblong lobe), the short, terete appendix (vs. cymbiform, incurved).

In *Lepanthes* of Bolivia (Luer 2010), the new species keys out to *L. dictyota* Luer & Vásquez but can be distinguished by the solid colored leaf (vs. purple reticulations on both surfaces), the shallowly emarginate petal apex (vs. extended, rounded apex), and the short, terete appendix

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**Figure. 1.** A. Habit to 3 cm scale. B. Flower detail to 3 mm scale. C–E to 3 mm scale. C. Dorsal sepal. D. Lateral sepal. E. Petal. F–H to 3 mm scale. F. Column with sepals and petals removed in profile. G. Column with sepals and petals removed viewed from above. H. Column with sepals and petals removed viewed from above and connate lobes parted to reveal the column.

(vs. hinged, ligulate, with a brush-like apical segment).

A review of species reported from Peru (Ocupa-Horna et al. 2023) and the species described after Luer (1996) did not reveal any matching taxa.

**ACKNOWLEDGEMENTS:** Generative AI tools were used to assist with language and editing. All content, taxonomic decisions, and conclusions remain the responsibility of the authors.

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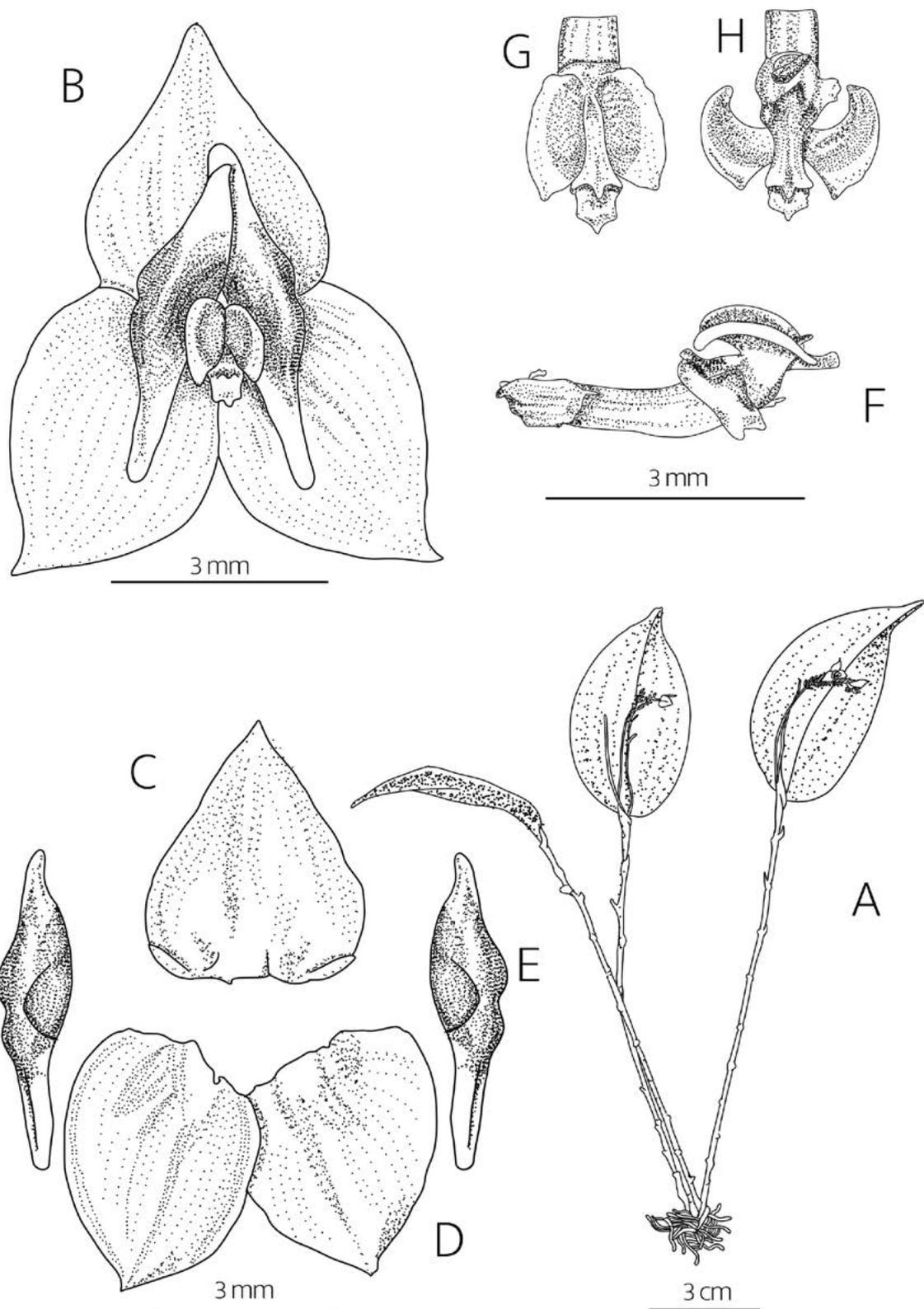
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**Figure 2.** *Lepanthes chrysokallos* in bloom exsitu



**Figure. 3** *Lepanthes lepanthes chrysokallos* A. Habit to 3 cm scale. B. Flower detail to 3 mm scale. C–E to 3 mm scale. C. Dorsal sepal. D. Lateral sepal. E. Petal. F–H to 3 mm scale. F. Column with sepals and petals removed in profile. G. Column with sepals and petals removed viewed from above. H. Column with sepals and petals removed viewed from above and connate lobes parted to reveal the column.. drawing by Juan Pablo Martínez

## New morphological evidence supports the description of three novel species of *Koellensteinia* (Orchidaceae: Zygopetalinae) from the southern Ecuadorian Amazon.

Hugo Medina, José Portilla & Iván Portilla<sup>1</sup>

**ABSTRACT:** Two new species of *Koellensteinia*, (*Zygopetalinae* Orchidaceae), *Koellensteinia albiflavoviola*, *K. morona-santiagoensis* and *K. portillae*, collected for the first time in the province of Morona Santiago and Zamora Chinchipe, Ecuador, from material collected under the research permit "Rescue, conservation, reproduction and ex situ management of the flora of Ecuador," No. 004-2016-IC-FLO-FLO-DNB/MA, authorized by the Ministry of Environment of Ecuador under The Codification to the Forestry and Conservation of Natural Areas and Wildlife Law, granted to Ecuagenera Cia. Ltda.

**Keyword:** South Ecuador, new species of *Zygopetalinae*, *Koellensteinia*, terrestrial plants, discovered by Ecuagenera

**INTRODUCCIÓN:** The genus *Koellensteinia* was described by Heinrich Gustav Reichenbach in 1854 (*Bonplandia*, volume 2:17), with *Koellensteinia kellneriana* Rchb.f. designated as the type species. Reichenbach dedicated the genus to Captain Carl Kellner von Koellenstein, his botanical correspondent in Austria (Seemann, W et al., 1853).

In 1903, Otto Kuntze proposed including the genus *Koellensteinia* as a section within *Aganisia*, as *Aganisia* sect. *Koellensteinia*. However, the botanical community maintained the genus as independent. Various authors have described species now classified in *Koellensteinia* under different names; for example, *K. ionoptera* Linden & Rchb.f. *Aganisia ionoptera* was transferred, and *Kefersteinia florida* was originally published as *Promenaea florida* (Rchb.f.) in 1863. These synonymies reflect the genus's complex taxonomic history. *Koellensteinia* belongs to the subfamily Epidendroideae, tribe Cymbidieae, and subtribe Zygopetalinae. It is part of the "Aganisia" complex of the Zygopetalinae (along with *Aganisia*, *Cheiradenia*, *Otostylis*, and *Paradisanthus*), with *Koellensteinia* being the most widely distributed genus within this group. This complex is primarily South American, though *K. tricolor* also extends to Belize and *K. graminea* to Trinidad (Meneguzzo et al., 2015). Approximately 11 valid species of *Koellensteinia* are recognized (Meneguzzo et al., 2015), while some

horticultural sources mention up to 16 described species. The majority of these are restricted to the Amazon Basin and tropical montane forests of northern South America.

The species of *Koellensteinia* are predominantly terrestrial (occasionally epiphytic), inhabiting humid forests, often in the mid-elevation understory (Seemann, W. et al., 1953). Some species also grow in coastal margins or more open areas, showing a certain ecological amplitude. The genus is prevalent throughout South America (Brazil, Peru, Ecuador, Colombia, Bolivia, Venezuela, etc.), with a distribution largely stratified north of the Tropic of Capricorn, and only one or two species reaching the tropical Caribbean.

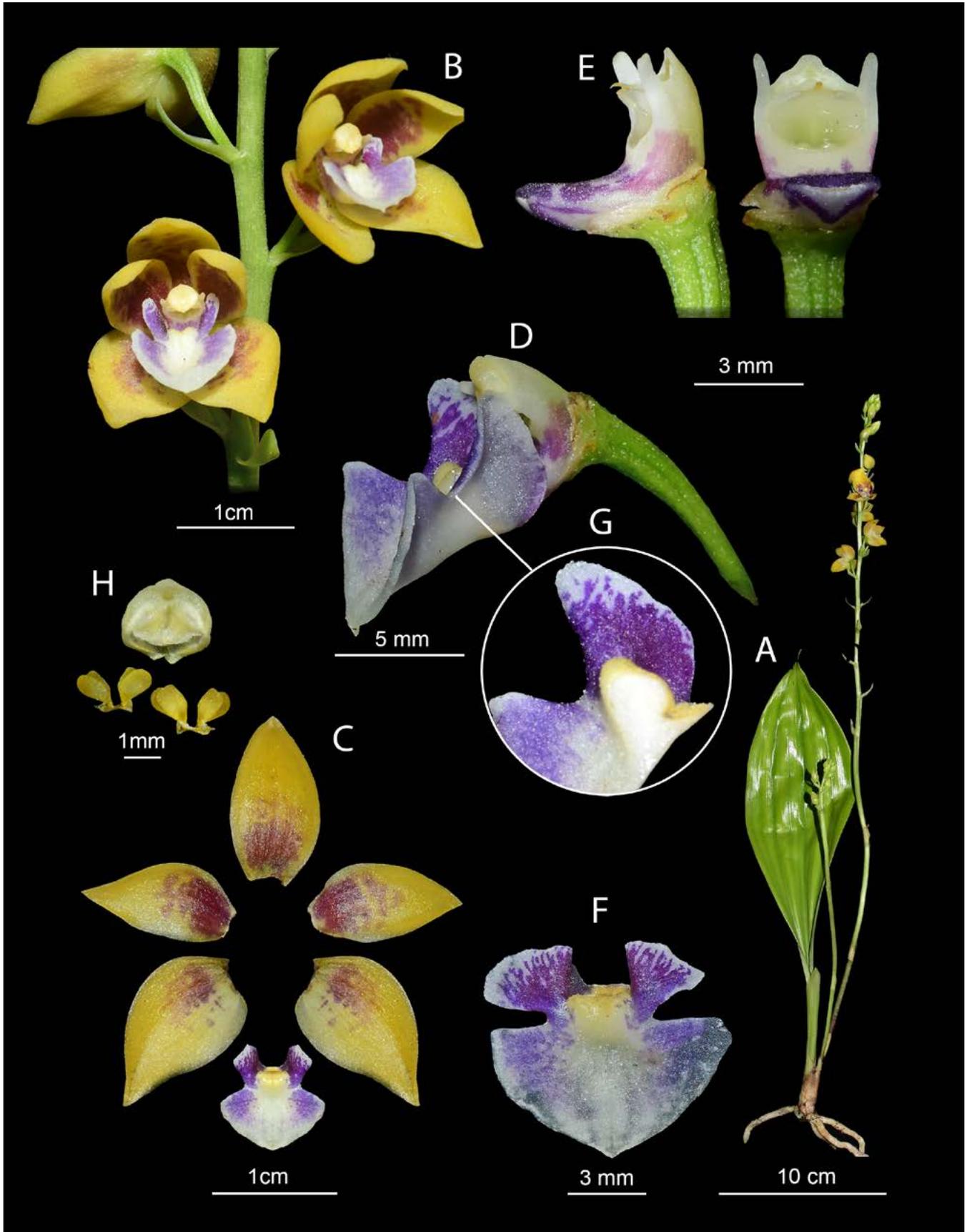
The plants are sympodial with a caespitose growth habit. The stems are typically short, sometimes with short or absent pseudobulbs, and few leaves that are lanceolate to linear, petiolate with prominent venation.

The inflorescence is a lateral raceme, erect or arching, densely packed with small flowers that usually open successively. The flowers, generally fragrant, vary from white to yellow with purplish or pinkish markings on the **labellum**. Sepals and petals are free, similar to each other, and spreading.

The labellum is **trilobed**: the lateral lobes are small and erect, while the midlobe is broad (sometimes bifid) with a prominent, fleshy basal callus. The column is robust and curved with a conspicuous foot, typically bearing four **pollinia** (two pairs) on a common viscidium. This combination of characters—small flowers with a trilobed labellum and basal callus, and four pollinia—distinguishes *Koellensteinia* within the subtribe Zygopetalinae.

In summary, *Koellensteinia* is a well-defined genus within the Zygopetalinae with a clear historical circumscription since its establishment by Reichenbach in 1854 (Seemann, W. et al., 1854). It comprises about a dozen Neotropical species, primarily terrestrial in habit, and adapted to humid tropical environments. Its distinctive morphology (relatively small, fragrant flowers; trilobed labellum with a basal callus) and its phylogeny (grouped in the Aganisia complex) are well-documented in recent literature.

To clarify their taxonomy in relation to related species, the new species, such as *Koellensteinia albiflavoviola*, *K. morona-santiagoensis*, and *K. portillae*, were compared with *Koellensteinia ionoptera* Linden & Rchb.f. and *K. graminea* (Lindl.) Rchb.f.



**Figure 1.** *Koellensteinia albiflavoviola* H.Medina et al. A. Habit. B. A section of the spike showing flowers from the front and three-quarters. C. Dissected perianth. D. Detail of the column and lip profile view. E. column front and profile view. F. flattened lip, front view, G. cross-section of the lip, showing the callus drawing H. detail of the anther and pollinia, by Hugo Medina.

**TAXONOMY:** *Koellensteinia albiflavoviola* H.Medina, J.Portilla sp. nov.

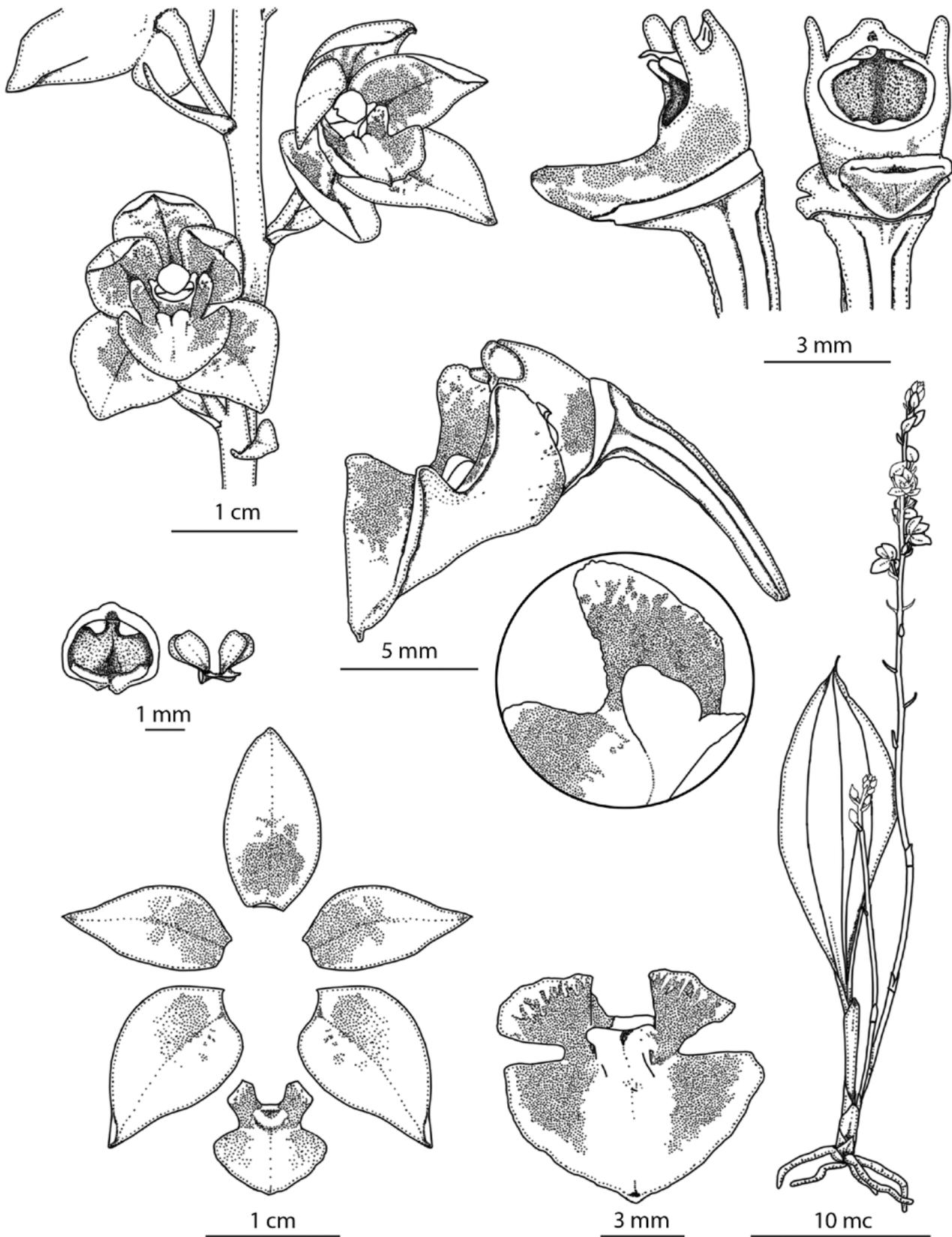
**TYPE:** ECUADOR. Zamora Chinchipe, canton El Pangui, parish El Guismi, Centro Shuar Uwents, 3°35'02.19"S 78°40'43.80" W, ca. 1000 m. grows terrestrially on roadside slopes, flourished in cultivation in Ecuagenera Gualaceo 2024 EG 0652 (holotype: HA). Fig. 1-2. Fig. 3 A-B.

**DIAGNOSIS:** *Species nova similis est Koellensteinia ionoptera* Linden & Rchb.f. *Cognoscitur praecipue propter flores aureos, labellum violaceum*

**DESCRIPTION: Terrestrial plant**, sympodial in growth, 44–75 cm tall including the floral spike and 28.34 cm tall excluding it. Roots whitish-gray, cylindrical, glabrous, up to 8.0 cm long, 0.34 cm in diameter, produced at the base of the pseudobulbs. Rhizome short. Pseudobulbs sub-spherical, heteroblastic, single-leaved, 1.0–2.8 cm long, 0.7–1.0 cm in diameter, enveloped by foliaceous sheaths; **sheaths** linear, papyraceous, multi-veined, 1.2–9.5 cm long, 1.6 cm in diameter, enveloping the pseudobulbs, with an apex slightly acuminate and a truncate base; leaf lanceolate to oblanceolate, medium to dark green, smooth, coriaceous, with a satiny sheen, parallel venation, entire margin, slightly arching, with an acute-apiculate apex; the base is attenuate into a petiole; the blade is sub-cartilaginous, plicate, with veins channeled abaxially, 11.0–27.5 cm long, 4.5–7.5 cm wide, and a conduplicate apex; **inflorescence** is a lateral, erect raceme, ca. 42.0 cm long and 0.4 cm in diameter, cylindrical, with approximately 22 flowers that open simultaneously; the **peduncle** is brownish, becoming yellowish-green towards the apex; the **rachis** is green, about 23.5 cm in length; **peduncle bracts** are light green, 1.0–1.9 cm long, 0.5–0.6 cm in diameter, amplexicaul, broadly triangular, with an acuminate apex; **floral bracts** are green, 0.5–0.8 cm long, 0.2–0.4 cm in diameter, lanceolate, with an acute apex and a truncate base; the **flowers** are odorless, resupinate, and pedicellate, ranging from luteous yellow to golden with purple markings. The **ovary** and **pedicel** are cylindrical, slightly clavate, and 1.8–2.0 cm in diameter; the **dorsal sepal** is luteous yellow with brownish-tan spots towards the base, obovate, 1.5 cm long, 0.8 cm wide, with an apex that is acute to slightly **obtuse**, a truncate base, and an entire margin. The lateral sepals are similar in color to the **dorsal sepal**, obovate, 1.5 cm long, 1.0 cm wide, with an apex that is acute to slightly **apiculate**, a truncate base, and an entire margin; the **petals** are luteous yellow with a brown base that diffuses toward the apex, with purple at the base, obovate, slightly concave, 1.3 cm long, 0.7



**Figure. 2.** Comparison of the new specimen with the most similar species. A. *Koellensteinia albiflavoviola* B. *Koellensteinia ionoptera* Linden & Rchb.f. photographed by Hugo Medina



**Figure 3.** *Koellensteinia albiflavoviola* Medina et al. Drawing of the plant used to make LCDP, used to describe this species and subsequently deposited in the herbarium. By Hugo Medina.

cm wide, with an apex that is acute to slightly apiculate, a truncate base, and an entire margin; the **labellum** is white with prominent purple spots on the lobes, **3-lobed**, and ca. 0.9 cm in diameter, attached to the column foot; the **midlobe** is semi-rhomboidal, 0.45–0.9 cm in diameter, with a rounded apex. The lateral lobes are asymmetrically depressed-rhomboidal, truncate, 0.3–0.4 cm in diameter; the **callus** is whitish, with a few purple spots, fleshy, slightly bilobed, and 0.22–0.3 cm in diameter; the **column** is slightly **clavate**, white, becoming purple near the base, ca. 0.3 cm in diameter, ventrally slightly concave, slightly curved, and winged; the **column foot** is ca. 0.4 cm long, 0.25 cm wide, and purple in color; the **anther** is incumbent, operculate, with a 2-locular anther cap, ca. 0.23–0.24 cm in diameter; the **clinandrium** is deep with an entire margin; the **pollinarium** consists of two pairs of subequal pollinia, dorsiventrally flattened, obovate, 0.1–0.09 cm in diameter; the **viscidium** is 0.09 cm in diameter; **rostellum** is prominent and cartilaginous; the **stigma** is transversely elliptic. **Seed** not seen.

**ETYMOLOGY:** Nombrada de las palabras latinas "**albus**" (que significa "blanco"), "**flavus**" (amarillo, dorado) y "**viola**" (que significa de color "violeta") en referencia a la coloración de las flores.

**DISTRIBUTION:** *Koellensteinia albiflavoviola*, known from the Ecuadorian Amazon in the province of Zamora Chinchipe.

**PHENOLOGY:** In cultivation, this species has been observed in flower from February to August.

**HABITAT AND ECOLOGY:** Found growing terrestrially on semi-rocky road embankments, under herbaceous plants. It occasionally shares its habitat with other species like *Pleurothallis*, *Sobralias*, *Stellis*, among others, at an altitudinal range of 1000 to 1200 meters above sea level.

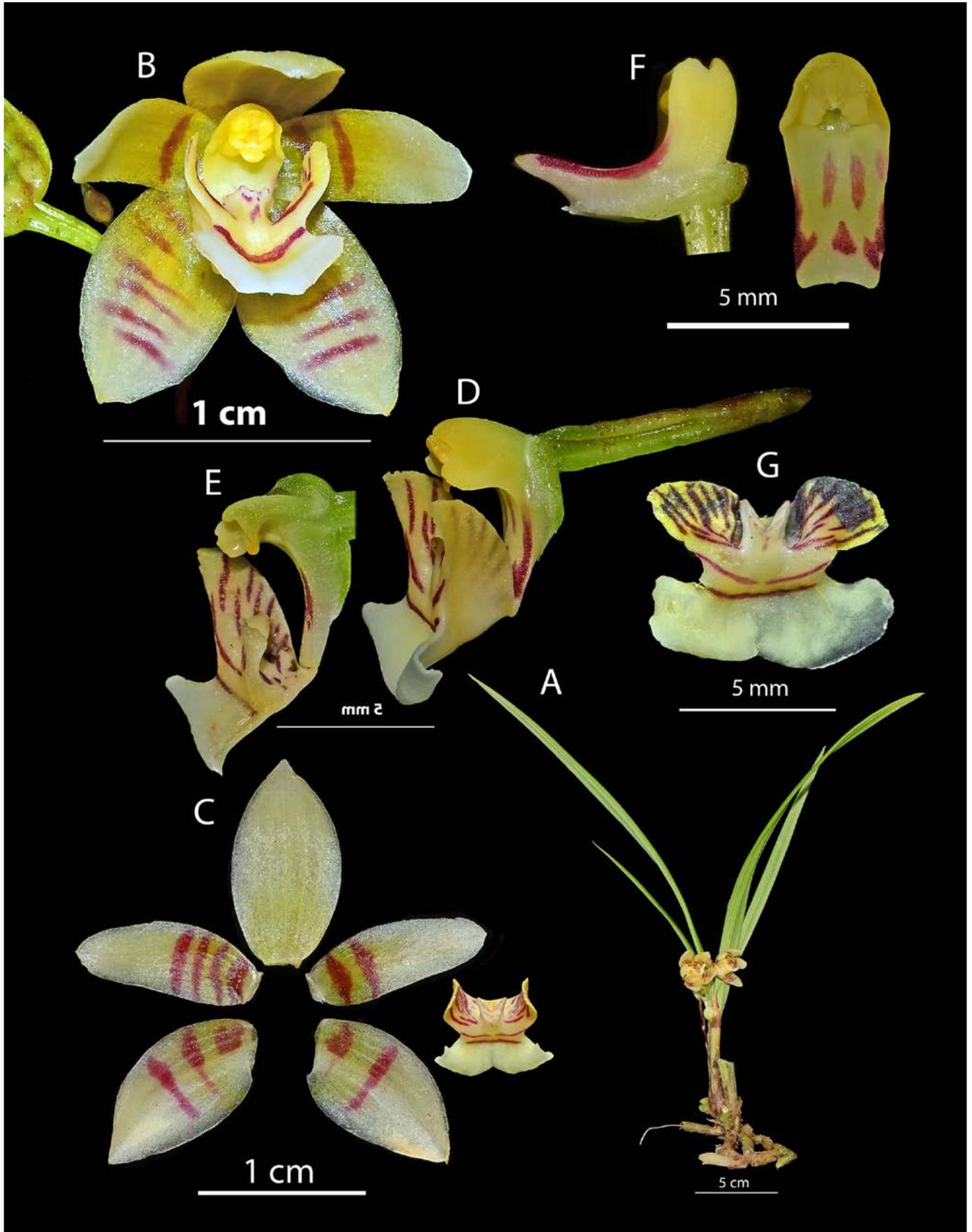
**DISCUSSION:** The new species resembles *Koellensteinia ionoptera* Linden & Rchb.f. It differs mainly in the coloration of the flowers, which are yellow with purple spots, vs. white flowers with wine-colored hues. The lip is rhomboid, trilobed, with more pronounced purple spots on the lobes, and a whitish, barely bilobed callus, vs. an oval, trilobed lip with wine-colored lines and a prominent, yellow, bilobed callus. Column with thin wings, vs. column wings, much wider. Petals and sepals lanceolate, broadly acuminate, vs. sepals and petals oval, apex acute, slightly rounded in *Koellensteinia ionoptera*.

**TAXONOMY:** *Koellensteinia morona-santiagoensis* H.Medina, J.Portilla sp. nov.

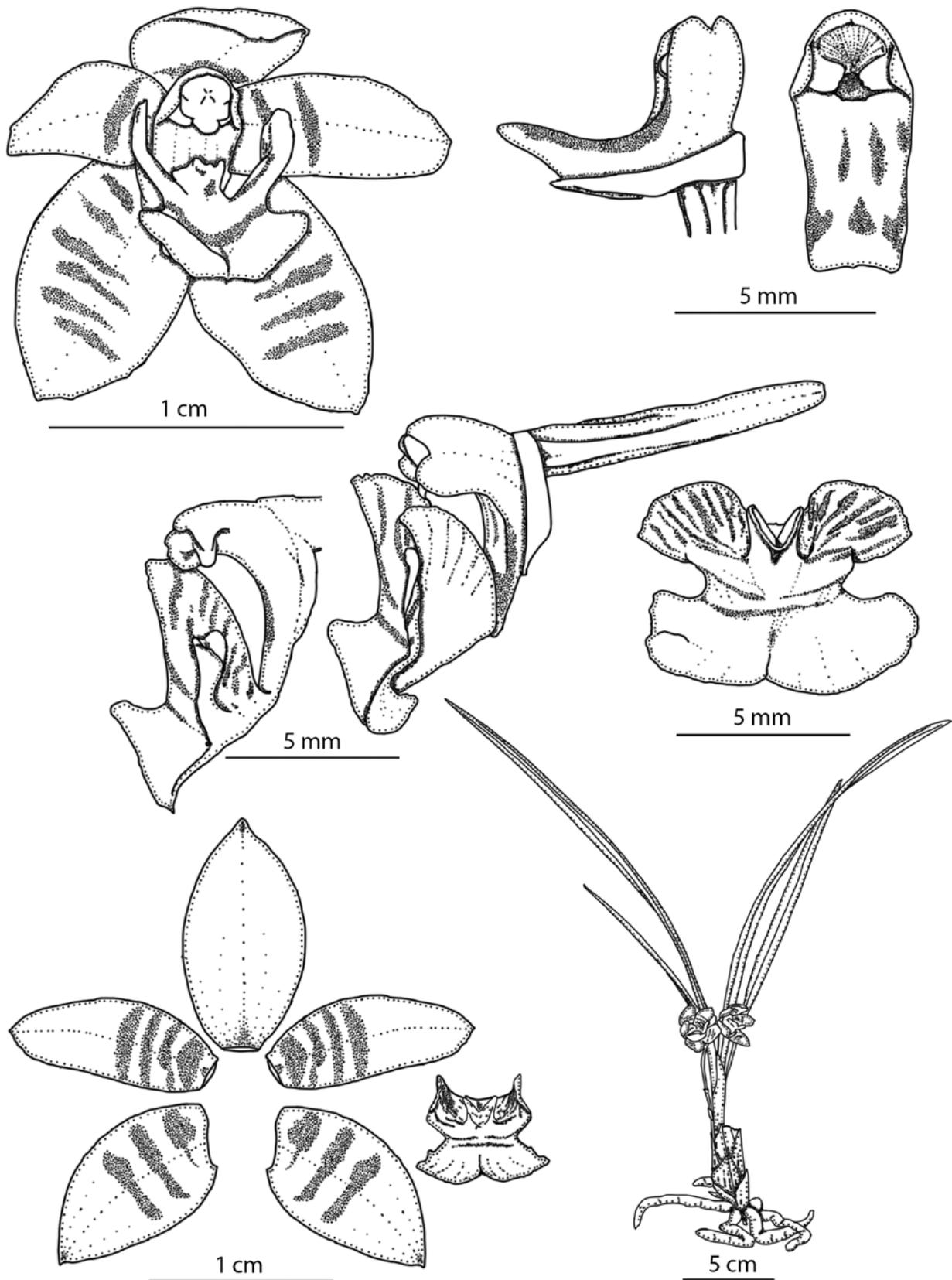
**TYPE:** ECUADOR. Morona Santiago, Santiago de Mendez canton, Patuca parish, near the Namangoza River, 2°47'17.04"S 78°16'38.85" O, ca. 580 m. grows epiphytically in primary forest, flourished in cultivation in Ecuagenera Gualaceo 2024 EG 0663 (holotype: HA). Fig. 4–5. Fig. 6 A–B.

**DIAGNOSIS:** *Species nova similis est Koellensteinia graminea* Linden & Rchb.f. *Planta cum floribus flavescens, columna inclusa, et lineis purpureis in sepalis et petalis. Habitus multo longior quam K. graminea.*

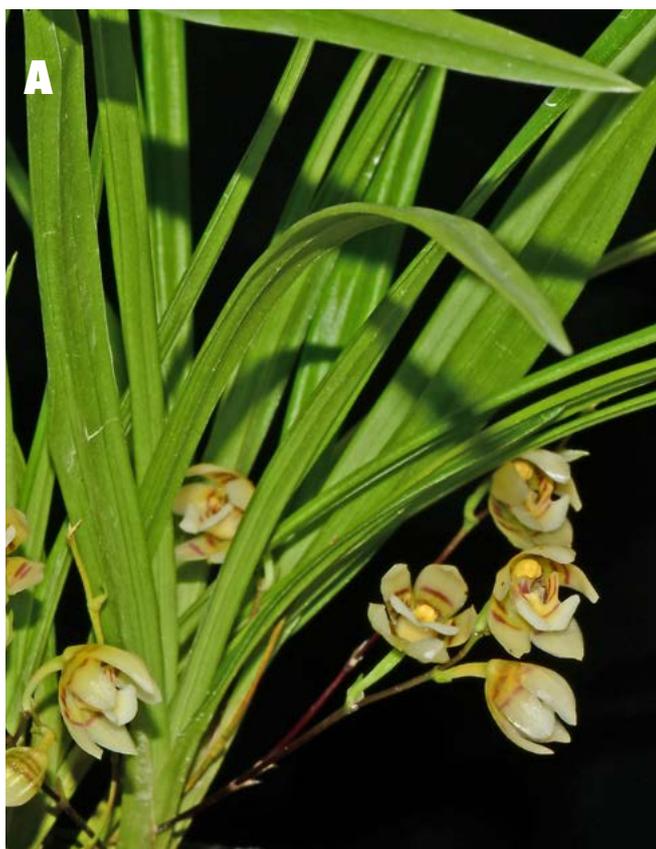
**DESCRIPTION: Plant**, epiphytic, herbaceous, sympodial growth, 22.5–30.0 cm long; roots greenish-white, cylindrical, glabrous, terete, green cap, about 6.0–10.0 cm long, 0.5 cm in diameter, produced at the base of the pseudobulbs; **short rhizome**; **pseudobulbs** ensiform, heteroblastic, with 2 leaves, covered by up to 3 attached leaves, 1.2–1.8 cm long, 0.2–0.3 cm in diameter, enveloped by leafy sheaths; linear, papery, multiventate **sheaths**, 1.5–3.5 cm long, 0.6 cm in diameter, enveloping the pseudobulbs, apex slightly acuminate, base truncate; **leaves linear**, 15.0–20.0 cm long, 0.5–0.8 cm wide, dark green, smooth, semi-leathery, with parallel venation, entire margin, apex acute-apiculate; base attenuated into a **petiole**, subcartaceous blade, plicated, veins abaxially grooved, 15.0–17.5 cm long, 6.0 cm wide, apex conduplicate; **inflorescence** in a lateral, semi-erect raceme, ca. 9.0 cm long, 0.2 cm diameter, cylindrical, with about 4 flowers opening simultaneously, peduncle brown, becoming lighter towards the apex; **rachis** light brown, about 4–6 cm long; **peduncle** bracts papery, 0.7–1.8 cm long, 0.4 cm diameter amplexicaul, broadly triangular, apex acuminate; **floral bracts** green, 0.4–0.7 cm long, 0.3–0.4 cm diameter, lanceolate, apex acute, base truncate; Flowers odorless, yellowish to creamy with purple stripes, resupinate, pedicellate; ovary + pedicels cylindrical, slightly clavate, 1.3–1.5 cm in diameter; creamy yellow **dorsal sepal**, some flowers have brownish-brown lines, elliptical, 1.2 cm long, 0.6 cm wide, acute apex, truncate base, entire margin; **lateral sepals** similar in color to the dorsal sepal, elliptical, 1.2 cm long, 0.6 cm wide, apex acute to slightly apiculate, base truncate, margin entire; **petals** creamy yellow, with brown transverse lines, elliptical-obovate, slightly concave toward the column, 1.0 cm long, 0.4 cm wide, apex acute to slightly obtuse, base truncate, margin entire; **labellum** white with creamy yellow base, purple lines accentuated on the lobes and



**Figure. 4.** *Koellensteinia morona-santiagoensis* H.Medina et al. A. Habit. B. three-quarter flower. C. Dissected perianth. D. Detail of the column and lip profile view. E. cross section of the labellum and column. F. column front and profile view. G. flattened lip. by Hugo Medina.



**Figure. 5.** *Koellensteinia morona-santiagoensis* Medina et al. Drawing of the plant used to make LCDP, used to describe this species and subsequently deposited in the herbarium. By Hugo Medina.



hepichile, 3-lobed, ca. 0.6–0.8 cm in diameter, attached to the base of the column; **middle lobe** semi-rhomboidal, 0.48–0.24 cm diameter, apex rounded; **lateral lobe** reniform, asymmetrically depressed, truncate, 0.24–0.8 cm diameter; **callus** creamy yellow, barely mottled with brown, fleshy, bilobed, 0.16–0.3 cm in diameter; **column** slightly clavate, creamy yellow turning greenish near the base, ca. 0.23–0.32 cm in diameter, ventrally barely concave, slightly curved, winged; **column foot** ca. 0.4 cm long, 0.1 cm wide, creamy yellow with brown spots; **anther** incubant, operculate, anther cap 2-locular, ca. 0.2–0.19 cm in diameter; **clinandrium** shallow, margin entire, prominent at apex; **pollinarium** with two pairs of sub-equal pollinia, dorsi-ventrally flattened, obovate, 0.12 cm long, 0.06 cm wide, without stipe or viscidium; **seed** not seen.

**ETYMOLOGY:** Named after the province of Morona Santiago, where this species was found.

**DISTRIBUTION:** *Koellensteinia morona-santiagoensis*, known from the Ecuadorian Amazon in the province of Morona Santiago, near Patuca.

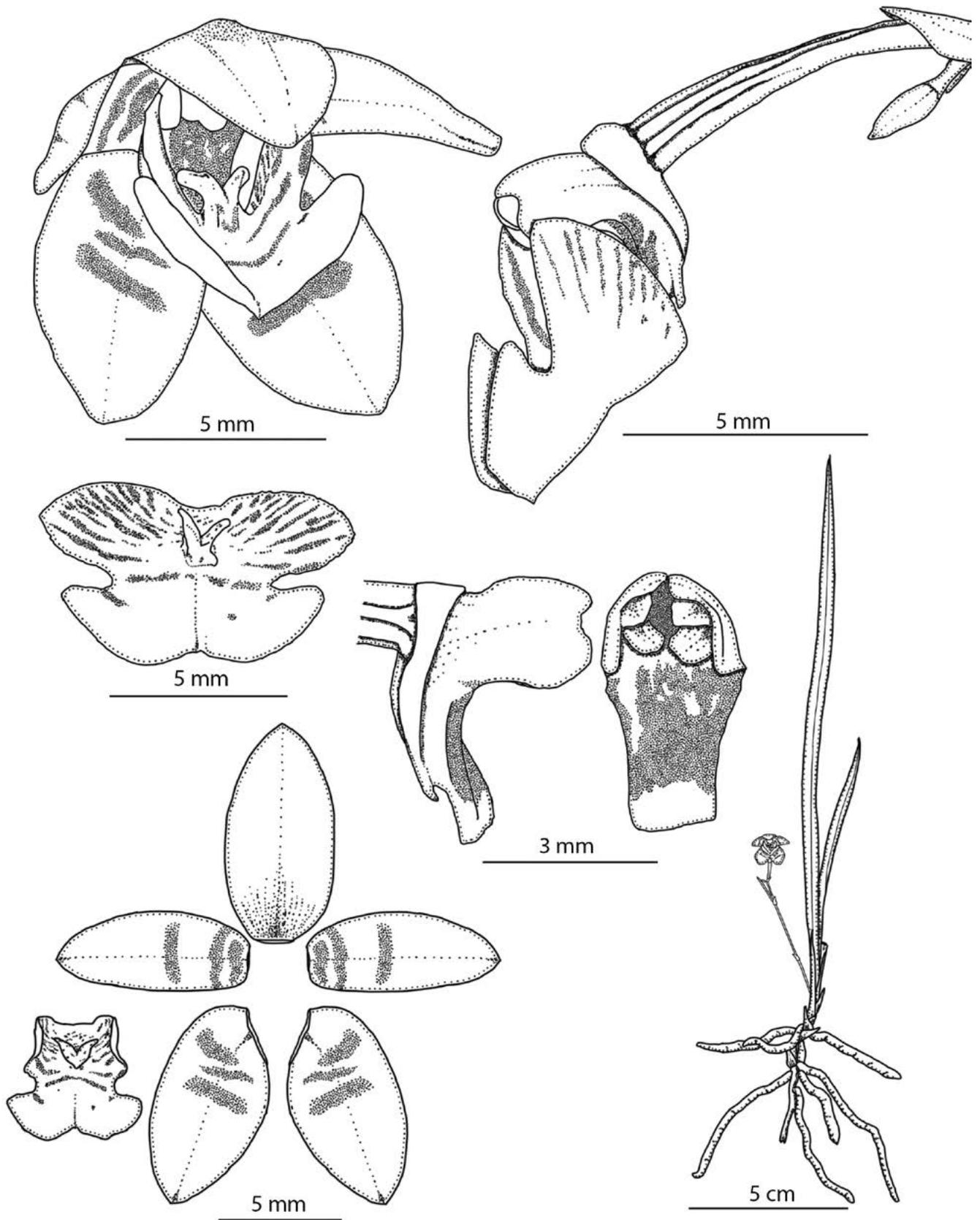
**PHENOLOGY:** In cultivation, it has been seen flowering in the months from August to November.

**HABITAT AND ECOLOGY:** Found growing epiphytically in primary forest, under the canopy of low trees, at an altitude range of 580 to 650 meters above sea level.

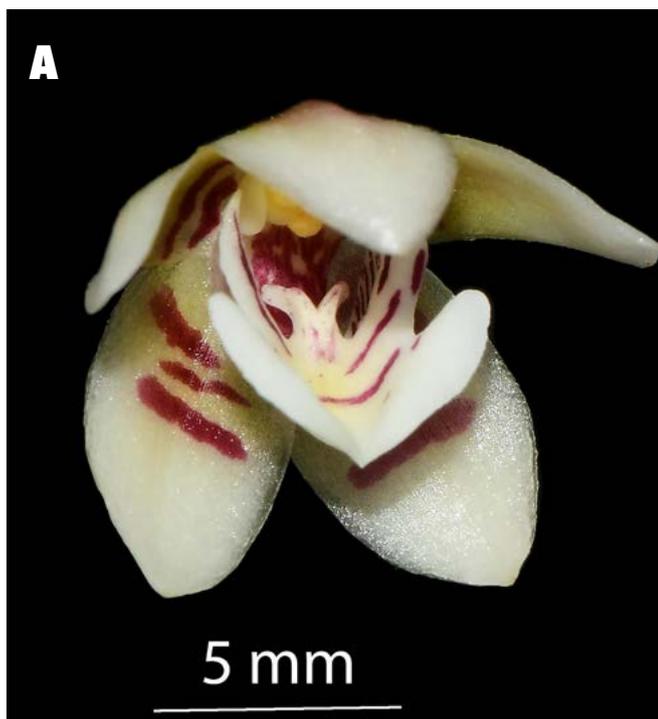
**DISCUSSION:**

The new species resembles *Koellensteinia graminea* Linden & Rchb.f. It differs mainly in plant size (25–27 cm long) and flower coloration (creamy yellow with thick purple lines) vs. short plant (15–23 cm), yellowish flowers with much more pronounced purple lines. Sepals and petals narrow, with well-marked linear spots, slightly arched toward the column, vs. sepals and petals with fine linear spots tinged with purple, arched toward the column. Rhomboid trilobed lip, apical part equal in proportion to lateral lobes, with purple transverse lines, with a prominent callus open in a shallow 'V' shape. Vs. Rhomboid lip, apically trilobed much shorter than the lateral lobes, with broad purple transverse lines, with a deep open basal callus forming two wings in the middle in *Koellensteinia graminea*.

**Figure. 6.** Comparison of the new specimen with the most similar species. A. *Koellensteinia morona-santiagoensis* B. *Koellensteinia graminea* Linden & Rchb.f. photographed by Hugo Medina



**Figure. 7.** *Koellensteinia portillae* Medina et al. Drawing of the plant used to make LCDP, used to describe this species and subsequently deposited in the herbarium. By Hugo Medina.



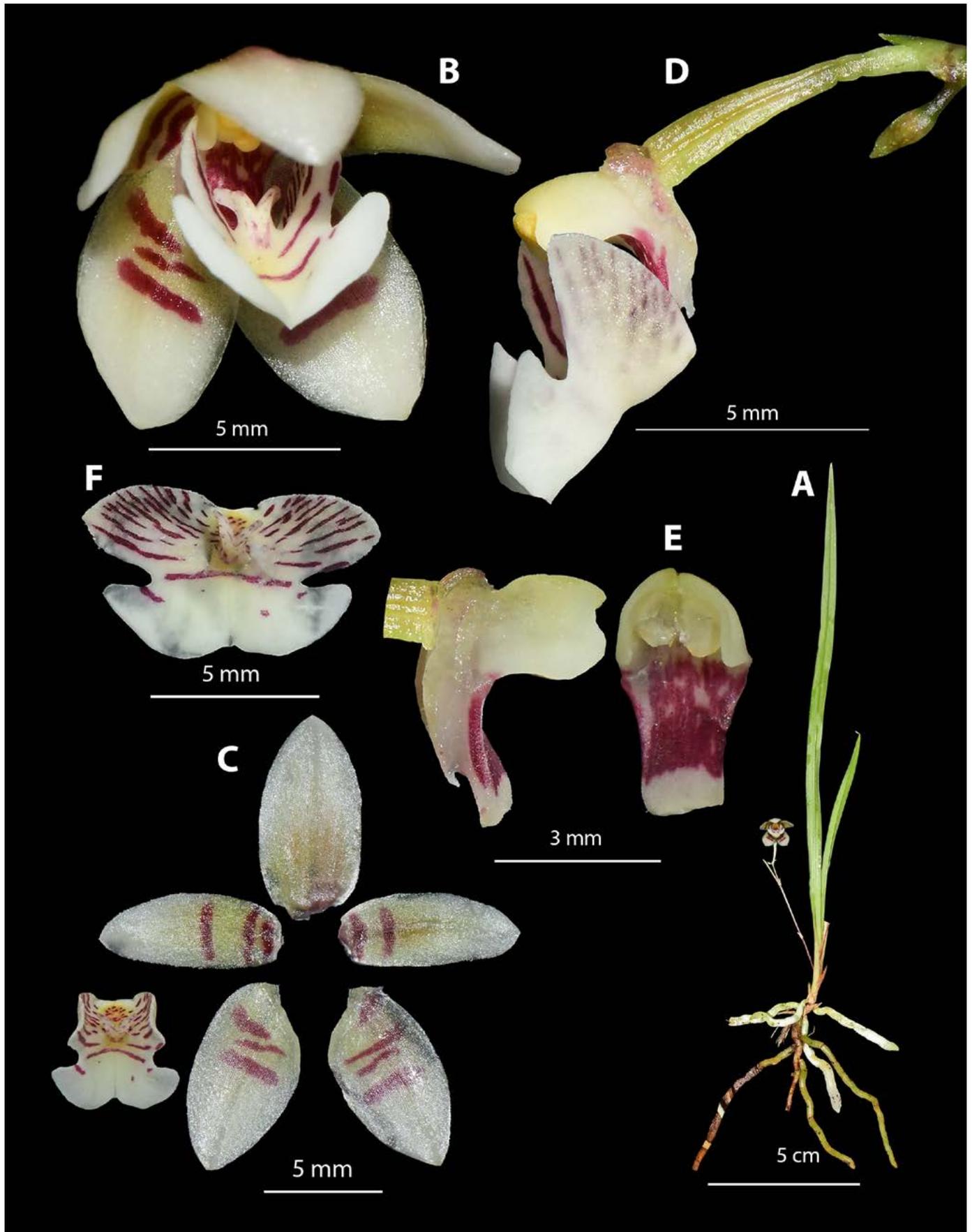
**Figure 8.** Comparison of the new specimen with the most similar species. A. *Koellensteinia portillae* B. *Koellensteinia graminea* Linden & Rchb.f. photographed by Daniela Tacuri

**TAXONOMY:** *Koellensteinia portillae* H.Medina, J.Portilla sp. nov.

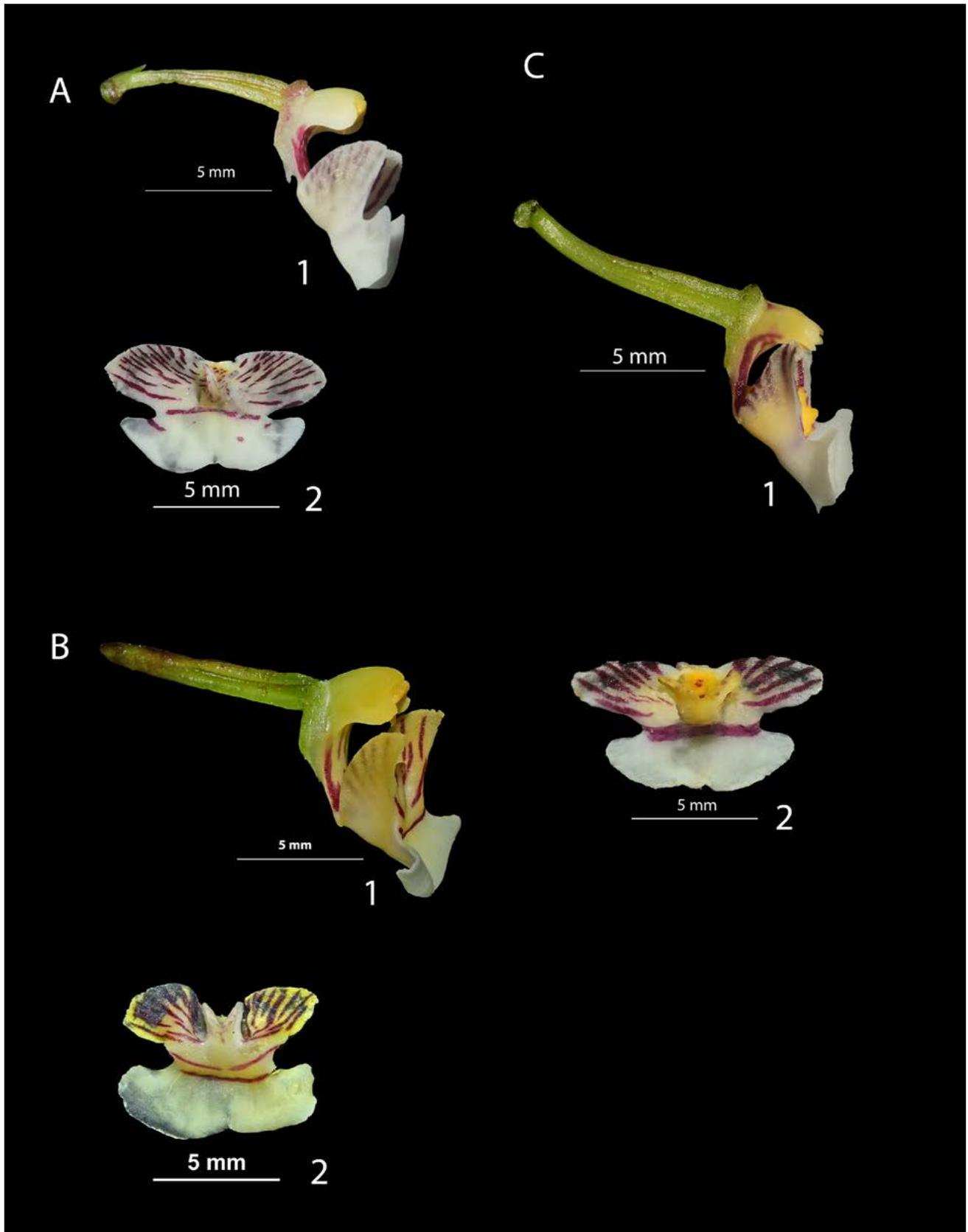
**TYPE:** ECUADOR. Pastaza province, Pastaza canton, Montalvo parish, near the Bobonaza River, 2°02'34.71"S 77°00'16.40"W, approx. 350 m. Grows epiphytically under the canopy of trees, flourished in cultivation in Ecuagenera Gualaceo. 2024 EG 0633 (holotype: HA). Fig. 1-2. Fig. 3 A-B.

**DIAGNOSIS:** *Species nova similis est Koellensteinia tricolor* (Lindl.) Rchb.f. *Floribus lacteis vel eburneis, sepalis petalisque arcuata lineis brunneis tinctis; labellum trilobatum, apice alis lateralibus multo brevioribus.*

**DESCRIPTION: Plant**, epiphytic, herbaceous, sympodial growth, 15.0-30.0 cm long; **roots** greenish-white, cylindrical, glabrous, terete, green cap, about 6.0-10.0 cm long, 0.15 cm in diameter, produced at the base of the pseudobulbs; **short rhizome** 0.4 cm long, 0.26 cm in diameter; **pseudobulbs** ensiform, heteroblastic, with 2 leaves, covered by up to 3 attached leaves, 0.5-0.8 cm long, 0.3-0.5 cm in diameter, wrapped in leafy sheaths; linear, papery, multiventate **sheaths**, 1.3-2.8 cm long, 0.6 cm in diameter, enveloping the pseudobulbs, acuminate apex, truncated base; green linear **leaves**, 11.0-29.0 cm long, 0.4-0.7 cm wide, smooth, semi-leathery, with parallel venation and a prominent central vein, entire margin, acute-apiculate apex; base attenuated into a **petiole**, blade with a central vein grooved abaxially, 12.5-26.5 cm long, 0.4-0.7 cm wide; **inflorescence** in a cluster, lateral, semi-erect, ca. 9.0 cm long, 0.03 cm diameter, cylindrical, with about 2 flowers opening simultaneously, peduncle brown, becoming lighter towards the apex; **rachis** light brown, about 2-4 cm long; **peduncle bracts** papery, 0.3 cm long, 0.2 cm diameter amplexicaul, broad triangular, apex acuminate; **floral bracts** green, 0.2 cm long, 0.14 cm wide, lanceolate, apex acute, base truncate; **flowers** odorless, white to creamy with purple transverse stripes, resupinate, pedicellate, 1.0-1.41 cm in diameter; **ovary+pedicels** cylindrical, slightly clavate, 0.1-0.7 cm in diameter; **dorsal sepal** creamy white, elliptical, 0.9 cm long, 0.43 cm wide, apex obtuse to slightly acute, base truncate, margin entire; Creamy white **lateral sepals** with brown transverse stripes, elliptical, 0.8 cm long, 0.4 cm wide, obtuse to slightly acute apex, truncated base, entire margin; **petals** similar in color, with brown transverse lines, oblong-obovate, slightly concave toward the column, 0.8 cm long, 0.3 cm wide, apex acute to slightly obtuse, base truncate, margin entire; labellum white with slightly creamy base, purple lines accentuated on lateral lobes and



**Figure. 9.** *Koellensteinia portillae* H.Medina et al. A. Habit. B. three-quarter flower. C. Dissected perianth. D. Detail of the column and lip profile view. E. column front and profile view. F. flattened lip. by Daniela Tacuri.



**Figure. 10.** Comparison of the new species *Koellensteinia morona-santiagoensis* and *K. portillae* with *Koellensteinia graminea*. A. *Koellensteinia portillae*. A-1. lip and column seen in profile. A-2. view of the flattened lip. B. *Koellensteinia morona-santiagoensis* B-1. lip and column seen in profile. B-2. view of the flattened lip. C. *Koellensteinia graminea*. Linden & Rchb.f. C-1 lip and column seen in profile C-2 view of the flattened lip. photographed by Hugo Medina.

hypochile, 3-lobed, ca. 0.5–0.9 cm in diameter, attached to base of column; **apical lobe**, 0.2–0.7 cm in diameter, apex cleft; **lateral lobes** reniform to orbicular, asymmetrically depressed to truncate, 0.4–0.25 cm in diameter; **callus** similar in color, mottled with brown, fleshy, bilobed, 0.2 cm long, 0.16 cm at the apex, 0.06 cm at the base; **column** slightly clavate, barely creamy yellow turning white near the base, ca. 0.2–0.23 cm diameter, ventrally concave, prominently winged; **column foot** ca. 0.3 cm long, 0.1 cm wide, creamy white tinged ventrally with brown; **anther** incumbent, operculate, anther cap 2-locular, ca. 0.15–0.17 cm in diameter; **clinandrium** shallow, margin smooth, prominent at apex; **pollinarium** with two pairs of sub-equal pollinia, dorsi-ventrally flattened, obovate, 0.1 cm long, 0.08 cm wide, rhomboid stipule 0.03–0.06; **seed** not seen.

**ETYMOLOGY:** Named in honor of José Portilla Andrade, executive president of Ecuagenera, he has dedicated his life to the research, conservation, and promotion of Ecuadorian orchids, contributing significantly to science and the environment.

**DISTRIBUTION:** *Koellensteinia portillae*, known from the Ecuadorian Amazon in the province of Pastaza, canton of Pastaza, parish of Montalvo, near the Bobonaza River.

**PHENOLOGY:** In cultivation, this species has been seen flowering in the months from July to September.

**HABITAT AND ECOLOGY:** Found growing epiphytically in primary forest, under the tree canopy, at an altitude range of 330 to 350 meters above sea level.

**DISCUSSION:** The new species resembles *Koellensteinia graminea* Linden & Rchb.f. but differs mainly in plant size (30 cm long) and flower coloration (creamy white with thick purple transverse lines) vs. short plant (15–23 cm), yellowish flowers with much more pronounced purple lines. Sepals and petals elliptical, apex obtuse, slightly acute with marked linear spots, slightly arched toward the column, vs. sepals and petals elliptical, apex acuminate with thick linear spots tinged with purple, arched toward the column. Trilobed lip, apical part almost equal to lateral lobes, with more pronounced purple transverse lines on wings, with prominent, thin, semi-open basal callus in a 45° V-shape. Vs. Trilobed lip apically much shorter than the lateral lobes, with broad purple transverse lines, with an open, deep basal callus forming two open wings at 90°, in the middle part short column with prominent wings, Vs thin column. in *Koellensteinia graminea*

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## A New Species of *Anthurium* (Araceae) section *Calomystrum* from southeast of Ecuador

Hugo Medina, Ivan Portilla, Juan P. Martinez, Alex Portilla & Daniela Tacuri

**ABSTRACT:** A new species of *Anthurium*, (Araceae), *Anthurium pepeportillae*, collected for the first time in the province of Zamora Chinchipe, Ecuador, from material collected under the research permit "Rescue, conservation, reproduction and ex situ management of the flora of Ecuador," No. 004-2016-IC-FLO-FLO-DNB/MA, authorized by the Ministry of Environment of Ecuador under The Codification to the Forestry and Conservation of Natural Areas and Wildlife Law, granted to Ecuagenera Cia. Ltda.

**KEY WORDS:** Araceae, new *Anthurium* species, Amazonian Forest, terrestrial and epiphytic growth, tropical plants, discovered by Ecuagenera.

**INTRODUCTION:** The genus *Anthurium* was published by **Heinrich Wilhelm Schott** in 1829 in *Wiener Zeitschrift für Kunst*, thereby formally established as *Anthurium* (Schott 1829). The Austrian botanist, a specialist in Araceae, later culminated his work with the *Prodromus Systematis Aroidearum* (Schott, 1860), in which he expanded the classification of the family. Among the species Schott combined in *Anthurium*, *Anthurium acaule* (Jacq.) Schott is notable; its basionym (*Pothos acaulis* Jacq.) had been previously described by Nikolaus Joseph von Jacquin in the 18th century (Jacquin, 1763–1780). Thus, although the genus *Anthurium* dates from 1829, some of its members have a nomenclatural history under other genera. The generic name *Anthurium* derives from the Greek **ánthos** (ἄνθος, "flower") and **ourá** (οὐρά, "tail"), referring to the elongated spadix that bears the flowers, resembling a "floral tail." (Boyce & Croat, 2018). *Anthurium* is the largest genus in Araceae, comprising approximately 1,000 described species, with numbers still increasing due to recent discoveries. (Croat, 1983; Boyce & Croat, 2018) Its geographic range extends from northern Mexico and the Caribbean to southern Brazil and northern Argentina, with a center of diversity in the Andes of Colombia, Ecuador, and Peru. Species exhibit high morphological plasticity: leaves are highly variable (cordate, lanceolate, palmate, peltate, or deeply lobed); inflorescences bear spathes that are green, red, purple, or

white; spadices can be cylindrical, globose, or caudiform; fruits are berries, often bright-colored and bird-dispersed. From a taxonomic perspective, *Anthurium* represents a challenge due to high intraspecific variability and frequent morphological convergence. Various authors have proposed subdivisions into sections (more than 18), based on leaf venation, inflorescence morphology, and floral structure (Schott, 1860; Engler, 1905; Croat, 1983; Boyce & Croat, 2018).

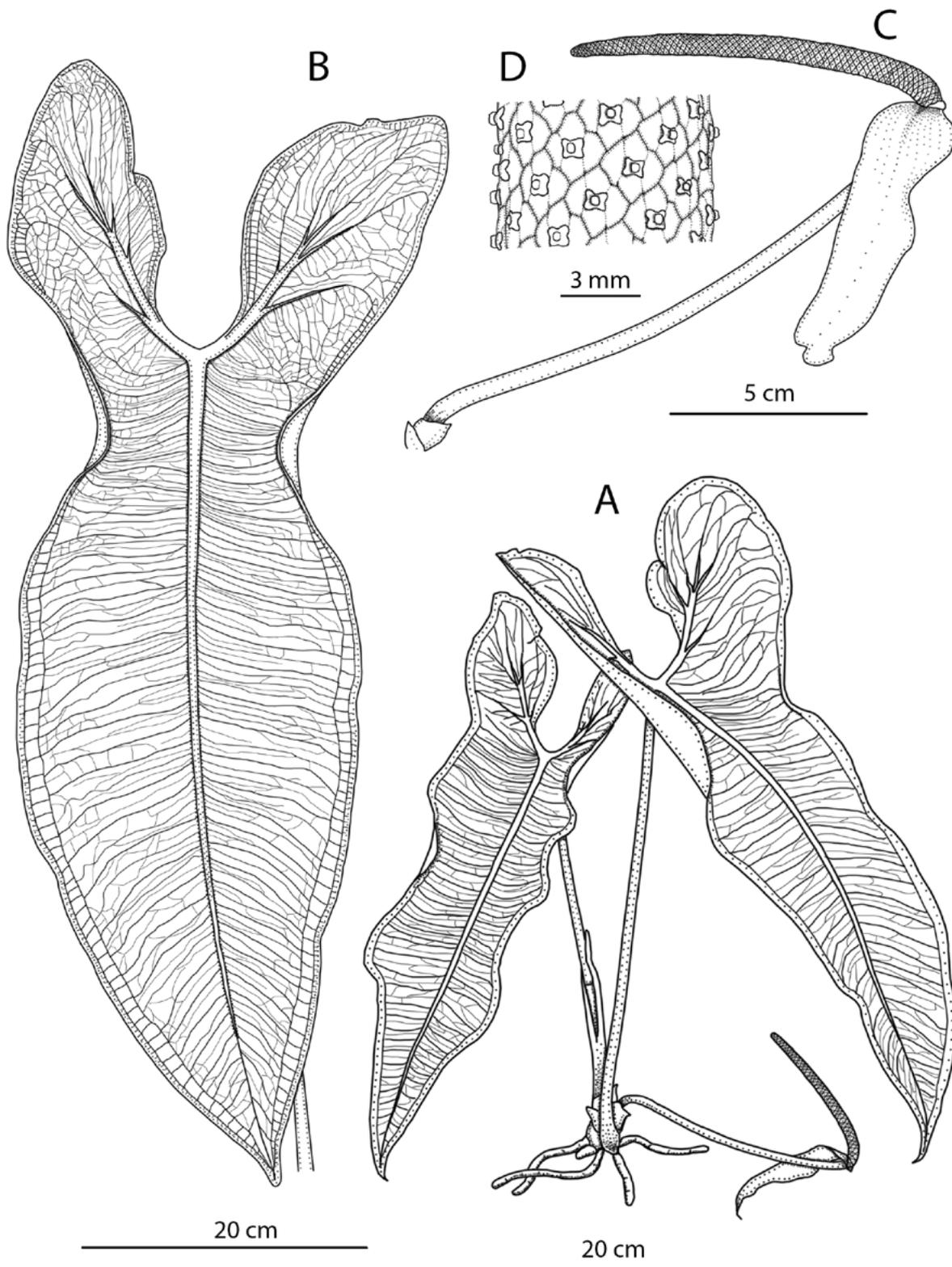
The new species of *Anthurium* from the section ***Calomystrum*** is described and illustrated, and it is compared with *Anthurium longissimilobum* Croat.

**TAXONOMY:** *Anthurium pepeportillae* H.Medina et al **sp. nov.**

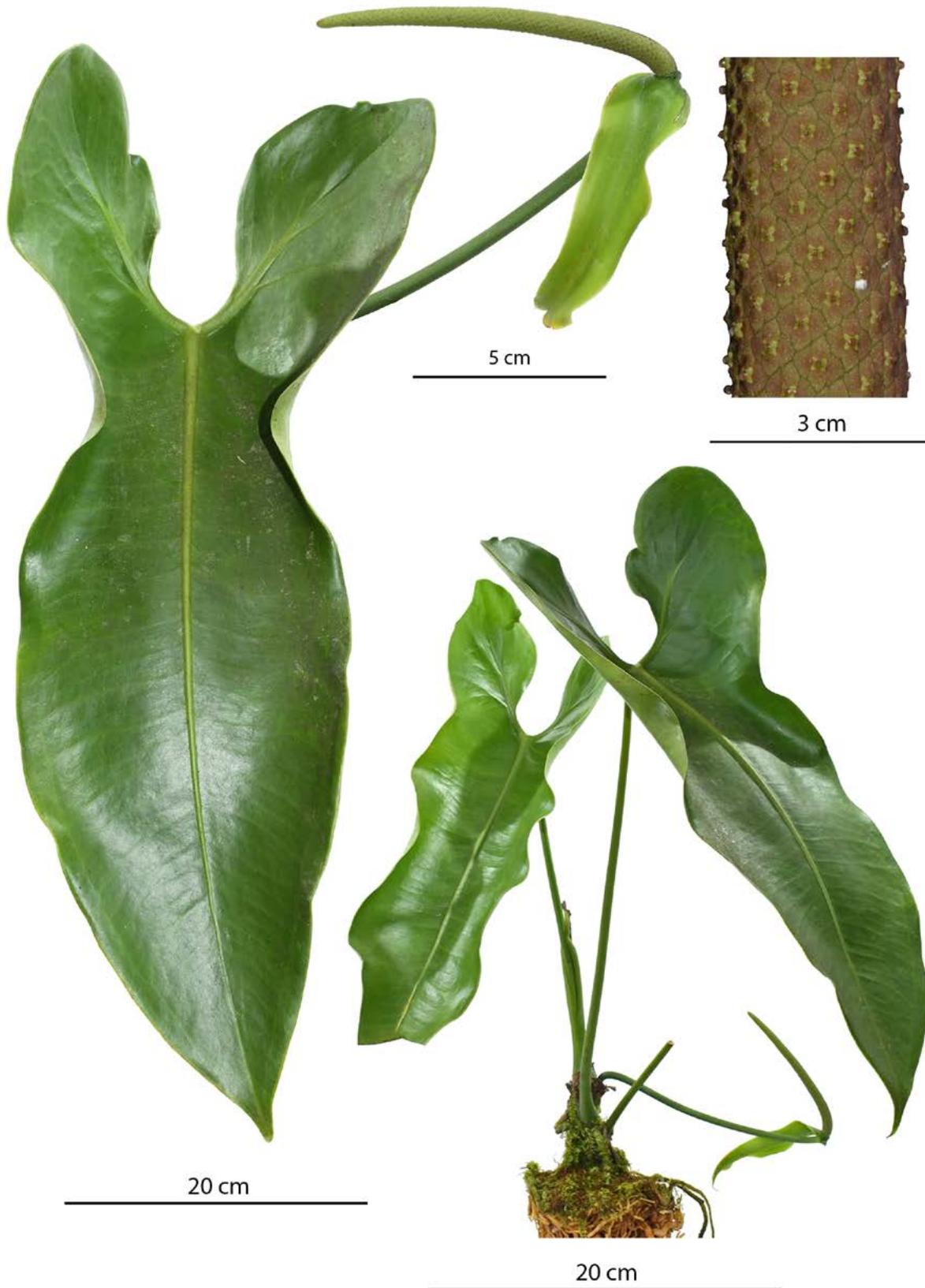
**TYPE:** Ecuador. Zamora Chinchipe Province, Nangaritzá canton, Guayzimi Parish, between the towns of Nuevo Paraíso and Selva Alegre: southeastern end of the province, 4°23'46.87" S, 78°40'50.13" W, 950 m, originally collected by Ecuagenera, certified by Hugo Medina EG-0643 (**holotype**, HA). Fig. 1–2.

**DIAGNOSIS:** *Planta terrestris, erecta; cataphylla viridia ad papyracea; folium nitide viride, lanceolato-auriculatum, cum costa rotundata, margine integro, apice acuminato; inflorescentia semi-erecta, viridis; spadix olivaceo-viridis, demum brunnescens.*

**DESCRIPTION:** Terrestrial plant, 50.0–80.0 cm tall; stems 10.0–20.0 cm long with light green internodes, short, asymmetric, slightly wider than long, 0.5–2.0 cm long, 1.5–2.5 cm in diameter; cataphylls green when young, papyraceous and fibrous with age, 4.0–14.0 cm long, 2.0–4.0 cm wide. Leaves attached near the stem apex, blades more or less pendent to spreading; petioles light green with slight yellowish tint, semi-shiny, with minute yellowish maculations, erect, terete, 25.0–35.0 cm long, 0.5–0.8 cm in diameter; geniculum 2.0 cm long, 0.6 cm in diameter, lighter than the petiole, moderately granular when dried. Lamina lanceolate-auriculate, 35.0–40.0 cm long, 17.5–21.5 cm wide, and 11.0–12.0 cm wide in the discal portion, much longer than wide, exceeding the length of the petiole; gradually long-acuminate at the apex, sagittate-lobulate at the base; finely coriaceous, light green and glossy on the adaxial surface, moderately pale and more glossy on the abaxial surface; drying dark green and matte above, moderately paler and semi-glossy below; surface smooth-waxy between primary lateral veins, similar appearance along basal veins; anterior lobe 25.0 cm long, widely convex along the margins; posterior



**Fig. 1** Botanical drawing of *Anthurium pepeportillae*. **A.** plant. **B.** leaf of the plant seen from the front. **C.** inflorescence showing the spathe and spadix. **D.** close-up view of the spadix with flowers. by Daniela Tacuri.



**Fig. 2** Botanical plate of *Anthurium pepeportillae*, the same one that was used for the herbarium, subsequently deposited in the HA. By Daniela Tacuri

lobes 12.0 cm long, 8.6 cm wide, directed upwards; sinus obtuse, 7.5 cm deep, 4.5 cm wide when flattened, open with lobes separated; midrib narrowly rounded and concolorous above, more yellowish below; primary lateral veins 33 per side, pinnately arising from midrib, lower veins moderately prominent, concolorous, almost flat and inconspicuous abaxially; collective veins arising from first pair of basal veins, in younger leaves arising from upper primary lateral veins; primary lateral veins moderately connected by barely perceptible loops, 0.3–0.4 cm from the margin; basal veins none free, coalesced at base; posterior venation ca. 5.0 cm long, prominent along sinus; tertiary veins scarcely prominent. Inflorescence erect, uniformly green, subterete to terete, with a robust base inserted on a visibly lignified and yellowish stem; peduncle approximately 15–18 cm long, 0.5–0.7 cm in diameter; spathe intense green, subcoriaceous, oblong-lanceolate, apex acuminate, base truncate, smooth surface, semi-erect, partially enclosing the spadix at the base, approximately 8.0–10.0 cm long, ca. 2.5–3.5 cm wide; spadix cylindrical to slightly conical, light green turning brown, longer than the spathe, approximately 10.0–12.0 cm long. Flowers visibly papillose, giving a rough texture, horizontally oriented, slightly curved downward from the point of insertion; 6–7 visible flowers arranged in a spiral (frontal view), hermaphroditic, sessile, polygonal, mostly rhomboid to hexagonal due to lateral compression, 0.2–0.2 cm in diameter; with a reticulate pattern across the spadix surface, primary and secondary spirals clearly discernible; tepals four, pale olive green, conspicuously granular, margins of each tepal defined by prominent veins of lighter green. Pistil prominent, obpyramidal, central in the flower, 0.07 cm long, 0.03 cm wide; stigma with a short, translucent protuberance at the apex of the pistil, visible and receptive; pistil surface slightly papillose; stamens and thecae concealed beneath the perianth, emerging sequentially during the male flowering phase (protandrous). Anther dehiscence and pollen release occur after stigmatic receptivity.

**ETYMOLOGY:** Named in honor of José Portilla Andrade, (Pepe) executive president of Ecuagenera, he has dedicated his life to the research, conservation, and promotion of Ecuadorian orchids, contributing significantly to science and the environment.

**DISTRIBUTION:** *Anthurium pepeportillae*, known from the Ecuadorian Amazon in the province of Zamora Chinchipe, Nangaritza canton, Nuevo Paraiso town, near the Nangaritza River.

**HABITAT AND ECOLOGY:** Found growing epiphytically in primary forest, at an altitude range of 950 meters above sea level.

**DISCUSSION:** *Anthurium pepeportillae* is similar to *Anthurium longissimilobum*, but differs by: Leaves: *A. pepeportillae* has shorter, noticeably wider, glossy leaves with short basal lobes, Vs. *A. longissimilobum* has longer, narrower, dull leaves with much longer basal lobes. In *A. pepeportillae*, the cataphylls are green when young, becoming papyraceous and fibrous with age. In contrast, *A. longissimilobum* has narrow, acute, coriaceous cataphylls with two faintly marked ribs, which turn pale reddish-brown and remain persistent and intact upon drying. In *A. pepeportillae* features a short inflorescence (15.0–18.0 cm long) that is semi-horizontal, with a semi-erect, olive-green spathe, and an erect, greenish spadix turning brown. This is different from *A. longissimilobum*, which has a long inflorescence (65.0–76.0 cm long), a yellowish-green spathe that curves backward, and a pendulous, reddish-brown spadix.

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## *Ceratostema josecaamanoi* (Ericaceae: Vaccinieae), a new epiphytic shrub from the Andean cloud forests of Ecuador

Alfonso Doucette<sup>1</sup>, Hugo Medina<sup>2</sup>, & Jose Portilla<sup>2</sup>

**ABSTRACT:** A new species of *Ceratostema*, *Ceratostema josecaamanoi*, is described from the Andean cloud forests of Ecuador. This epiphytic shrub was discovered in cultivation at Ecuagenera from collections made in Zamora Chinchipe. The species is morphologically similar to *Ceratostema zamorana* but differs in its vegetative and floral morphology. The new species is described and illustrated for the first time.

**KEY WORDS** : Andean cloud forests, epiphytic shrubs, neotropical blueberries, discovered by Ecuagenera, cultivated plants

**INTRODUCTION:** The genus *Ceratostema* Juss. (Ericaceae) comprises over 30 described species, predominantly distributed in the Andean cloud forests, where they contribute to the region's exceptional biodiversity and endemism (Luteyn 2002). Ecuador, in particular, harbors a remarkable diversity of *Ceratostema*, with new species continuing to be discovered despite centuries of botanical exploration (Luteyn 2005; Jiménez et al. 2021; Cornejo et al. 2024; Cornejo & Luteyn 2024; Jiménez et al. 2024a, 2024b, 2024c; Doucette et al. 2024, 2025). Here, we describe *Ceratostema josecaamanoi*, a new species from Zamora Chinchipe, Ecuador, based on recent collections made by Ecuagenera and cultivated at their facilities in Gualaceo.

### TAXONOMY

*Ceratostema josecaamanoi* A.Doucette, H.Medina & J.Portilla, *sp. nov.*

**ETYMOLOGY:** The new name is formed by combining the first and last name of José Luis Caamaño, who participated in the collection of the new species.

**TYPE:** ECUADOR. Zamora Chinchipe, Zamora canton, San Carlos de Las Minas parish, along the road from San Carlos to Minas de Nambija, 1550 m, flowered in cultivation at Ecuagenera, Gualaceo, 2024, EG-0686 (holotype: HA). Figure 1, 2.

**DIAGNOSIS:** *Ceratostema josecaamanoi* is most similar to



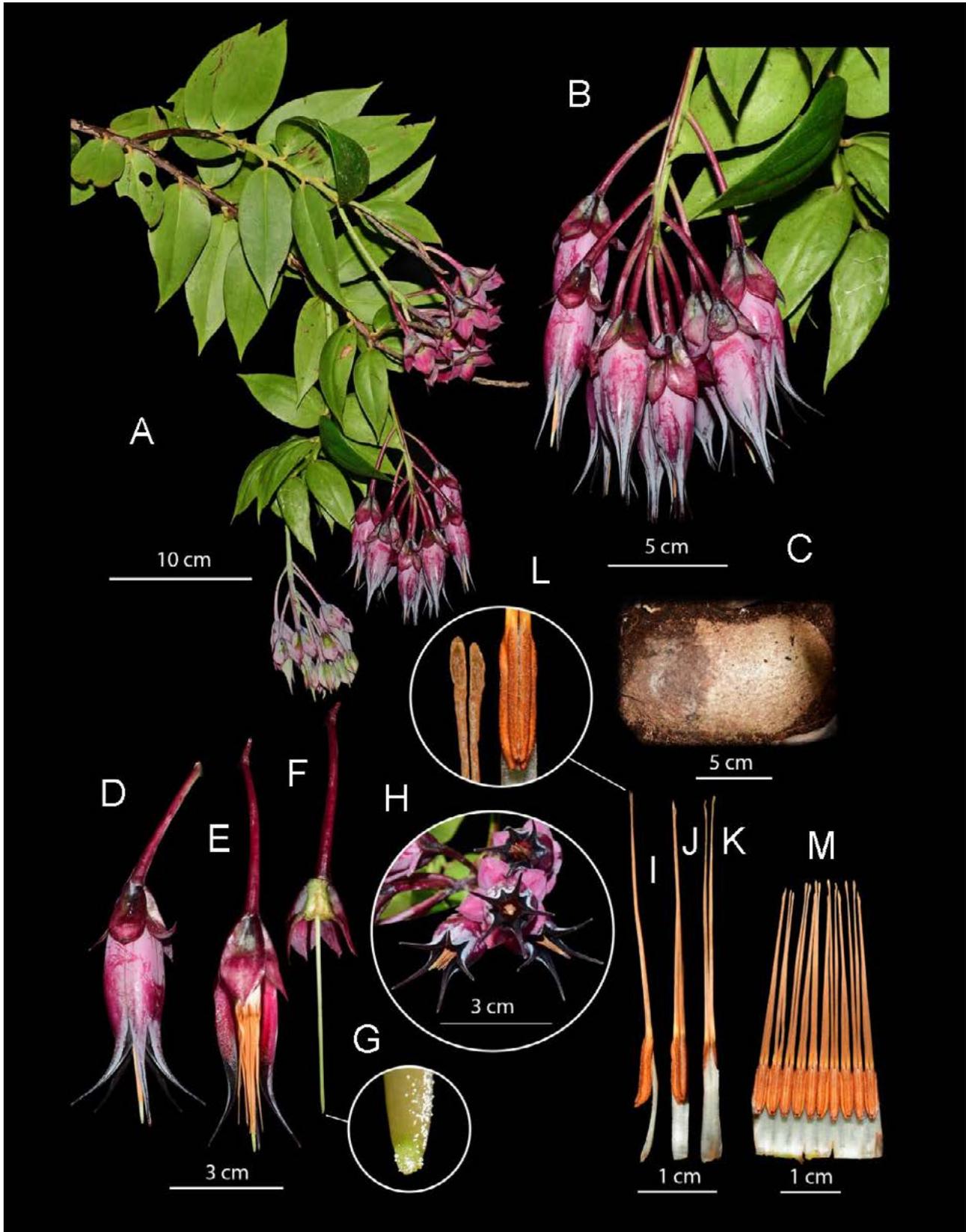
**Figure 2.** *Ceratostema josecaamanoi* in cultivation

*C. zamorana* M.M. Jiménez & Vélez-Abarca, but differs by its ellipsoid lignotubers (vs. subspherical to broadly fusiform), ovate leaf blades with obtuse bases (vs. ovate-lanceolate to elliptic with shortly attenuate, decurrent bases), the glaucous corolla (vs. not), and glabrous filaments (vs. pilose on both sides).

**DESCRIPTION:** Epiphytic shrubs; lignotubers present, ellipsoid, young branches ascending to pendent; stems terete, glabrous, ascending to pendent, 0.5–0.7 cm in diam., the bark gray to red-brown. Leaves alternate; blades thinly coriaceous, ovate, apex acuminate, base obtuse, margins entire, 5.8–10.0 cm long, 2.0–4.1 cm wide, the upper and lower surface glabrous. Inflorescence racemose, pendent, 2–10 flowers; floral bracts reduced, deltoid, membranous, pale green to brown, 4.0 mm long, 1.8 mm wide; peduncle straight to arcuate, subterete, keeled, glabrous, green suffused with rose; pedicel, straight, terete, purple, articulated with calyx, 35.9–41.8 mm long, 2.9–3.7 mm in diam. Flowers 5-merous, pendent; calyx hypanthium turbinate, purple, nitid, glabrous, 5-carinate, 7.4–10.0 mm long, 13.6–13.8 mm wide; calyx limb, campanulate, similar in color and texture to the hypanthium 12.8–13.2 mm long, 20.2–22.2 mm wide; lobes purple, deltoid, acute, sinuses acute, 10.0–10.5 mm long, 9.3–11.3 mm wide; corolla red-purple, glabrous, glaucous, terete, tubular, fleshy, 29.1–33.2 mm long (excluding the lobes), 16.7–16.9 mm wide;

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**FIGURE 1:** *Ceratostema josecaamanoi*. A. Habit to 10 cm scale. B. Inflorescence detail to 5 cm scale. C. Lignotuber to 5 cm scale. D-F to 3 cm scale. D. Flower in profile. E. Flower with a portion of the corolla removed. *Ceratostema josecaamanoi* (Ericaceae: Vaccinieae), a new epiphytic shrub from the Andean cloud forests of Ecuador

lobes five, purple, spreading, slightly recurved, triangular, acuminate, sinuses acute, 23.6–27.1 mm long, 3.7–4.1 mm wide; stamens ten, sometimes unequal with each other, 38.3–40.8 mm long; filaments white, connate into a tubular corona, glabrous, 12.1–13.9 mm long, 2.5 mm wide; anthers 44.2–47.3 mm long, with two orange-brown, granular textured thecae, 8.3 mm long, 1.8–2.1 mm wide, each connate for their length, attenuated into free, straw-colored, filiform tubules, 29.4–31.4 mm long, 0.3–0.8 mm wide, dehiscing by terminal, spatulate pores; style light green, glabrous, exerted, 51.5 mm long, 0.9 mm in diameter; stigma truncated. Fruits not seen.

**DISCUSSION:** *Ceratostema josecaamanoi* keys out to *C. Ceratostema reginaldii* (Sleumer) A.C.Sm. in the digital key to *Ceratostema* (Luteyn & Pedraza-Peñalosa 2025) but is easily distinguished by the terminal (vs. axillary) inflorescences, terete pedicel (vs. subterete or more commonly strongly flattened, striate to ribbed), calyx articulate with the pedicel (vs. continuous), the glaucous corolla (vs. nitid), and the tubules that are longer than the thecae (vs. shorter or equal).

**ACKNOWLEDGEMENTS:** Generative AI (ChatGPT, OpenAI) was used as a tool to assist in drafting and refining portions of this manuscript, including structuring the diagnosis and improving clarity. The final content, scientific interpretations, and taxonomic conclusions remain the responsibility of the authors.

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## ***Macleania gigiportillae* (Ericaceae: Vaccinieae), a new shrub from the Andean cloud forests of Ecuador**

Alfonso Doucette<sup>1</sup>, Hugo Medina<sup>2</sup>, & Jose Portilla<sup>2</sup>

**ABSTRACT:** A new species of *Macleania* is described from the Andean cloud forests of Ecuador. This shrub was discovered in cultivation at Ecuagenera, originating from collections made in Zamora Chinchipe Province. The new species is morphologically similar to *Macleania stricta*, but differs in the floral characteristics. Here, the new species is formally described and illustrated for the first time.

**KEY WORDS:** Andean cloud forests; neotropical blueberries; cultivated material; Ecuagenera collections

**INTRODUCTION:** The genus *Macleania* Hook. is a distinctive group within the Neotropical Vaccinieae (Ericaceae), comprising approximately 50 species of shrubs, small trees, and epiphytes distributed from southern Mexico to Bolivia and the Guianas, with a center of diversity in the

northern Andes (Luteyn 1996). Members of the genus are noted for their coriaceous leaves, often tubular brightly colored flowers adapted for hummingbird pollination, and fleshy berries. Despite considerable collecting in Andean forests, new species of *Macleania* continue to be discovered, especially in underexplored or botanically rich areas of Ecuador.

An unidentified *Macleania* was found to differ consistently from all described species. The plant originated from a wild collection in Zamora Chinchipe Province and, upon flowering, displayed a suite of unique floral traits not attributable to any known taxon. The new species is described here.

### **TAXONOMY**

*Macleania gigiportillae* A. Doucette, H. Medina & J. Portilla, *sp. nov.*

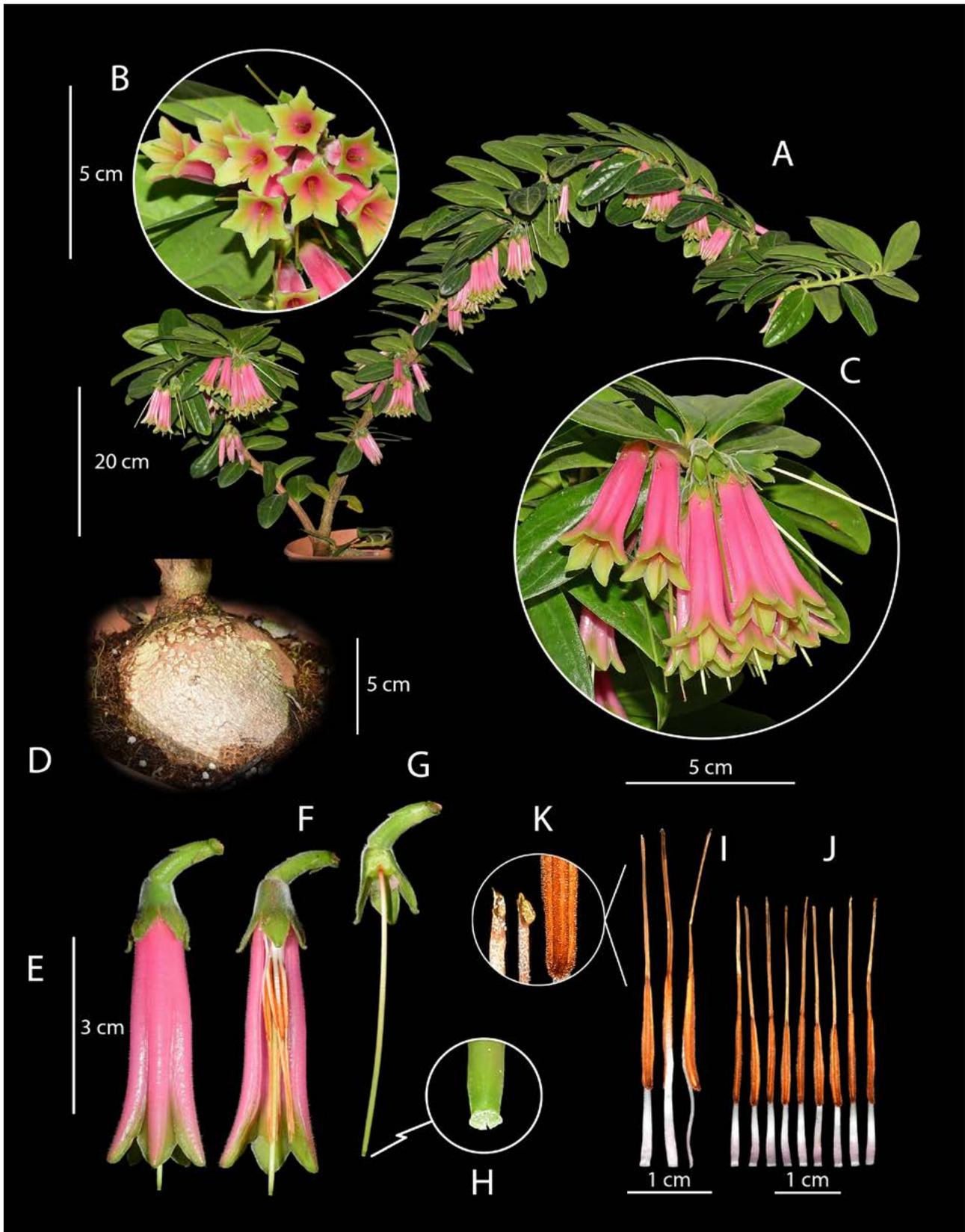
**ETYMOLOGY:** The name honors Gigi Portilla, daughter of Jose Portilla, President of Ecuagenera.



**Figure 1.** *Sphyrospermum buxifolium* var. *chlorinus* in cultivation

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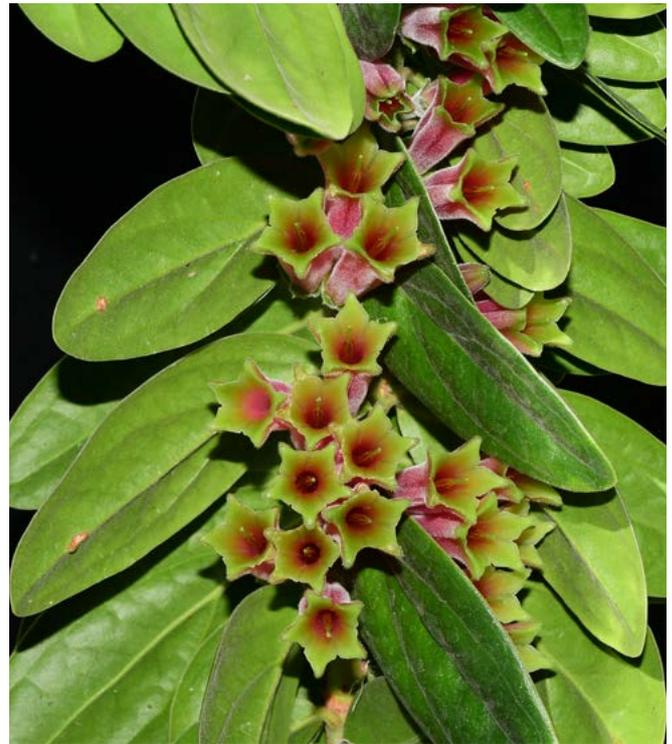


**FIGURE 2:** *Macleania gigiportillae*. A. Habit to 20 cm scale. B. Inflorescence detail, to 5 cm scale. C. Inflorescence detail in profile, to 5 cm scale. D. Lignotuber, to 5 cm scale. E-G to 3 cm scale. E. Flower detail in profile. F. Flower with a portion of the corolla removed to illustrate the habit of the stamens. G. Hypanthium in cross-section. H. style apex detail, not to scale. I. Stamens to 1 cm scale, from left to right: front, back, profile. J. Stamens to 1 cm scale. K. Detail of base of the stamen tubule apex and base of the thecae, not to scale.

**TYPE:** ECUADOR. Zamora Chinchipe, cantón Yacuambi, Tutupali sector, ca. 1800 m, 3° 31' 12.07" S, 78° 54' 38.84" W, flowered in cultivation at Ecuagenera, Gualaceo, 2024, EG-0655 (holotype: HA). Figure 1, 2, 3.

**DIAGNOSIS:** *Macleania gigiportillae* is most similar to *M. salpa* (Bentham) Hooker f. ex Herold but can be distinguished by more flowers per inflorescence (up to 10 vs. 2-4), terete hypanthium (vs. 10-ribbed to sharply 5-[6]-angled [narrowly winged]), longer corolla (34.0 mm long vs. 15.0-20.0 mm long), bicolored corolla lobes (green and pink vs. pale-pink to red), and stamens that are shorter than the corolla (vs. as long or exerted).

**DESCRIPTION:** Terrestrial to epiphytic shrubs; young branches erect to ascending form a lignotuber; stems terete, glabrate ca. 5.0 mm in diameter, the bark reddish brown, striated. Leaves alternate; petiole terete, 6.5–7.0 mm long, 4.5 mm in diameter; blades coriaceous, thin, ovate-elliptical, apex obtuse, the base rounded, margins entire, involute, 7.9–9.3 cm long, 3.6 mm wide, the upper surface weakly bullate, nitid, glabrous, the lower surface light green, glabrous. Inflorescence congested, racemose up to ten flowers; floral bracts triangular, microscopically pubescent, 3.9–4.4 mm long, 1.7 mm wide; Pedicel slightly curved, terete-conical, microscopically pubescent, green, 10.0–11.0 mm long, 3.5–3.7 mm in diameter. Flowers 5-merous, pendent; calyx hypanthium green, microscopically pubescent, turbinate, 12.0 mm long (including the lobes), 6.0 mm wide (widest portion below the calyx limb); calyx limb campanulate, 8.0 mm long (including the lobes), 7.6 mm wide (below the lobes); lobes green, fused at the base, separate, triangular, microscopically pubescent, sinuses acute, apices subacute, recurved, apiculate, 7.0 mm long, 4.6 mm wide. Corolla pink, infundibular, glabrous, sharply 5-angled, 34.0 mm long, 10.5 mm in diameter (at widest part); lobes five, carinate, pink along the carina, expanded into green lamina, green on the glabrous inner surface, apices obtuse, sinuses acute, 5.2 mm long, 6.8 mm wide; stamens ten, free, 40.5–41.8 mm long; filaments whitish, free, glabrous, 9.5–10.0 mm long, 1.3 mm wide, with two orange-brown, granular textured thecae, 12.7–13.4 mm long, 1.2–1.4 mm wide, each connate for their length, attenuated into orange-brown, tubules, the tubules connate for most of their length, 18.5–18.8 mm long, 0.5 mm wide, dehiscing by terminal, spatulate pores; style reddish at the base becoming cream and then green toward the apex, glabrous, exerted, 50.0 mm long, 0.9 mm wide; stigma truncated. Fruits not seen.



**Figure 3.** *Macleania gigiportillae* details of the flowers

**NOTES:** The new species keys out to *Macleania salapa* in Luetyn (1996) but is readily distinguished by the floral morphology. See diagnosis above for a detailed comparison.

**ACKNOWLEDGEMENTS:** Generative AI (ChatGPT, OpenAI) was used as a tool to assist in drafting and refining portions of this manuscript, including structuring the diagnosis and improving clarity. The final content, scientific interpretations, and taxonomic conclusions remain the responsibility of the authors.

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## ***Cavendishia isernii* var. *ecuagenera* (Ericaceae: Vaccinieae), a new shrub from the Andean cloud forests of Ecuador**

Alfonso Doucette<sup>1</sup>, Hugo Medina<sup>2</sup>, & Jose Portilla<sup>2</sup>

**ABSTRACT:** A new variety *Cavendishia isernii* is described from the Andean cloud forests of Ecuador. This epiphytic shrub was discovered in cultivation at Ecuagenera, originating from collections made in Morona Staniago Province. The variety is morphologically similar to *Cavendishia isernii* var. *isernii*, but differs in the floral characteristics. Here, the new variety is formally described and illustrated for the first time.

**KEY WORDS:** Andean cloud forests; neotropical blueberries; cultivated material; Ecuagenera collections

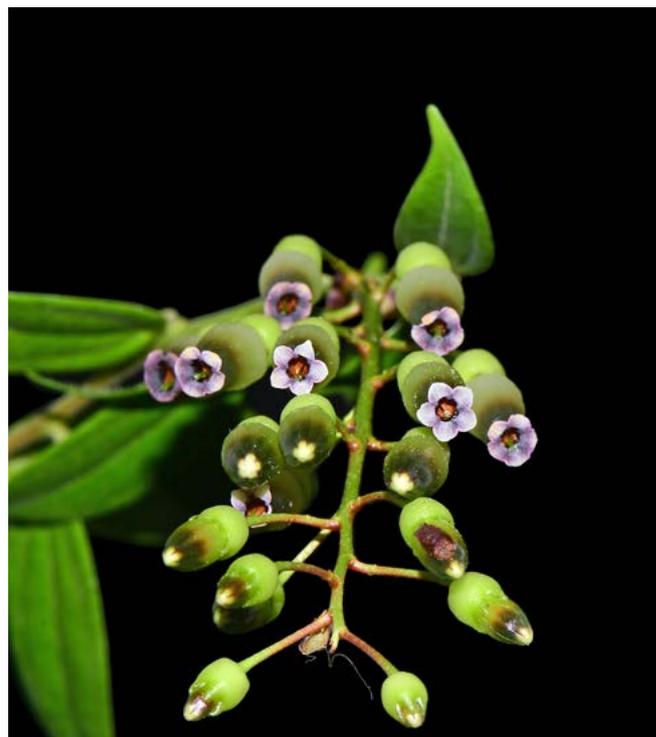
**INTRODUCTION:** A group of four *Cavendishia* Lindl. species outlined by Luteyn (1996) are characterized by corollas less than 12 mm long, floral bracts caducous prior to anthesis and less than 8 mm long, and green in color: *Cavendishia awa* Luteyn, *C. isernii* Sleumer, *C. palustris* A.C.Sm., and *C. parviflora* Luteyn. Among these, material attributable to *C. isernii* was examined and found to exhibit consistent but subtle differences in floral morphology, supporting the recognition of an undescribed variety.

*Cavendishia isernii* is a terrestrial or epiphytic shrub reaching up to 5 meters in height, with mature stems that may be terete, striate, or ribbed, and either glabrous or puberulent. The leaves are variable in shape, ranging from elliptic to ovate, and are often short-acuminate at the apex. Inflorescences are elongate, typically bearing 16–30 flowers, with a slender, often striate rachis and caducous floral bracts. The flowers are bicolor, with a shiny translucent white corolla base grading to violet or burgundy-red apically (Luteyn n.d.).

The species, *Cavendishia isernii*, was originally described in 1936 based on collections made by Isern in the eastern foothills of the Ecuadorian Andes between Baeza and Archidona in 1865. Since its original description, the species has remained poorly understood due to limited collections and morphological variation within its range. However, further exploration in Ecuador and Peru has revealed consistent morphological differences among populations, leading to the recognition of distinct varieties within the species. We describe a new variety here.

### **TAXONOMY**

*Cavendishia isernii* var. *ecuagenera* A.Doucette, H.Medina & J. Portilla, var. nov.



**Figure 1.** *Cavendishia isernii* var. *ecuagenera* flowers detail

**ETYMOLOGY:** The new name is formed as a noun in apposition and named for the nursery responsible for the collection of the wild material.

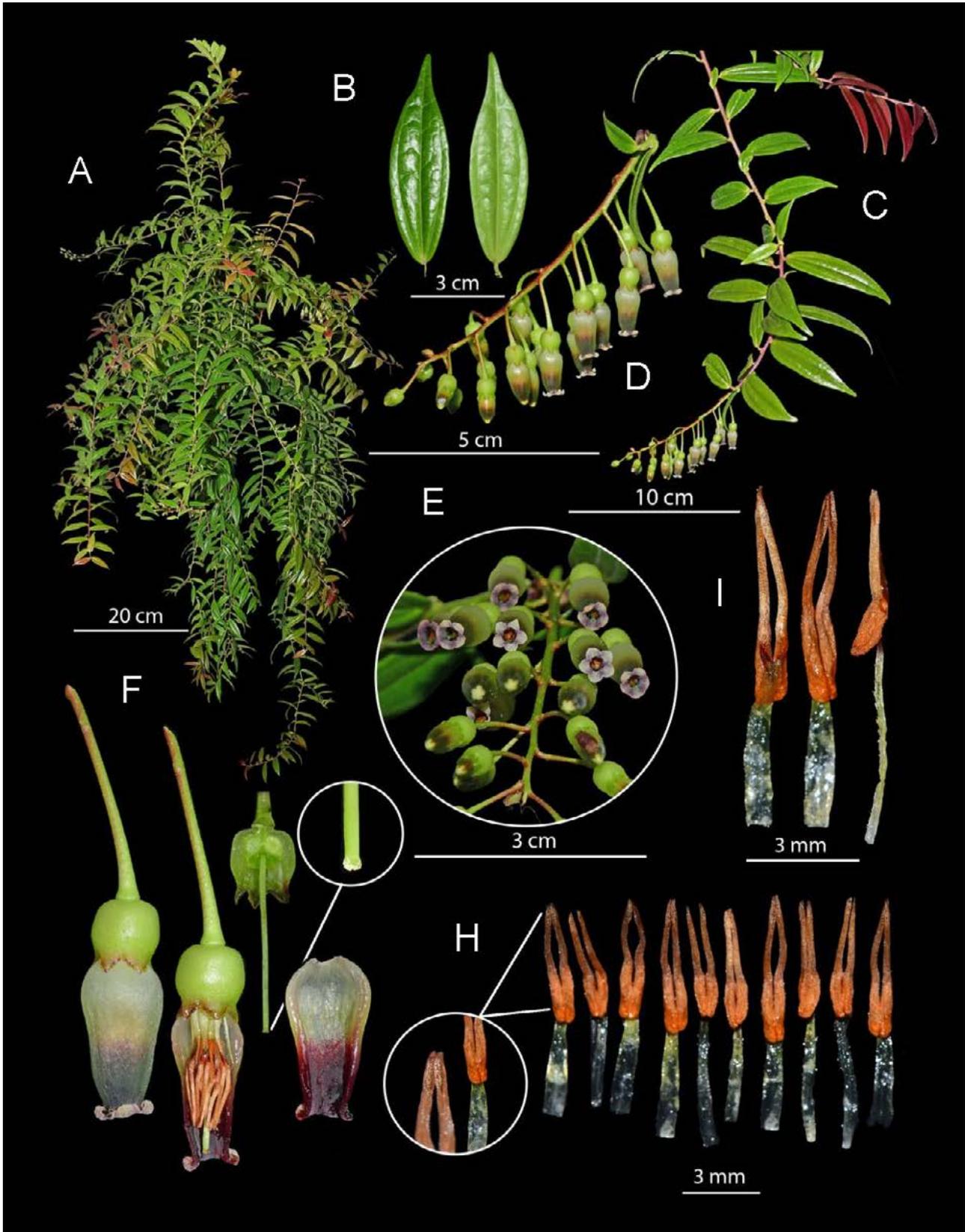
**TYPE:** ECUADOR. Morona Santiago, cantón San Juan Bosco, Pananza sector, ca. 1500 m, 3° 11' 50.73" S, 78° 30' 27.49" W, flowered in cultivation at Ecuagenera, Gualaceo, 2024, EG-0521 (holotype: HA). Figure 1,2.

**DIAGNOSIS:** *Cavendishia isernii* var. *ecuagenera* is most similar to the typical variety *C. isernii* var. *isernii*, but can be distinguished by the globose and glabrous hypanthium, lacking an apophysis, and the lanceolate, weakly bullate leaves.

**DESCRIPTION:** Terrestrial to epiphytic shrubs; young branches erect to pendent; stems terete, glabrous ca. 3.0 mm in diameter, the bark reddish brown. Leaves alternate; petiole terete, 4.9 mm long, 1.4 mm in diameter; blades coriaceous, lanceolate, apex narrowly acuminate, subacute, the base rounded, margins entire, 2.3–6.7 cm long, 0.8–1.9 cm wide, the upper surface weakly bullate, nitid, both surfaces glabrous, the lower surface light green, young leaves reddish. Inflorescence a raceme of ca. 18 flowers; floral bracts not seen, presumably caducous (prior to anthesis); pedicel curved, nutant, terete-conical, glabrous, green, sometimes suffused with reddish purple, 11.0–15.0 mm long, 1.5 mm in diameter. Flowers 5-merous, pendent; calyx hypanthium green, glabrous, globose, 4.9–5.3 mm long, 4.3–4.6 mm wide; calyx limb campanulate, 3.8 mm long (excluding the lobes), 4.0 mm in diameter; lobes green, suffused with red-purple, separate, triangular, marginally glandular-callose, sinuses obtuse, apices subacute, 1.1 mm long, 1.7 mm wide;

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**FIGURE 2:** *Cavendishia isernii* var. *ecuagenera*. A. Habit to 20 cm scale. B. Leaf, upper (left) and lower (right) surfaces, to 3 cm scale. C. Flowering habit, to 10 cm scale. D. Inflorescence detail, to 5 cm scale. E. Flower detail, to 3 cm scale. F. Flower dissection details, not to scale. G. Stamens to 3 mm scale. H. Stamens to 3 mm scale with detail illustrating base of thecae and anther dehiscence.

Corolla pale green, suffused with dark purple above the middle, cylindrical-urceolate, constricted at base and throat, glabrous, 9.8–10.3 mm long, 5.0 mm in diameter (at widest part); lobes five, lavender, microscopically pubescent, apices obtuse, sinuses obtuse, 1.3–1.6 mm, 1.7–1.9 mm wide; stamens ten, alternating in length, 8.9–9.5 mm long; filaments pale greenish yellow, translucent, free, pubescent on the inner surface, 3.4–5.5 mm long, 0.7 mm wide, with two orange-brown, granular textured thecae, 1.6 mm long, 0.9 mm wide, each connate for their length, attenuated into free, orange-brown, tubules, 2.9–4.6 mm long, 0.3 mm wide, dehiscing by terminal, spatulate pores; style green, glabrous, 10.2 mm long, 0.5 mm in diameter; stigma truncated. Fruits not seen.

**DISCUSSION:** This new variety of *Cavendishia isernii* is readily distinguished from both previously recognized varieties by a combination of floral and vegetative characters. It differs from the typical variety, *C. isernii* var. *isernii*, in having a globose, glabrous hypanthium that lacks an apophysis, as opposed to the basally apophysate hypanthium with a smooth, flaring rim found in var. *isernii*. The calyx lobes in the new variety are separate, triangular, marginally glandular-callose, and like the typical variety have crescent-shaped marginal glands.

From *C. isernii* var. *pseudospicata* (Sleumer) Luteyn, the new variety is distinguished by the absence of glandular fimbriae on the calyx lobes and by the lobes being consistently separate and subacute at anthesis. In contrast, var. *pseudospicata* typically has calyx lobes that are marginally glandular-fimbriate and often imbricate in bud or at anthesis. Additionally, var. *pseudospicata* has a hypanthium that is basally rounded or truncate rather than globose, and its floral surfaces are often pilose or bear glandular fimbriae, which are entirely lacking in the new variety.

Vegetatively, the new variety is also set apart by its slender, glabrous, reddish-brown stems and its lanceolate, coriaceous leaves with a narrowly acuminate apex and glossy, weakly bullate adaxial surface—features not observed in either of the previously described varieties. These consistent morphological differences warrant recognition of this new variety as distinct within *Cavendishia isernii*.

**ACKNOWLEDGEMENTS:** Generative AI (ChatGPT, OpenAI) was used as a tool to assist in drafting and refining portions of this manuscript, including structuring the diagnosis and improving clarity. The final content, scientific interpretations, and taxonomic conclusions remain the responsibility of the authors.

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## A correction to the spelling of *Pitcairnia andreetae* (Bromeliaceae)

Alfonso Doucette<sup>1</sup>, Hugo Medina<sup>2</sup>, & Jose Portilla<sup>2</sup>

**ABSTRACT:** The name *Pitcairnia andreetae* H. Luther was published in 1988 based on material from southern Ecuador. In the protologue, Luther dedicated the species to Padre Angel Andreetta of Bomboiza but consistently misspelled the surname as "Andreeta." Consequently, the epithet *andreetae* represents an orthographic error under Art. 60.1 of the International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code). The epithet is here corrected to *andreettae*, in accordance with the correct spelling of the honouree's surname.

**Keywords.** Bromeliaceae; Ecuador; nomenclature; orthographic correction; *Pitcairnia*

**INTRODUCTION:** Luther (1991) described *Pitcairnia andreetae* from southern Ecuador (Zamora-Chinchipe Province, near Yangana and Valladolid), based on material collected by A. Hirtz. The holotype is deposited at SEL (Hirtz 2326), with an isotype at MO. In the protologue, Luther noted the species' stoloniferous habit, broad leaf blades, short pedicels, and unusually dark violet corollas, which distinguish it from the allied *P. alata* L.B. Sm.

The name was explicitly dedicated to Padre Angel Andreetta of Bomboiza, Ecuador, in recognition of his contributions to orchidology and his interest in bromeliads. However, Luther consistently misspelled the honouree's surname as "Andreeta" (with a single *t*), and the epithet *andreetae* was formed from this incorrect spelling. The correct spelling of the surname is Andreetta (with two *ts*).

According to Art. 60.1 of the International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code; Turland *et al.* 2018), such errors in the spelling of personal names are correctable. This case is directly comparable to Art. 60 Ex. 7 (*Nilsonia* → *Nilssonina*), where an epithet was derived from a misspelled surname. The correct spelling of the epithet is therefore *andreettae*.

**CORRECT NAME:** *Pitcairnia andreettae* H. Luther, *Selbyana* 12(1-4): 82. 1991. – *Pitcairnia andreetae* H. Luther, orth. error.

**TYPIIFICATION:** Holotype. ECUADOR: Prov. Zamora-Chinchipe, S of pass on road Yangana-Valladolid, March 1985, A. Hirtz 2326 (SEL); isotype: MO.

**DISTRIBUTION:** Endemic to Zamora-Chinchipe Province, Ecuador, known from the Yangana-Valladolid region and near Zumba, between 1,650–1,800 m elevation in montane habitats (Luther 1991).

**NOTES:** Art. 60.9, which addresses intentional latinization of personal names, does not apply in this case. The omission of one *t* is not a latinization but simply an orthographic error in rendering the surname. Therefore, Art. 60.1 governs the correction.

**ACKNOWLEDGEMENTS:** The author acknowledges the assistance of artificial intelligence (ChatGPT, OpenAI) in drafting and refining the text of this nomenclatural note. Final responsibility for interpretation of the ICN and the conclusions presented rests entirely with the authors.

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**ANDRETTANA**

TROPICAL ANDES BIODIVERSITY AND CONSERVATION

# Horticultura Horticulture



Figura 1. *Caucaea olivacea*, en cultivo en Ecuagenera. Foto Hugo Medina

## LA COLUMNA DE TOM

### ***Caucaea*, Verdaderos Tesoros de los Andes**

Thomas Mirenda<sup>1</sup>

Me había acostumbrado al hecho desafortunado de que muchas de las orquídeas que encuentro más atractivas se niegan a crecer en las condiciones que tenía disponibles, pero la mudanza a Hawái ciertamente ha ayudado en ese sentido, ya que la mayoría de las orquídeas prosperan aquí. No obstante, mientras busco la propiedad adecuada a la que llamar propia, las zonas altas de la región, que ofrecen temperaturas nocturnas más frescas la mayor parte del año, ciertamente me están atrayendo. Cuando pienso en todas las especies de altura que he enviado al "cielo de las orquídeas" a lo largo de los años debido a mi debilidad y avaricia por las cosas bellas, me pongo más que un poco melancólico. Más de unos pocos de estos desafortunados sujetos de cultivo estaban en el género *Caucaea*, víctimas de su propia belleza.

Durante la mayor parte del año pasado, he estado tratando de dilucidar las relaciones dentro del hiperdiverso grupo *Oncidiinae*. En este ejercicio, busco comprender mejor los nuevos cambios taxonómicos en este grupo tan importante, no solo para ustedes, sino también para mí.

Al contar con algunas de las especies más interesantes y verdaderamente bellas entre sus filas, es importante comprender sus relaciones mutuas.

Los estudios filogenéticos moleculares han demostrado que la forma y el color de la flor por sí solos no son características adecuadas para delinear géneros. Aun así, hay muchas personas que cuestionan algunas de las nuevas circunscripciones, y puede pasar algún tiempo antes de que gran parte de la disputa taxonómica se establezca. Afortunadamente, la mayoría de los taxónomos están de acuerdo con respecto al estatus de este género inusualmente bello.

Una vez clasificados como el grupo *cucullata* dentro de *Oncidium*, las *Caucaea*, en su mayoría miniaturas, parecen agruparse en los cladogramas como hermanas del género *Cyrtorchilum*, en su mayoría bastante grande y espectacular, y un poco más distantes de *Miltoniopsis*. No obstante, los taxónomos están de acuerdo en que deben estar separadas de *Oncidium*, y eso me parece bien.

Estas pequeñas joyas, aunque diminutas, exhiben una belleza única propia, y merecen un cultivo más amplio por parte de aquellos de nosotros que podemos proporcionarles condiciones verdaderamente frescas; es decir, días de 21-24 °C y noches de 10-13 °C durante la mayor parte del año.



Figura 2,3,4,5. 2. *Caucaea mimetica* 3. *Caucaea phalaenopsis* 4. *Caucaea nubigena* 5. *Caucaea nubigena* var. *aba*. en cultivo en Ecuagenera. Foto Hugo Medina



Figura 6,7,8,9. 6. *Caucaea hirtzii* 7. *Caucaea colombiana* 8. *Caucaea alticola* 9. *Caucaea cucullata* En cultivo en Ecuagenera. Foto Hugo Medina

Me viene el recuerdo de la belleza única de esta planta; que se exhibieron con varios ejemplos excelentes en la Conferencia Mundial de Orquídeas en Guayaquil, Ecuador.

Actualmente, se reconocen 14 especies, pero identificar correctamente algunas de ellas es un desafío. Recientemente, la clasificación de un espécimen premiado en Colombia fue discutido por expertos durante bastante tiempo sin una resolución satisfactoria. La confusión se ve exacerbada por el hecho de que las flores pueden cambiar su forma y coloración dependiendo de las condiciones climáticas que experimenten. Por ejemplo, en su hermosa Enciclopedia Pictórica de *Oncidium*, Harry Zelenko representa dos flores extremadamente dispares de *Oncidium* (*Caucaea*) *cucullatum* que provenían exactamente de la misma planta. La diferencia se produjo porque la planta fue cultivada a una gran altitud en Ecuador, y posteriormente cultivada en condiciones mucho más cálidas en Nueva York. Las dos flores son notablemente diferentes y fácilmente podrían ser clasificadas como especies o variedades separadas por los no iniciados. Es probable que incluso las diferencias sutiles produzcan variaciones dentro de una población.

A pesar de la confusión, cuando se cultivan en condiciones frescas o se encuentran en una población natural, las *Caucaea* son plantas pequeñas excepcionalmente bellas: caracterizadas por pseudobulbos pequeños, redondeados (no comprimidos bilateralmente) y flores con sépalos laterales unidos que son más cortos que el labelo. Los labelos son a menudo de un color muy vibrante, trilobulados o panduriformes, y están estampados con manchas llamativas. Sorprendentemente, se han realizado muy pocos híbridos con estas plantas, por lo que creo que

hay un terreno fértil para la experimentación para combinar estas especies con algunos *Oncidium* provenientes de hábitats más cálidos y de alturas menores.

Realmente no se sabe nada sobre los polinizadores de estas orquídeas, pero presumiblemente son visitadas por abejas, al igual que otras orquídeas que comparten flores planas o superficialmente en forma de cuenco.

Varias especies muy selectas esperan al intrépido entusiasta de las especies que pueda proporcionarles las temperaturas correctas. La mencionada *Caucaea cucullata* es una de las más bonitas, con sus segmentos de color verde oliva oscuro que realzan un espectacular labelo lavanda salpicado de manchas púrpura vibrante y una cresta amarillo-naranja brillante. Procede del Valle del Cauca de Colombia, lo que le da su localidad como fuente para el nombre del género. *Caucaea phalaenopsis*, del sur de Ecuador, es una flor más pálida con un patrón marrón y un labelo que seguramente parece una mariposa, de ahí su nombre. *Caucaea nubigena* es posiblemente la más extendida, encontrándose en gran parte de los Andes, desde Venezuela hasta Perú, y tiene colores realmente hermosos de rosa, lavanda y púrpura superpuestos sobre un fondo pálido y blanquecino.

Muchas de las otras especies son bastante difíciles de distinguir y ciertamente están estrechamente relacionadas y pueden ser reducidas a sinonimia algún día. Estas incluyen *Caucaea mimetica*, *Caucaea olivacea*, *Caucaea rhodosticta* y *Caucaea sanguinolenta*, pero estas decisiones serán discutidas y resueltas por mentes más preclaras que la mía. Cualesquiera que sean los nombres que finalmente lleven, espero que más de nosotros cultivemos y apreciemos estas joyas andinas.

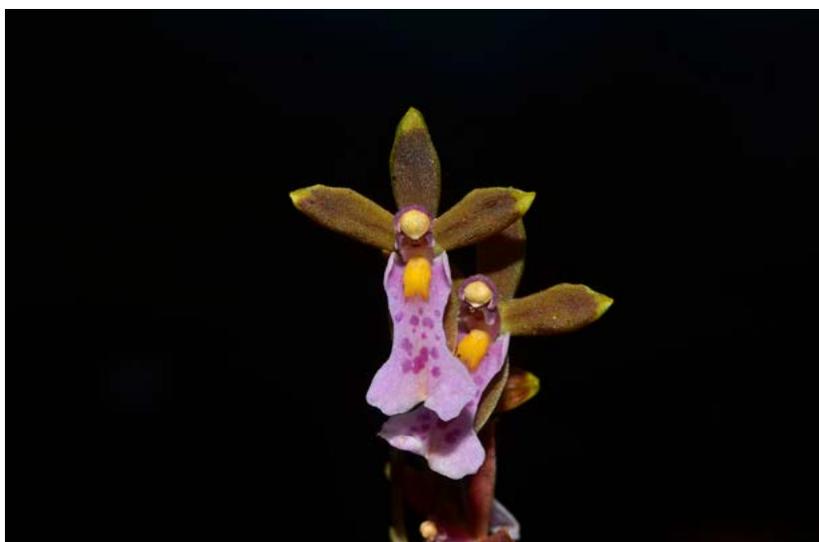


Figura 9. *Caucaea portillae* en cultivo en Ecuagenera. Foto Hugo Medina

## EL FASCINANTE MUNDO DE LA *CATTLEYA MAXIMA F. COERULEA*.



**Figura 1.** *Cattleya maxima* in situ en el bosque seco del occidente de Ecuador

Hugo Medina<sup>1</sup>

En el cautivador mundo de las orquídeas, algunas historias brillan con luz propia, y pocas son tan fascinantes como la de *Cattleya maxima f. coerulea* en Ecuador. Lo que comenzó en 1990, no es solo un relato de descubrimiento y propagación de una variedad excepcional, sino también una inspiradora lección sobre la paciencia, la investigación y la tenacidad en el mundo de las orquídeas.

Todo se remonta a los años 1929 con la llegada del sacerdote salesiano Ángel Andreetta a Ecuador. Radicándose en Bomboiza, un pequeño pueblo en la provincia de Morona Santiago. El padre Andreetta desarrolló una profunda pasión por las orquídeas, dedicándose a coleccionarlas y cultivarlas con esmero. Su entusiasmo, y al ser motivado y recompensado con la floración de sus orquídeas, lo llevaron a participar en una exposición de orquídeas en

Guayaquil. Fue allí donde su mirada se posó en un ejemplar inusual, una *Cattleya maxima f. coerulea* con una singular y cautivadora coloración azulada.

Atraído por su rareza, preguntó el precio al propietario, el Sr. Héctor, originario de Machalilla en la costa ecuatoriana. Los \$200 dólares solicitados, una fortuna para la época, podría haber sido el final de la historia, pero el destino tenía otros planes. Justo en ese momento, apareció Andrés Maduro, un apasionado cultivador de orquídeas panameño. Al ver la planta, reconoció de inmediato su valor incalculable. Sin dudar, la compró y, con un gesto de profunda generosidad, se la ofreció al padre Andreetta, proclamando: "¡Esta planta es una maravilla, no debe salir del país, debe quedarse en Ecuador!".

Andreetta, en señal de gratitud, se comprometió a compartir esquejes de la planta con Andrés y otros tres miembros del Jardín Botánico de Guayaquil. Esta historia, de un encuentro fortuito, se convirtió en un legado. Es la prueba de que lo más valioso a veces no se compra, se salva.

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Figura 2. Padre Angel Andreetta con *Cattleya máxima*

En este punto crucial, José Portilla A. se une al proyecto del padre Andreetta, asumiendo la gran responsabilidad de cultivar esta preciada planta y dividirla para compartirla con otras cuatro personas. Responsabilidad que fue un gran reto, sin embargo, no fue obstáculo para el joven Portilla, llevando a cabo su misión con mucho éxito, quedando todos satisfechos. Concluida esta etapa, se procedió a nombrar con un clon a la *Cattleya* en mención. En este caso, en el mundo de las orquídeas, poner un clon significa nombrar a una planta única dentro de un grupo de la misma especie. Pensando en el primer propietario el Sr Hector, se la bautizó en su honor quedando con el nombre de *Cattleya maxima f. coerulea "Hector"* (Figura 3).

Este espécimen de *Cattleya máxima* azul, despertó el inicio de una ardua investigación, el objetivo fue lograr más individuos con este inusual color en *Cattleya*. Con el tiempo, la colección se enriqueció con la adquisición de otra *Cattleya maxima f. coerulea* originaria de Piñas, un pueblo en la provincia de El Oro. A esta se le asignó el nombre de clon "Gigi" (Figura 4). Posteriormente, se sumó un tercer clon, a la colección, *Cattleya maxima f. coerulea "Angelo"* (Figura 5), procedente de la costa ecuatoriana. A partir de ese momento, se abrió un capítulo apasionante en el mundo de las *Cattleyas*, especialmente con las *Cattleya maxima* de color azul.

Después de que la reproducción vegetativa fuera un éxito total, se dio el siguiente paso; la reproducción in-vitro, lo que implicaría el proceso de polinización manual, que consiste en intercambiar polen entre estos clones. Siendo los candidatos favoritos, *Cattleya maxima f. coerulea "Hector"* y *Cattleya maxima f. coerulea "Angelo"* (Figura 6), ambos de origen costero. Sorprendentemente este cruce no produjo el anhelado color azulado, sino que todas resultaron ser de color rosáceo, su tonalidad original. Esto puso de manifiesto la complejidad genética y la importancia de la procedencia de los parentales en la obtención de ciertas características.

En el intento de reproducir masivamente la codiciada *Cattleya* de color azul, se intentó nuevamente, pero ahora entre dos especímenes, una de la costa y otro de las estribaciones de la sierra es decir *Cattleya maxima f. coerulea "Gigi" x Cattleya maxima f. coerulea "Hector"* (Figura 7), esta vez sí se obtuvieron los resultados esperados. Esto confirmó que la diversidad genética entre regiones puede ser clave para el éxito en la hibridación.



Figura 3 . *Cattleya máxima f. coerulea* "Hector"



Figura 4. *Cattleya máxima f. coerulea* "Gigi"



Figura 5. *Cattleya maxima f. coerulea* "Angelo"

Actualmente se reproducen millares de especímenes mediante este proceso, los cuales son cuidadosamente tratados en el laboratorio de Ecuagenera. Siendo la base, los clones de *Cattleya máxima* antes mencionados, "Hector", "Gigi" y "Angelo", generando en la actualidad diversos clones de *Cattleya máxima f. coerulea*, como los que se presentan en la Figura 9.

Esta conmovedora historia no es solo un testimonio de amor y dedicación por las orquídeas, sino también una valiosa lección sobre la paciencia, la experimentación y el incalculable valor de la colaboración en el mundo de la horticultura. El legado de la *Cattleya maxima f. coerulea* en Ecuador, con sus clones azulados, perdura como un símbolo de la belleza, la intriga y el conocimiento que estas plantas encierran. Cabe mencionar que estos tres clones son los primeros en *Cattleya maxima f. coerulea* en Ecuador y marcaron el inicio para la creación de un sinfín de nuevos clones que, sin duda, seguirán maravillando a los aficionados en todo el mundo.

Es triste pensar que la majestuosa orquídea *Cattleya maxima* está en peligro. Esas flores púrpuras tan vibrantes son un tesoro de nuestros bosques que se nos están yendo de las manos, y con ellas, una parte importante de nuestros ecosistemas. Todo por la deforestación, un problema que avanza sin freno para darle espacio a la agricultura. Y en ese camino, está aniquilando los rincones donde esta orquídea florece.

No podemos dejar que la historia de esta orquídea termine en un simple "existió". No podemos quedarnos de brazos cruzados, mirando cómo desaparece. Tenemos que ser parte de su historia, pero de la de su supervivencia, para que nuestros hijos y los hijos de ellos puedan verla con sus propios ojos, floreciendo en su hábitat, en lugar de verla solo en libros o fotografías. Cuidar la *Cattleya maxima* no es una obligación, es un acto de amor y respeto por la naturaleza que, al final del día, nos enriquece a todos.



Figura 6. Resultado del cruce entre *Cattleya máxima* f. *coerulea* "Hector" x *Cattleya maxima* f. *coerulea* "Angelo", todas de color rosáceo.



**Figura 7.** Algunas de las variedades obtenidas mediante el cruce de *Cattleya maxima* f. *coerulea* "Hector" x *Cattleya máxima* f. *coerulea* "Gigi"



Figura 8. Variabilidad en el resultado del cruce entre *Cattleya maxima* f. *coerulea* "Gigi" x *Cattleya máxima* f. *coerulea* "Angelo"

**Clones de *Cattleya máxima* f. *coerulea* obtenidos en Ecuagenera a partir de los clones "Hector", "Gigi" y "Angelo".**



*Cattleya maxima coerulea* 'Gigi' x self



*Cattleya maxima coerulea* 'Gigi' x *Cattleya maxima coerulea* 'Angelo' x *Cattleya maxima coerulea* 'Gigi'



*Cattleya maxima coerulea* 'Ingrid' x *Cattleya maxima coerulea* 'Angelo'



*Cattleya maxima coerulea* 'Ingrid' x *Cattleya maxima coerulea* 'Angelo' 4N



*Cattleya maxima coerulea* 'Hector' x *Cattleya maxima coerulea* 'Gigi' x *Cattleya maxima coerulea* 'Angelo'



*Cattleya maxima coerulea* 'Gigi' x *Cattleya maxima coerulea* 'Angelo' x sibling



*Cattleya maxima coerulea* 'Gigi' x *Cattleya maxima coerulea* 'Angelo' yellow lip



*Cattleya maxima coerulea* 'Gigi' x *Cattleya maxima coerulea* 'Angelo' x *Cattleya maxima coerulea* 'Hector'



*Cattleya maxima coerulea 'Ingrid Segata'*



*Cattleya maxima coerulea 'Gigi' x Cattleya maxima coerulea 'Ingrid'*



*Cattleya maxima semialba coerulea 'Super Ingrid'*



*Cattleya maxima semialba coerulea 'Ecuagenera Encanto'*



*Cattleya maxima coerulea 'Diosa Gigi'*



*Cattleya maxima coerulea 'Ecuagera' 4N*



*Cattleya maxima semialba coerulea 'Ecuagera Taste'*



*Cattleya maxima coerulea 'Rafael'*



*Cattleya maxima semialba coerulea 'Madrina'*



*Cattleya maxima coerulea 'Ponderosa'*



*Cattleya maxima semialba coerulea 'Lourdes'*



*Cattleya maxima coerulea 'Scott'*

**Figura 9.** Clones de *Cattleya máxima f. coerulea* obtenidos en Ecuagenera a partir de los clones "Hector", "Gigi" y "Angelo".



## **PHRAGMIPEDIUM CARICINUM: A JOURNEY INTO CONFUSION AND MISTAKES IN SEARCH OF A LOST SPECIES**

Frank Cervera<sup>1</sup>

### **Introduction:**

*Phragmipedium caricinum* has become rare in cultivation. Once easy to encounter at orchid exhibitions, and in botanical gardens, the species has all but disappeared from collections, commercial offerings and *Phragmipedium* breeding lines. Many plants being offered in the trade as *Phrag. caricinum* are actually hybrids. The flowers tend to be larger and darker than the commonly seen and utilized *Phrag. pearcei* with a taller, more erect inflorescence that branches more freely. There is great untapped potential in this species. This species has a lot to offer *Phragmipedium* breeding programs.

The species is not rare in its natural habitat. *Phragmipedium caricinum* is not particularly difficult to cultivate. *Phrag. caricinum* is part of section *Phragmipedium* subsection *Himantopetalum* together with its closely related sister species *Phrag. hirtzii*, *Phrag. pearcei*, *Phrag. cabresosii*, *Phrag. richteri* and *Phrag. klotzschianum*. A deeper look at the species in this subsection will be part of a future

article. Perhaps owing to its rarity in cultivation, resulting in less commercial pressure to generate new names, *Phrag. caricinum* has not, to date, been described as multiple different species and natural hybrids like some of its cousins in the genus.

### **Taxonomy:**

*Phragmipedium caricinum* (Lindl. & Paxton) Rolfe, *Orchid Review*, 4: 332 (1896)

Homotypic synonyms: *Cypripedium caricinum* Lindl. & Paxton in *Paxton's Fl. Gard.* 1: 39 (1850)

*Paphiopedilum caricinum* (Lindl. & Paxton) Stein in *Orchid.-Buch*: 458 (1892)

*Selenipedium caricinum* (Lindl. & Paxton) Rchb.f. & Warsz. in *Bonplandia (Hannover)* 2: 116

### **A long and confusing journey**

Lindley and Paxton first described this species in 1850 as *Cypripedium caricinum*, and Rolfe transferred it to the genus *Phragmipedium* in 1896. The initial description was based on a dried flower sent from Bolivia. At the time, there were no cultivated plants to serve as a basis for the description or to create adequate herbarium specimens. Like so many 19th-century descriptions in the genus, the

type description, based on incomplete floral parts, caused confusion, leading to lingering questions about what this name actually referred to. Quoting the 1850 description, "The flowers in our possession are mere fragments..." In 1864, Veitch & Sons flowered a *Phragmipedium* plant collected near Tarapoto, Peru. The Peruvian plant was mentioned in Curtis's Botanical Magazine as the same species Lindley described in 1850, *Cypripedium caricinum*, resulting in, in the author's opinion, over a hundred years of confusion as to whether *caricinum* could be found in Peru. Reichenbach fil. recognized that the plant described in the 1864 article was not *caricinum*, but rather something new, while also noting that *caricinum* was "dreadfully badly known," owing to the dried floral parts that made up the 1850 description. Based on several specimens he had seen from the Peruvian collection, Reichenbach fil. described it as *Phrag. pearcei* in 1865. Before 1865, the name *Phrag. caricinum* (as *Cypripedium*) was used for plants from both Peru and Bolivia. Reichenbach fil. did correctly note in 1865 that "I can say that this *caricinum* is not *pearcei*." This, however, did not stop the confusion. Notwithstanding Reichenbach fil., statement to the contrary, many in the horticultural trade and hobbyist community considered both *caricinum* and *pearcei* to be synonymous for over one

hundred (100) years. It seemed that no one knew which species was which, whether there was one species or two, and most hybrids made with "*caricinum*" or "*pearcei*" were either mislabeled or simply labeled as hybrids without specific parents. The author has some old tags in his collection as such (*the plants and their owner have long since passed*).

Then, in 1975, Werner Rauh, a botanist at the University of Heidelberg and Karlheinz Senghas set out to clarify the names and traveled to Peru in search of *Phrag. caricinum* and mistakenly believed that they found *Phrag. caricinum* in the area around Tarapoto. Remember, by the time 1975 came, there was still considerable confusion as to what *Phrag. caricinum* was, and it is not surprising that populations of *Phrag. pearcei* would be mistaken for *Phrag. caricinum*. That *Phrag. caricinum* would be found there, in the area around Tarapoto, as opposed to *Phrag. pearcei*, was based, in part, on older erroneous reporting that *Phrag. caricinum* had been found in Peru, including the 1864 article in Curtis's Botanical Magazine. These reports continue into the current literature, some of which show the range of *Phrag. caricinum* as Peru, Bolivia, and Brazil. Until 1975, the point of reference, or the herbarium



specimen, of what real *Phrag. caricinum* is, was the 1850 type material from Bolivia, and that consisted of a broken dried flower sent from halfway around the world. Rauh and Senghas compared the plants they found in the area around Tarapoto, Peru, assuming them to be *caricinum*, with plants they found further north along the river Napo in central Ecuador. Rauh and Senghas published their analysis in *Die Orchidee*.

The Rauh and Senghas analysis, although flawed, is important to us in the *Phragmipedium* community, both scientific and horticultural, because it reads like so many of the attempts in recent years, as well as historically, to break species of *Phragmipedium* out into multiple species and natural hybrids. They note differences in the size of the plants, the length of the rhizomes, the number of flowers produced per inflorescence, the shape and color of the labellum, and the overall size of the flowers. It makes little sense to reproduce all or part of that analysis or retest their conclusions, as Rauh and Senghas were working with two (2) populations of *pearcei*. Plants along the river Napo are all *pearcei*, as are all the plants found in the rivers around Tarapoto, Peru. *Phragmipedium caricinum* does not extend as far north as Tarapoto and cannot be found that high in the Andes. The weather pattern necessary for *Phrag. caricinum* is not part of the Andean climate. All of the differences noted in the Rauh and Senghas analysis fit nicely into the range of variability for *Phrag. pearcei*. It is, however, worth taking note that Rauh and Senghas found the natural cline in variability within one species concept to be representative of two (2) species, an error that has continued into the current understanding of the genus. The 1975 Rauh and Senghas article led to further confusion as to what the natural range of *Phrag. caricinum* is and how it is defined.

Further confusing matters, in 2003, a large Ecuadorian orchid nursery misidentified a large population of *Phragmipedium richteri* found near Mendez, in Central Ecuador, as *Phrag. caricinum*. For several years thereafter, these plants were sold as *Phrag. caricinum*, further muddying the waters as to what *Phrag. caricinum* is and what its natural distribution range is. (these plants were subsequently described as *Phragmipedium x merinoi* in 2010 by Gruss and reduced to a synonym of *Phragmipedium richteri* in 2020 by Cervera).

The flawed analysis and differences noted in the 1975 Rauh and Senghas article and the apparent ease with which plants of *Phrag. richteri* were misidentified as *Phrag. caricinum* by a nursery well versed in the genus, do accomplish



one thing relevant to our current understanding of the genus *Phragmipedium*: All species of *Phragmipedium* are inherently variable across multiple floral and vegetative characteristics, making it highly problematic to try to force *Phragmipedium* species into a static, formal classification.

The confusion surrounding *Phrag. caricinum* has continued into the current literature. In 1989, McCook stated, in broad terms, that *Phrag. caricinum* could be distinguished from *Phrag. pearcei* based on color, inflorescence type, and general pubescence, but provided no specifics. In 2008 Koopowitz wrote regarding *Phrag. caricinum* "It is said that one of the defining characters of this species is a dorsal sepal longer than the synsepalum, but I have seen the reverse as well." In 2018, Braem noted the analysis by Rauh and Senghas as being "unreliable" and, following McCook, stated that "the main colour of the *P. pearcei* flower is green, where the *P. caricinum* flower is more or less a rusty orange," and otherwise does little to differentiate the two species. Cribb (2017) does provide more detail. Cribb differs *Phrag. caricinum* from *Phrag. pearcei* based on a shorter rhizome, a simple or branching pubescent inflorescence, having "dense, hairy petal tips", and a brownish-orange colored labellum. The recent literature on *Phrag. caricinum* reads as consistent with the flawed 1975 Rauh and Senghas analysis of two (2) populations of *Phrag. pearcei* wherein they differentiated one population of *pearcei* from another based on the length of the rhizomes, the number of



flowers produced per inflorescence, the shape and color of the labellum, and the overall size of the flowers. If we are compelled to use the same broad language and floral and vegetative characters to separate one population of *pearcei* from the next, that we are using to try to differentiate *Phrag. caricinum* from *Phrag. pearcei* at the specific level, we have some work to do.

All of the above referenced characters are either subjective or overlap with *Phrag. pearcei* populations making use of these characters to define one species or the other problematic. The author has observed little to no difference in overall rhizome length in natural populations of *Phrag. caricinum* and *Phrag. pearcei*, which appears to be a variable adaptation to immediate ecology, specifically the curvature and angle of the underlying rock and how much accumulated river sand the rhizomes need to escape from on subsequent year-over-year growths. The author has observed a group of *Phrag. caricinum* buried in a deep sand accumulation with rhizomes 15cm long and natural populations of *Phrag. pearcei* atop boulders with minimal curvature with 1-2 cm rhizomes. The author has seen flowers of *Phrag. pearcei* with a rusty orange to brown color in the flowers. Although not as common in *Phrag. pearcei*, the color is present in *Phrag. pearcei* populations making its use as a distinguishing character troublesome in all but a general sense. The author has observed the same simple

successive flowering inflorescence on smaller plants of *Phrag. caricinum* as in populations of *Phrag. pearcei* and noted both simple successive flowering inflorescences growing intermixed with thicker, taller, branching inflorescence in the same localized populations on larger, more mature specimens of *Phrag. caricinum*, making attempts to quantify characteristics of the inflorescence and use of the inflorescence as a defining character of one or the other species problematic. Addressing the pubescence of the flowers and the inflorescence, the author has seen natural populations of both species with varying degrees of pubescence on the inflorescence and flower parts. The specimens of *Phrag. caricinum* that I have examined in natural populations do not show a "dense, hairy tip" to the petals.

However, Cribb does identify and differentiate *Phrag. caricinum* consistent with natural populations in one way that can be supported and quantified. Cribb notes that *Phrag. caricinum* has a "white or pale brown claw with red-brown spotting", which, based on examination of natural populations of both species, is the only quantifiably observable, stable, and static character that flower after flower, population after population, defines *Phrag. caricinum* as a distinct species and differentiates *Phrag. caricinum* from *Phrag. pearcei*.

As it seems with many species in the genus *Phragmipedium*, a minute sample size, and a lack of exposure to natural populations has led to over one hundred years of confusion as to what these names referred to, where they can be found in natural populations, and what, if anything, defined *Phragmipedium caricinum* as unique.

### **So, what is *Phragmipedium caricinum*, what is its natural range, and is it a true species?**

This species has a restrictive ecology and as such, a limited natural distribution when compared to other species in the genus. *Phragmipedium caricinum* can only be found clinging tenaciously to rocks in rivers below the high-water line in Bolivia between 500 and 1500 meters elevation on the eastern side of the Andes. Reports of this species anchoring to limestone are not supported. Limestone is not stable enough over time in the midst of constantly onrushing water to maintain this species. *Phragmipedium caricinum* anchors its roots to the surface of granite and sandstone rocks and small boulders at the edges of rivers large and small, as well as rocks midstream, which provide long-term stability notwithstanding seasonal and periodic submersion in strong, fast-moving floodwaters. I have not been able to confirm reports of this species further

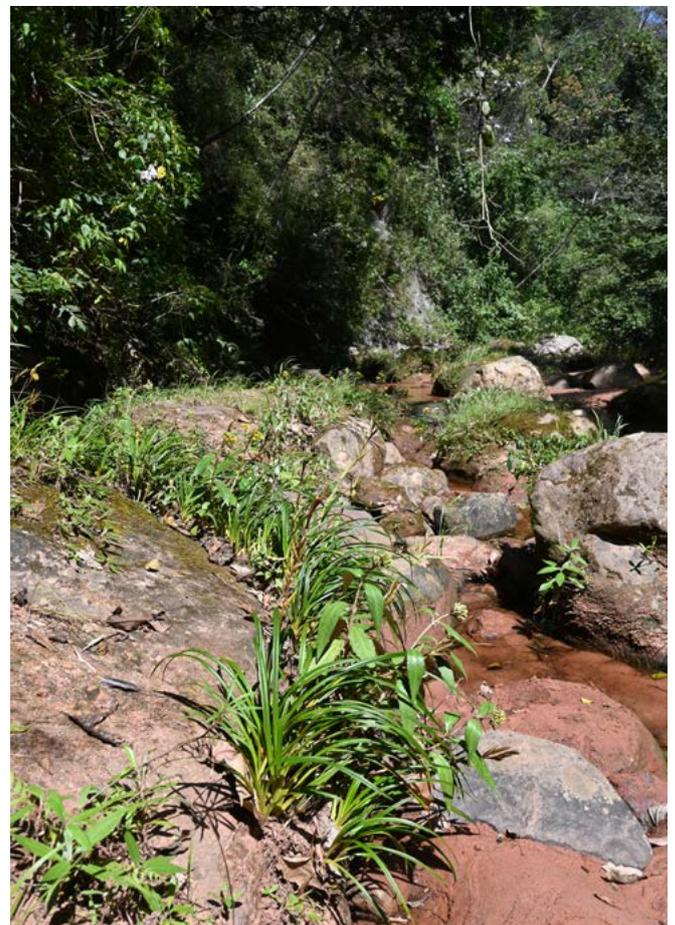
east in Brazil, although it is possible given the climate. To date, I have only been able to confirm this species in Bolivia, at lower elevations, at the 'elbow' of the Andes, in temperate areas with a dry winter and hot summer (climate classification Cwa). All Peruvian plants alleged to be *Phrag. caricinum* have turned out to be *Phrag. pearcei* including those thought to be *Phrag. caricinum* in the 1975 Rauh and Senghas article in *Die Orchidee*. The climate patterns and altitude of the Peruvian Andes are not consistent with known habitats of *Phrag. caricinum*. No secondary roadside habitats have been reported nor encountered. This is consistent with *Phrag. caricinum*'s sister species in the subsection. More than a few rivers which *Phragmipedium caricinum* calls home have been hiked by the author and no plants have been seen nor reported in tree branches nearby nor outside the rivers above the high water line.

This species is easy to identify based on the size, color and pattern of spots on the claw face. The pattern of spots on the face of the claw is dispositive. All other floral, ecological, and vegetative characters overlap with its sister species in the genus *Phrag. hirtzii*, *Phrag. pearcei*, *Phrag. cabrejosii*, *Phrag. richteri* and *Phrag. klotzschianum*. *Phragmipedium caricinum* has large, dark to light brown spots on the claw face arranged in a pattern not inconsistent with a right triangle on the left and right halves of the claw. The claw face is that part of the slipper-shaped labellum that come together as two halves just below the staminode. The inflorescence of *Phragmipedium caricinum* branches more readily than its sister species. However, this attribute is not dispositive of species differentiation nor can it be used to break *Phragmipedium caricinum* into more than one species. Plants with successive flowering inflorescence grow intermingled with plants with branching inflorescences. *Phragmipedium caricinum*, like all species of *Phragmipedium*, is inherently variable across multiple taxonomic characteristics. The size, color, and pattern of spots on the face of the claw, together with the habitat range, define *caricinum* as a species and make it easy to identify. *Phragmipedium caricinum* is an ochlo species. An ochlo species is "A very variable (polymorphic) species, whose variation, though partly correlated with ecology and geography, is of such a complex pattern that it cannot be satisfactorily accommodated within a formal classification" (Cronk 1998). It is not separable into distinct subspecific groups. See the *Orchid Digest* Vol. 84-4, Oct., Nov., Dec. 2020 for a more detailed discussion and understanding of the species concept in the genus.

The transient river sand in which *Phrag. caricinum* calls home has a higher content of red clay than does the sand

found in the rivers throughout northern Peru and into Ecuador that *Phrag. pearcei* calls home. As I have noted in other articles, in the genus *Phragmipedium* specific ecology is tied to taxonomic-specific status. The two (2) cannot be disconnected, and the high content of red clay in the river sand appears to be tied to *Phrag. caricinum* only, as no other species of *Phragmipedium* has been encountered growing in rivers as such, including *Phrag. caricinum*'s sister species in subsection Himantopetalum. Herein lay a potential clue as to why the range of this species is limited to Bolivia. The author hypothesizes that the iron oxide content in the river sand plays a role in limiting the natural range of the species. This, however, I will leave to future generations of *Phragmipedium* explorers to figure out.

*Phragmipedium caricinum* is apply named after the long, narrow sedge-like leaves that are folded down the middle almost to a point of ninety degrees in some plants. Plants can be found in dense mats with little more than mosses and occasionally grasses atop boulders at the margins of rivers large and small throughout its range. Accumulated river sand can often be found at the roots



of this species. However, this is inconsistent and transitory as flooding causes the river sand to shift and move with the onrushing water. Rhizomes are up to 15 cm, and plants can reach 60 cm in height. The inflorescence can reach 60cm in height and can bear up to six flowers successively for several months. Branching inflorescences have been observed and these specimens tend to be on larger plants and can bear up to ten flowers over several months. Flowers are yellowish green with differing amounts of orange and brown and are morphologically very close to *P. pearcei*, the difference being in the pattern, size, and color of the spots on the face of the claw. The dorsal sepal is elliptic, the synsepal is ovate and can range from equal to or shorter than the slipper in overall length depending on the age of the flower. The slipper is oval and has an orange-to-brown coloration. Consistent with the closely related *P. pearcei*, *P. hirtzii* and *P. cabrejosii*, the labellum lacks spurs, or side lobes. The claw face is beige with the characteristic red and brown spots that vary in size and clarity. Petals are about 6 cm long and can be held between a twenty-five- and forty-five-degree angle out from the labellum. I have seen some plants in nature with the petals almost straight down. The petals can twist one to two times after the flower opens and continue to twist as the flower ages. The shape of the staminode is roughly rhombic, with dark purple hairs. Ecologically, the species in subsection Himantopetalum are consistent when not in flower. The species are vegetatively identical and it is very challenging to tell one species in this subsection from the other without geographic location and without seeing the flower.

## Culture

*Phragmipedium caricinum* is a group three (3) culture species and likes conditions warm and humid. Night-time temperatures should not be allowed below 55 degrees Fahrenheit for any extended period and ideally not below 60 degrees Fahrenheit. Daytime temperatures in the 80's are common and expected. However, due to the proximity of the plants to moving water, daytime temperatures should be modulated and managed if they are to exceed 90 degrees Fahrenheit consistently through the warmer seasons in cultivation.

As one can see from the photos, *Phrag. caricinum*, like its sister species in subsection Himantopetalum, likes bright light conditions. This species does not perform as well in cultivation in low-light conditions. Cattleya levels of light are ideal. Keep in mind as you view the photos, these plants are close to the Equator and do not experience the seasonal differences in day length and sunlight intensity

that growers in the northern hemisphere in North America, Canada and Europe will experience. Supplemental light in the winter months, depending on where you grow, should be considered.

There are strong indications that *Phrag. caricinum* is a seasonal species, not inconsistent with *Phrag. vittatum*, *lindleyanum*, and *klotzschianum*. This is based on the seasonality of the surrounding environment and the seasonal, mass flowering of this species. All plants in natural populations bloom in June, July, and August at the outset of the dry season when river levels are consistently low, and the threat of periodic submersion in flood waters has abated. The connection between the mass flowering of this species and the onset of the dry season should be noted. *Phragmipedium caricinum*, geographically, sits on the boundary between the Andean species and the Brazilian species on the eastern side of the Andes as that mountain range descends into lower altitudes and the distinct wet and dry seasonality of Brazil. This puts *Phrag. caricinum*, ecologically, in an area not inconsistent with its sister species at the other end of the range for subsection Himantopetalum, *Phrag. klotzschianum*. However, more research is needed to confirm this. There are also indications that this species self-pollinates in natural populations.

Throughout the dry season, plants of *Phrag. caricinum* are sustained by high levels of humidity generated by the river waters moving along below the plants. Copious amounts of water given to this species in June, July, and August should be reevaluated. It would not be inconsistent with the other seasonal species that live outside the Andes for the relative rarity of this species in cultivation to be connected to the seasonality of the plants in natural populations that cause this species to suffer in cultivation under the low light, one size fits all culture that some proffer for the genus.

Regardless of how long it has been since the river levels were high enough to reach the plants and submerge them in periodic flood waters, plants do not completely dry out. Notwithstanding the high levels of iron oxide in the river sand that *Phrag. caricinum* calls home this species is easy to cultivate when fertilized with most standard orchid fertilizers. Like its sister species in subsection Himantopetalum, *Phrag. caricinum* anchors itself intimately to the underlying rock and is capable of staying in place notwithstanding flood waters that would carry a full-grown human away.

## Conclusion

In answering the question, yes, *Phragmipedium caricinum*

is a distinct, beautiful, easy-to-recognize species. It is far from the bland and boring species that it is reported to be. The size, strength, and branching nature of the inflorescence make *caricinum* an ideal candidate for hybridization in the genus. The darker flower color makes this species an intriguing parent when mixed with the darker species and hybrids in the genus. For too long this beautiful species has been misunderstood and underappreciated in the *Phragmipedium* community. Hopefully, that is all about to change.

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<sup>1</sup>Frank Cervera is a biologist who has been studying the ecology, biology, and taxonomy of the genus *Phragmipedium* throughout natural populations for the past twenty-five years. His journey with *Phragmipedium* started in the 1980s when one of his ecology professors introduced him to orchids which led him to buy a plant of *Phrag. longifolium*. After many years of trying to get a sense of which *Phragmipedium* species were which, and why he was killing so many plants, Frank decided to take the matter into his own hands. Frank's twenty-five-year sojourn to the jungles of Mexico, Guatemala, Panama, Columbia, Ecuador, Peru, Venezuela, Guyana, Bolivia and Brazil studying the genus *Phragmipedium*, the taxonomy, ecology, and culture has given him unique access to the source material. Along the way, Frank has met some of the most well-known names and personalities in the *Phragmipedium* community. He has been to some of the most famous, and infamous, orchid nurseries in South America at critical times in the history of the genus and asked them to retell their stories. Frank has had the unique opportunity of going straight to the source and examining plants and flowers through extensive field research. Frank is an accomplished author and lecturer on the genus *Phragmipedium*. Frank currently works in the financial services industry and resides, along with his family and his orchids, in New York.

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Include a concise and descriptive title.

Include an Abstract (max. 250 words) in the manuscript's primary language (Spanish or English) and a set of 5-8 keywords.

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Affiliations of all authors (with full address and email of the corresponding author)

Acknowledgments

Link to the preprint, if applicable.

Tables and Figures:

Place tables and figures after the references.

Provide brief and clear captions; additional clarifications are placed as footnotes in the tables.

Figures containing maps do not imply endorsement of political or jurisdictional boundaries.

Ensure that images, graphics, or maps comply with ethical standards in data collection (e.g., avoid violating privacy if data have been obtained with drones or camera traps).

### **Ethics in Research with Humans and Animals**

If the study involves humans or biodiversity, specify the ethical regulations and permits (including permit numbers) followed, as well as compliance with local and international codes of conduct.

### **Review Process**

The editor-in-chief will initially evaluate the manuscript. If relevant, it will be assigned to a thematic editor, who will decide whether to send the manuscript for peer review. Authors must respond point by point to the reviewers' comments if revisions are requested. The final decision

rests with the editor-in-chief.

### **Appeals**

Appeals to editorial decisions are accepted within 3 months of notification. They should be addressed to the editor-in-chief, who will evaluate the request

### **Publication Costs**

"Andreettana" is a free academic publication, both for its dissemination and for the acceptance of publications.

### **Equity, Diversity, and Inclusion**

The journal promotes the participation of authors, reviewers, and editors from diverse backgrounds, orientations, and levels of experience, thus fostering inclusion and respect for local knowledge, and promoting interdisciplinary and multicultural dialogue.

## Instrucciones para Autores

### Alcance de la Revista

Andreettana es una revista científica dedicada a la publicación de investigaciones originales sobre la biodiversidad de la región neotropical, con énfasis en los Andes tropicales. La revista recibe trabajos en las áreas de taxonomía (descripción y revisión de especies), biodiversidad, ecología, biogeografía, restauración ecológica, usos culturales de la biodiversidad, así como horticultura de plantas tropicales, haciendo especial énfasis en orquídeas. Los manuscritos que ofrezcan aportes relevantes al conocimiento taxonómico y ecológico, así como a la conservación y el manejo sostenible de la biodiversidad andina, tendrán prioridad.

Se publican tanto estudios empíricos como revisiones, ensayos y comunicaciones breves que presenten nuevos métodos, enfoques conceptuales o aplicaciones prácticas. Se valoran contribuciones que trasciendan casos específicos y planteen soluciones o reflexiones aplicables a otras regiones y contextos.

Andreettana tiene como idioma principal de publicación el inglés. Sin embargo, se aceptan también manuscritos en español, siempre y cuando cumplan con los estándares de calidad científica y claridad. Una vez aceptados, la revista puede ofrecer servicios de edición sustantiva en inglés sin costo adicional, en especial para autores no nativos angloparlantes.

### Consultas Previas a la Presentación

Los autores pueden dirigir consultas al Comité Editorial de Andreettana antes de someter un manuscrito para evaluar la pertinencia temática y el ajuste al alcance de la revista.

### Formato Libre en la Presentación Inicial

La revista adopta un formato relativamente libre en la primera presentación del manuscrito, con algunos requisitos mínimos (ver "Especificaciones del Manuscrito" más adelante). Una vez aceptado el manuscrito con revisiones, se requerirá el ajuste estricto a las normas de estilo finales.

### Autoría

Se espera que todos los autores cumplan con criterios éticos de autoría, lo cual incluye haber contribuido de manera sustancial a la concepción, diseño, recolección de datos, análisis o interpretación, y/o a la redacción o revisión crítica del manuscrito. Todos los autores deben aprobar la

versión final aceptada antes de su publicación. Se sugiere incluir como coautores a quienes hayan contribuido sustancialmente, incluyendo a personal que haya recolectado datos, especialmente si son originarios de las regiones donde se desarrolló la investigación, de manera que se promueva la inclusión y la representación local.

### Categorías de Artículos y Límites de Palabras

El conteo de palabras incluye el texto desde el Resumen/ Abstract hasta los Agradecimientos, sin contar las referencias, ni leyendas de tablas y figuras, ni el cuerpo de tablas.

**Artículo de Investigación** (7000 palabras): Estudios originales y completos sobre biodiversidad, taxonomía, ecología, biogeografía, restauración, usos culturales y horticultura tropical, con énfasis en el contexto andino-neotropical.

**Revisión** (8000 palabras): Síntesis amplias y críticas de la literatura, que aporten nuevas perspectivas teóricas o metodológicas, o identifiquen tendencias relevantes a nivel local y global.

**Ensayo** (5000 palabras): Reflexiones conceptuales, análisis de políticas o enfoques novedosos en conservación y manejo de la biodiversidad, con base en evidencia documental y pertinencia más allá de un caso local.

**Nota** (3500 palabras): Reportes breves de resultados preliminares, hallazgos puntuales o avances metodológicos o curiosidades de horticultura.

**Comentario** (1000 palabras): Respuestas críticas o comentarios a material previamente publicado en Andreettana.

**Comunicación Breve / Carta** (500-1000 palabras): Opiniones cortas, correspondencia o declaraciones sobre temas urgentes en conservación, diversidad y ecología andina.

La revista no contempla secciones fijas para reseñas de libros, pero puede considerar su publicación a solicitud del equipo editorial.

### Requisitos de Presentación

Los manuscritos deben enviarse a través del correo electrónico oficial de Andreettana ([editorial@faec.org](mailto:editorial@faec.org)). En caso de problemas de acceso, contactar al editor general.

Evaluación por pares a doble ciego: Ni los autores ni los revisores conocerán las identidades entre sí. Por ello, se

debe eliminar cualquier información identificatoria del manuscrito (excepto en la página de portada separada).

Propuesta de Revisores: Se solicita sugerir 4-6 posibles revisores con experiencia en el tema, sin conflictos de interés con los autores, y procurando diversidad geográfica, de género y de trayectoria académica.

### **Transparencia, Acceso a Datos y Reproducibilidad**

Los autores deben cumplir con estándares de transparencia en el análisis y la presentación de datos. Se recomienda el uso de repositorios de datos y la inclusión de información complementaria (apéndices en línea) que faciliten la reproducibilidad. Se deberá incluir una breve declaración sobre el acceso a datos, código analítico y fuentes de financiamiento.

### **Prepublicación (Preprints)**

Se aceptan manuscritos previamente disponibles como preprints en repositorios reconocidos. De ser aceptado el trabajo, los autores deberán asegurar el otorgamiento de la licencia correspondiente a la revista. Si se utilizó un preprint, no debe citarse en el texto de manera identificable durante el proceso de evaluación a doble ciego. Luego de la aceptación, se podrá establecer el enlace entre la versión final y el preprint.

### **Políticas sobre Publicaciones Duplicadas**

No se aceptan manuscritos que hayan sido publicados total o parcialmente en otros medios, o que estén bajo consideración simultánea en otra revista. Los autores deberán declarar cualquier solapamiento previo en la carta de presentación.

### **Plagio**

Todos los manuscritos se someterán a revisión de similitud con otras fuentes. El envío implica la aceptación de esta condición.

### **Conflicto de Intereses**

Los autores deben declarar cualquier conflicto de interés, financiero o de otro tipo, en el proceso de envío del manuscrito.

### **ORCID**

Se requiere que todos los autores proporcionen su identificador ORCID (<http://orcid.org/>) al momento de la sumisión, a menos que existan motivos en contra debidamente justificados.

### **Uso de Inteligencia Artificial**

Si se emplearon herramientas de inteligencia artificial (IA) para la generación del texto o análisis del manuscrito, se deberá declarar explícitamente el modo de uso en el documento. Los autores son responsables de revisar la exactitud y la ausencia de sesgos en el contenido generado con IA.

### **Especificaciones del Manuscrito**

Formato:

Numerar todas las líneas del texto principal.

Las secciones suelen ordenarse en Introducción, Métodos, Resultados y Discusión para Artículos de Investigación. Ensayos, Comentarios y Cartas pueden tener una estructura más flexible.

Incluir un título conciso y descriptivo.

Incluya un Resumen (máx. 250 palabras) en el idioma principal del manuscrito (español o inglés) y un conjunto de 5-8 palabras clave.

Proporcionar una "Frase de Impacto" ( $\leq 140$  caracteres) que resuma el hallazgo clave o la aplicación práctica del estudio.

Incluir una página de portada separada (no incluida en el manuscrito) con:

Título completo

Frase de impacto

Palabras clave

Conteo de palabras

Afiliaciones de todos los autores (con dirección completa y correo electrónico del autor de correspondencia)

Agradecimientos

Enlace al preprint si corresponde.

Tablas y Figuras:

Colocar tablas y figuras después de las referencias.

Leyendas breves y claras; las aclaraciones adicionales se colocan como notas al pie en las tablas.

Las figuras que contengan mapas no implican respaldo sobre límites políticos o jurisdiccionales.

Asegurar que las imágenes, gráficos o mapas cumplan estándares éticos en la recolección de datos (ej. evitar violar

privacidad si se han obtenido datos con drones o cámaras trampa).

### **Ética en la Investigación con Seres Humanos y Animales**

Si el estudio involucra seres humanos o biodiversidad, especificar las normativas éticas y permisos (incluyendo números de permisos) seguidos, así como el cumplimiento con códigos de conducta locales e internacionales.

### **Proceso de Revisión**

El editor en jefe evaluará inicialmente el manuscrito. Si es pertinente, se asignará a un editor temático, quien a su vez decidirá si enviar el manuscrito a revisión por pares. Los autores deberán responder punto por punto a los comentarios de los revisores en caso de solicitarse revisiones. La decisión final corresponde al editor en jefe.

### **Apelaciones**

Las apelaciones a las decisiones editoriales se aceptan dentro de los 3 meses posteriores a la notificación. Deben dirigirse al editor en jefe, quien evaluará la solicitud.

### **Costos de Publicación**

Andreettana es una publicación académica sustentada gratuita, tanto para su difusión como para la aceptación de publicaciones.

### **Equidad, Diversidad e Inclusión**

La revista promueve la participación de autores, revisores y editores de diversas procedencias, orientaciones y niveles de experiencia, fomentando así la inclusión y el respeto al conocimiento local, y favoreciendo el diálogo interdisciplinario y multicultural.





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