

SPECIES ORCHIDACEARUM 6 Icones Costaricensis 1&2

Authors:

Franco Pupulin, Costa Rica

Melissa Díaz-Morales, Costa Rica

Lizbeth Oses, Costa Rica

Isler F. Chinchilla, Costa Rica

Adam P. Karremans, Costa Rica

Noelia Belfort-Oconitrillo, Costa Rica



SPECIES ORCHIDACEARUM ICONES COSTARICENSIS

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EDITORS

ADAM P. KARREMANS
JARDÍN BOTÁNICO LANKESTER
UNIVERSIDAD DE COSTA RICA
CARTAGO, COSTA RICA

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JARDÍN BOTÁNICO JOAQUÍN ANTONIO URIBE
MEDELLÍN, COLOMBIA

JUAN SEBASTIÁN MORENO
GRUPO DE INVESTIGACIÓN SCHULTES
FUNDACIÓN ECOTONOS
CALI, COLOMBIA

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UNIVERSIDAD DE COSTA RICA
CARTAGO, COSTA RICA

GRAPHIC DESIGN

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MEDELLÍN, COLOMBIA

DARIUS KARREMANS
WEBMASTER
CARTAGO, COSTA RICA

SPECIES ORCHIDACEARUM ICONES COSTARICENSIS

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Jardín Botánico Lankester, Universidad de Costa Rica
Jardín Botánico Joaquín Antonio Uribe, Medellín, Colombia

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FOREWORD

Monographic works are often the basis for the study and understanding of local orchid floras. Unfortunately, monographs are not always available for large and poorly explored countries, as well as for complex, species rich groups of plants. In such cases, it may be quite challenging to assess how many and which species need to be included in a systematically structured study *a priori*. Country level floristic works are unlikely to be published unless they represent either a complete set of taxa belonging to a particular group or a [relatively] complete set of all the species present within a geographical area. *Completeness* therefore limits the availability of good biological data, highly valuable information that does not become available because of its partiality.

A solution to this issue has been the creation of the Icones Plantarum Tropicarum (IPT) and Icones Orchidacearum (IO) series, which monographed orchid taxa by depicting and discussing individual species. These series opened the door for the publication of detailed knowledge on particular species, which would be far too partial to include in any monographic work, as was pointed out by Eric Hágsater when proposing the IO. These series set the basis for the study of orchids in many regions, where it was previously impossible, by depicting an individual to which a name has been applied to in different countries. Regarding the IPT, Calaway H. Dodson stressed that many floras of tropical countries had much more text than illustrations, lamenting that much confusion in botanical taxonomy resulted from inaccurate impressions due to confusing terminology, and pointing out that a picture could be worth a thousand words. Species Orchidacearum (SO) builds on those concepts and adds the following principles:

1. *Infra-specific variation*. When presenting the illustration for a species, what we are really doing is depicting the features of a single individual of that species from a particular population, a particular time, and particular ecological conditions. It is difficult to assess if what we have illustrated is truly an average individual that we consider representative of the species. There is always a risk of depicting a local variation, or an unusual or aberrant form of

a species. This issue is addressed in Species Orchidacearum by encouraging authors to publish an unlimited number of plates and descriptions as long as they show variation within the same species. This allows for a better assessment of each species' morphological variation.

2. *What you see is what you get*. When preparing the protologue of a species it is commonplace to use one or a few specimens known to the author(s). This makes it fairly easy to address what material was considered when preparing a species' description. But monographs regularly cite lots of material, usually from diverse origins, dates and herbaria. Did the author include the features of all the cited specimens or only of those at hand? Is the description based on the original protologue or an amendment that includes additional material? Is the author's concept of this particular species very inclusive or very exclusive, is it similar to my own? In Species Orchidacearum descriptions are restricted to the morphological variation found in the illustrated specimen only, nothing more and nothing less. This means that the variation described in each plate is limited, but it also means that these features are exactly what was found in that particular individual, and students are free to combine the descriptions of different individuals of the same species included in the series to form their own concept of each species.

3. *Lankester Composite Dissection Plates*. At the end of April 2013, Franco Pupulin, Diego Bogarín, Melania Fernández and I agreed to standardize the digital color plates that Lankester Botanical Garden had been perfecting for over a decade. The objective being to make this knowledge and tools generally available to the orchid community. The name LCDP or Lankester Composite Dissection Plate was coined back then, and a series of workshops on how to prepare them were given in countries such as Bolivia, Colombia, Ecuador and Peru. A protocol was released in 2019 and LCDPs have since become highly popular. The technique is now copied and used by students and researchers throughout the Neotropics, from where the concept has spread and is now used to document species belonging to families besides the Orchidaceae.

The LCDP's are another innovative feature of Species Orchidacearum. A combination of more accurate, detailed and less expensive photography, with the lower costs of color printing, and the generalization of digital publication, allows for the possibility of substituting the traditional black and white ink illustrations used in botanical literature for the composite dissection plates in full color published digitally. The LCDP has several advantages over black and white illustrations. They allow for more accuracy in the depiction of shapes, sizes, borders and ornaments, conveying greater information by including



a rich color palette, allowing for a better assessment of depth, and being much more objective and far less hand-dependent.

4. *Systematic order.* A major challenge in non-monographic treatments is the loss of systematic order. In such large and diverse groups as Orchidaceae, not knowing where to look for a particular species' closest relatives can make determination hazardous. Preparing treatments of groups of unrelated species belonging to different genus in each volume creates the issue of requiring the user to flip through the indexes to find all of the species belonging to a particular genus, and then having to go to each publication individually, rather than to be able to find all species of a single genus together. This is addressed in Species Orchidacearum by allowing users to access published material either by volume and issue, or alphabetically by genus or individual species.

5. *Accessibility.* One of the biggest limiting factors to the study of tropical floras is the unavailability of relevant literature. Type specimens, original descriptions, historical works and important research papers on are mostly deposited or published in North American or European institutes and their journals. Despite the fact that most biodiversity is found in tropical areas, and these continue to be the source of most novel botanical research, it is precisely students from tropical countries that often have the greatest limitation to access and publish biological data. SO is initially intended to be published electronically, lowering the costs of production dramatically. Therefore, and considering that it is to be used by the students of the orchid-rich countries to be able to study their floras, Species Orchidacearum will be completely available online, widely accessible, and free of charge.

6. *Now or never.* Orchids are considered to have the highest speciation rate, highest rate of extinctions and rarest species of any plant family in the world. The quick decline of biodiversity is one more reason to try to illustrate orchids before they are lost forever. Climate change and habitat disturbance, by deterioration, fragmentation and loss, impact both orchids and their ecological interactions, and their effects are only accelerating. The time is now to take action, both in celebrating and showcasing biodiversity, and in stressing the importance of conserving it.

The main goal of this series is to make available the illustrations of as many individuals of diverse orchid species as possible to students of the tropical floras. Species Orchidacearum follows Icones Orchidacearum in that each icon has its own authors and can be cited individually so that the individual efforts are recognized. However, it falls closer to the idea of Icones Plantarum Tropicarum in that it sticks to a two page format for each icon, giving more relevance to the illustrations, with less emphasis made on having an extremely detailed description and citation of vouchers of multiple specimens of the same species. Contrary to the controversy that may arise regarding a correct name, a good digital plate is a faithful representation of an individual that was found flowering in a particular space and time.

Adam Philip Karremans



ICONES COSTARICENSIS

Species Orchidacearum was inaugurated by the series Icones Colombianae. But it has always been our intention to progressively add series from different countries. With the publication of the fifth installment of Colombian materials we are excited to present the first two issues from Costa Rica, and look forward to extending this even further to other geographical areas in the near future.

The volumes, published as part of the broader *Species Orchidacearum* serial, have proven to be a useful tool not only for students and researchers, but also for more general audiences, including local communities and decision makers. Careful taxonomic work, enriched by detailed photographic documentation on the local orchid floras, slowly but surely set the basis for a multitude of biodiversity related studies and may be crucial to tackle large and highly diverse floras.

These series promote broad and unrestricted public access to the scientific knowledge on biodiversity. Here we present the first 24 icons from Costa Rica. They represent 19 different species belonging to the genera *Echinosepala* Pridgeon & M.W.Chase, *Masdevallia* Ruiz & Pav. and *Pleurothallis* R.Br., all in subtribe Pleurothallidinae. Pleurothallids are a major component of neotropical orchid floras, and these will serve as a useful source of information in the assessment of variation and establishment of species' identities in these highly diverse and challenging groups.

The LCDPs of *Echinosepala expolita* Pupulin & Belfort, *Masdevallia bellissima* Bogarín, Pupulin & Karremans, *Pleurothallis gonzaleziorum* Pupulin, M.Díaz & Pridgeon, *P. grandilingua* Pupulin, M.Díaz & Pridgeon, *P. navisepala* Pupulin, J.Aguilar & M.Díaz, *P. pudica* Pupulin, J.Aguilar & M.Díaz, *P. scotinantha* Pupulin, M.Díaz & J.Aguilar, *P. tapantiensis* Pupulin, M.Díaz & J.Aguilar, and *P. vide-vallis* Karremans & J.E.Jiménez are all based on the specimens that served as types. While the illustrated specimens of *Pleurothallis angusta* Ames & C.Schweinf, *P. compressa* Luer., *P. fantastica* Ames, *P. rectipetala* Ames & C.Schweinf and *P. tonduzii* Schltr. were all collected close to the species' type localities. That makes this body of information critical to the interpretation of these taxa.

We hope to continue the effort of publishing additional issues of Species Orchidacearum and remind all users that anyone can publish in this series, and that no country is off limits. We would like to encourage new authors and editors to come forward.

The editors



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Echinosepala expolita

PUPULIN & BELFORT
LANKESTERIANA 17(2): 294. 2017

Type: Costa Rica. Alajuela: San Ramón, Piedades, Piedades Norte, road to Bajo La Paz, ca. km 3, along the Río San Pedro, 1300 m. 19 February 2008. F. Pupulin 7030, R.L. Dressler & A.P. Karremans (holotype: JBL; isotypes: JBL; LCDP voucher).

Epiphytic, caespitose, erect herb up to 30 cm tall. Roots coarse, flexuous, 1–2 mm wide. Ramicauls stout, terete, 6–12 cm long, with 5 unequal nodes, completely enclosed by 3–5 papyraceous, tubular, ancipitous, obliquely truncate, glabrous, inflated sheaths, 20–80 × 2–8 mm, breaking longitudinally and disintegrating with age. Leaf coriaceous, linear-elliptic, subacute, minutely emarginate, 16–27 × 2–3 cm, midvein strongly protruding abaxially. Inflorescence a fascicle of successive flowers produced at the apex and the base of the ramicaul; peduncle terete-subclavate, erect, glabrous, 18–25 mm long. Floral bract papyraceous, loose, obliquely truncate-subobtuse, 18–24 mm long. Pedicel terete-subclavate, 18–25 mm long. Ovary lanate-hirsute, covered by the bract, linear-subclavate, 3 mm long. Flowers bilabiate, opening in the morning and closing in late afternoon; the sepals light greenish yellow, with the adaxial basal half mottled purple-red, the distal half with pointed verrucae, abaxially purple and densely warty-pubescent; the petals yellow, blotched with purple-red, sparsely verrucose; the lip dark purple, fresh flowers apically covered with a translucent wax. Dorsal sepal elliptic-oblong, subacute, 19–20 × 4–9 mm, 7–9-veined, base semitransparent forming a window under the dark blotches. Lateral sepals connate into an elliptic synsepal, 16–17 × 4–10 mm, each 5-veined, the apices free about 6 mm, subacute-rounded. Petals fleshy, rhombic, obliquely asymmetric, acute, 6–7 × 1–3 mm, 3-veined. Lip 3-lobed, narrowly oblong-obovate from a small, rounded, thin claw, 7.5 × 2.2 mm, the base subtruncate; lateral lobes basal, erect, narrowly linear-subuncinate, antrorse; the apical lobe elliptic-truncate, with irregular margins, with a pair of intramarginal, thin keels running from the disc, inside the lateral lobes, to the middle of the midlobe blade, apically thickened into a cushion-like, elliptic, low pad; disc with an erect, narrow callus arising above the base, topped by a horseshoe-shaped, channeled pseudo-glenion, producing a gelatinous exudate, extending in

front into a low groove flushing into the apex. Column straight, semiterete, 4–5 mm long, with long, narrow, subrectangular wings above the middle, the foot 2 mm long. Anther cap globose, cucullate, 0.8 × 0.8 mm, with stiff hairs on the upper margin, 2-celled. Pollinia 2, obovoid, flattened, 0.6 × 0.3 mm, caudicle short bilobed.

Etymology: From the Latin *expolitus*, “shining, glossy”, in allusion to the glossy apex of the lip in the fresh flowers with exudate.

Echinosepala expolita is distinguished by the inflorescence that may be produced both at the apex and lower nodes of the ramicaul, the glabrous, inflated sheaths that cover the stem, the linear-elliptic leaves, the lanate-hirsute ovary, the sepals >15 mm long, and the tomentose abaxial indumentum of the sepals.

References:

Pupulin, F., A. P. Karremans & N. Belfort Oconitrillo (2017). Two new species of *Echinosepala* (Orchidaceae: Pleurothallidinae). *Lankesteriana* 17(2): 285–304.



LCDP: *Echinosepala expolita* Pupulin & Belfort. A. Habit. B. Flower. C. Dissected perianth. D–E. Lip, adaxial and three quarters views. F. Ovary, column and lip, lateral view. G. Ovary and column, three quarters and ventral views. H. Anther cap. I. Pollinarium, two views.



Echinosepala lappiformis

(A.HELLER & L.O.WILLIAMS) PRIDGEON & M.W.CHASE
LINDLEYANA 17(2): 101. 2002

Synonyms: *Pleurothallis lappiformis* A.Heller & L.O.Williams, Fieldiana, Botany 31(2): 42. 1964.
Myoxanthus lappiformis (A.Heller & L.O.Williams) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 15: 38. 1986.
Brenesia lappiformis (A.Heller & L.O.Williams) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 255. 2004.

Type: Nicaragua. Chontales: epiphytic at Pistacho Peak near Babilonia Mine, alt. 650 m, Jul 1962, A. Heller 6620 (holotype, F).

Illustrated specimen: Costa Rica. Limón: Pococí, Guápiles, Parque Nacional Braulio Carrillo, Sector Quebrada González, Sendero Las Palmas, behind the building, 467 m, tropical wet, transition to premontane wet forest. 22 March 2012. D. Bogarín et al. 9554 (JBL-spirit; LCDP voucher).

Plant epiphytic, shortly repent, erect to subprostrate, up to 25 cm tall. **Ramicauls** stout, terete, 15–50 mm long, composed by 2–3 unequal nodes, enclosed by 3 papyraceous, fibrous, tubular, obtuse sheaths, to 3 cm long, fragmented with age. **Leaf** thickly coriaceous, elliptic, acute, minutely emarginate, 6–12 × 2–3 cm, base sessile, mid vein strongly protruding abaxially. **Inflorescence** a single flower emerging from the lower nodes of the ramicaul; the peduncle terete, erect, minutely pubescent, 3–4 mm long, subtended by a fibrous, brown, acute bract 3 mm long. **Floral bract** fibrous-papyraceous, brownish, inflated, obliquely truncate, 7–8 mm long. **Pedicle** obconical, pubescent, 2–3 mm long. **Ovary** clavate, purple, 3 mm long, densely long-pubescent to echinate. **Flowers** bilabiate, dorsal sepal apically connate to the tip of the synsepal, fleshy, non-resupinate, held almost vertically, bright red-purple, the petals basally white, densely long pubescent-echinate externally, rugose-verrucose within. **Dorsal sepal** narrowly triangular, acute, 17–20 × 4–5 mm, 3-veined. **Lateral sepals** connate to the apex into an obovate, obtuse, concave synsepal, the margins erect, adaxially transversely verruculose, 20–22 × 14–16 mm. **Petals** fleshy, linear-oblong, acute, adaxially verrucose in the distal half, 11–12 × 3 mm, 3-veined. **Lip** 3-lobed, elliptic from a thin, rectangular, rose-hyaline claw, 7–8 × 3–4 mm, base truncate; apical lobe ovate, truncate, denticulate, verrucose, provided with a pair of intramarginal, thick, apically verruculose keels running inside the lateral lobes toward the disc; lateral lobes erect, elliptic-subuncinate, antrorse; the disc transversely rugose-sulcate.

Column straight, semiterete, 6–7 mm long, with narrow, rectangular wings above the middle ending at apex into pointed teeth, the foot 1 mm long. **Anther cap** globose, cucullate, with stiff hairs on the upper margin, 2-celled. **Pollinia** 2, ovoid, laterally compressed, on a short bilobed caudicle.

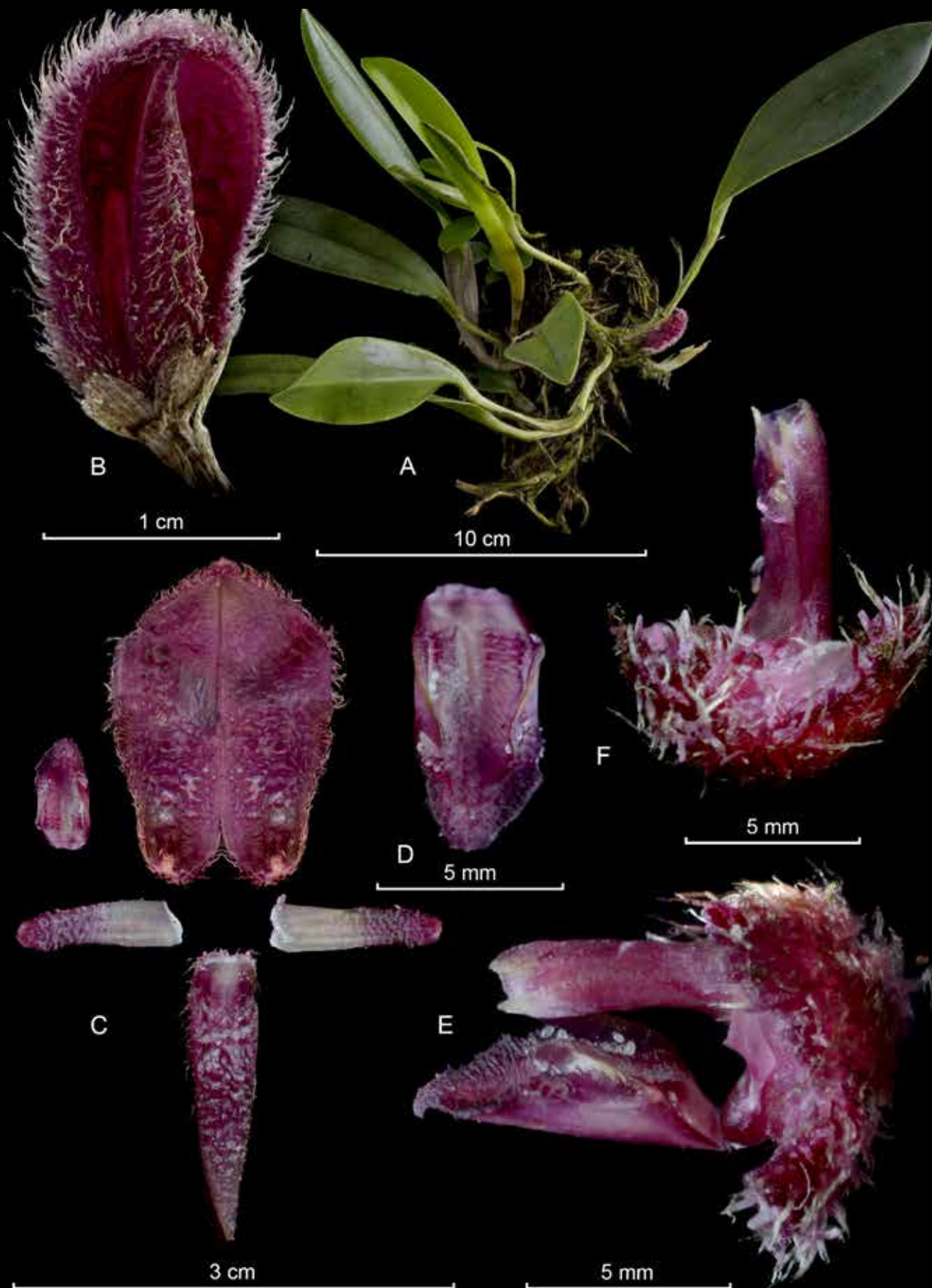
Etymology: From the Latin *lappiformis*, “like a bur”, in allusion to the appearance of the flower..

Echinosepala lappiformis is easily recognized by the red purple, long pubescent-echinate flowers born at the base of the stems, with the narrowly triangular dorsal sepal apically connate to the apex of the synsepal. *Echinosepala stonei* (Luer) Pridgeon & M.W.Chase has a free and obtuse dorsal sepal, while *E. balaeniceps* (Luer & Dressler) Pridgeon & M.W.Chase has a much larger flower with a high, longitudinal callus on the disc.

References:

Luer, C. A. 1992. Icones Pleurothallidarum IX. Systematics of *Myoxanthus*. Monographs in Systematic Botany from the Missouri Botanical Garden 44: 1–111.

Pupulin, F., N. Belfort-Oconitrillo, A. P. Karremans & D. Bogarín. 2020. *Flora Costaricensis Subtribui Pleurothallidinis Prodomus—Systematics of Echinosepala* (Orchidaceae). *Harvard Papers in Botany* 25(2): 155–190.



LCDP: *Echinosepala lappiformis* (A.Heller & L.O.Williams) Pridgeon & M.W.Chase. **A.** Habit. **B.** Flower. **C.** Dissected perianth. **D.** Lip, adaxial view. **E.** Ovary, column and lip. **F.** Ovary and column, ventral view.



Masdevallia bellissima

BOGARÍN, PUPULIN & KARREMANS
VANISHING BEAUTY. VOL. 2: 574. 2020

Type: Costa Rica. Limón: Talamanca, Bratsi, 1740 m. 26 April 2017, flowered in cultivation 16 August 2017. A.P. Karremans et al. 7793 (holotype, CR; isotypes, JBL, USJ; LCDP voucher).

Etymology: From the Latin *bellissimus*, “very beautiful”, in allusion to the lovely, magnificent flower, which is among the showiest of the genus in Costa Rica.

Masdevallia bellissima is most similar to *M. schroederiana*, from which it differs in the pinkish white flowers suffused with yellow (vs. blood red with white center), the smooth surface of sepals (vs. verrucose), the petals white with pink stains along the midvein, the lip white inconspicuously spotted fuchsia (vs. purplish with a red stripe along the midvein) and the oblong lip (vs. subpandurate).

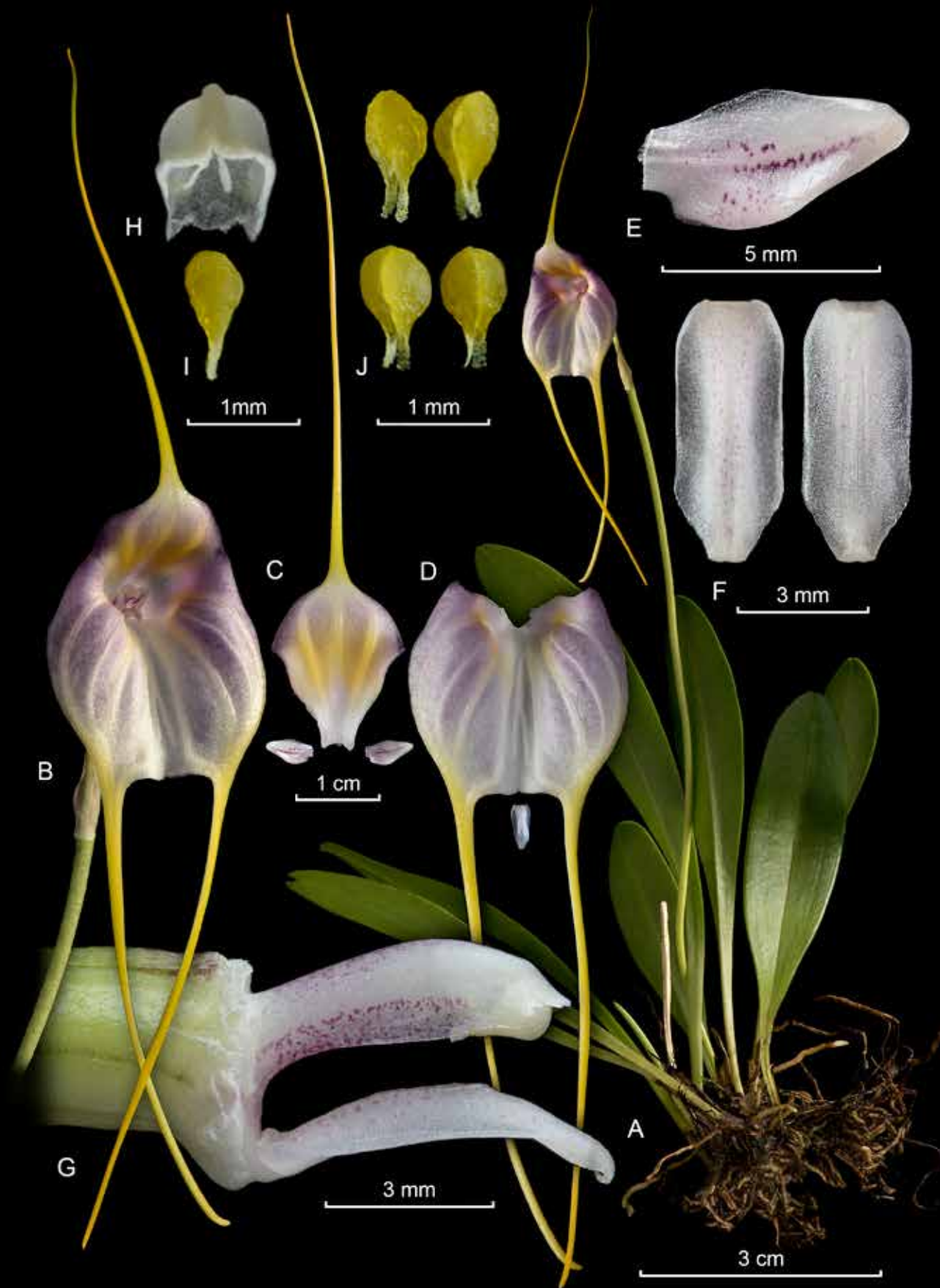
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Pupulin, F. & L. Oses. 2020. *Masdevallia*. Pp. 572–609 in: F. Pupulin (ed.). *Vanishing Beauty. Native Costa Rican Orchids. Vol. 2: Lacaena–Pteroglossa*. Koeltz Botanical Books, Oberreifenberg.

Plant epiphytic, caespitose, erect, up to 15 cm tall. *Roots* flexuous, to 1 mm wide. *Ramicauls* erect, up to 1 cm long, enclosed by 2–3, tubular sheaths 1 cm long. *Leaves* bright green, erect to suberect, coriaceous, oblong-elliptic, obtuse, emarginate, with a short apiculus, 3–7 cm long including the 1–2 cm long petiole, 7–10 mm wide, the base gradually narrowed. *Inflorescence* single flowered. *Peduncle* light green, sparsely spotted with brown, suberect, to 11 cm long, with three tubular bracts. *Floral bract* tubular, 10 × 2 mm. *Pedicle* light green, cylindric, 15 mm long. *Ovary* subclavate, light green 5 × 3 mm, with 6 straight ribs. *Flowers* fleshy, without perceptible fragrance, pinkish white suffused with yellow, the sepaline tails yellow, the petals white with pinkish purple stains along the midvein, the lip white inconspicuously spotted fuchsia along the keel, the column white with pinkish purple stains along the ventral side. *Dorsal sepal* broadly obovate, 9 cm long including the tail, 1.5 cm wide, connate 13 mm to the lateral sepals to form an open, cylindrical sepaline tube, the free portion ca. 7.5 cm long including the tail, basally subrhombic, abruptly contracted into a slender, erect, apical tail to 6.5 mm long. *Lateral sepals* obovate, oblique, 8 cm long including the tails, connate 1.5 cm to form a lamina 2.5 cm wide when expanded, the free portion ca. 7.5 cm long, including the erect apical tails, each basally ovate, gradually contracted into a slender, descending, ca. 6 cm long apical tail. *Petals* asymmetrically ovate, oblique, unguiculate, 6 × 2–3 mm, the apex acute to rounded, the labellar margin with a low, inconspicuous, longitudinal callus. *Lip* oblong, base subtruncate, hinged beneath, convex, recurved with an incurved apex, 6–6.5 × 2–2.5 mm, the callus made up of two low keels. *Column* semiterete, 6 × 2 mm, provided with a foot 2 mm long, with a short, incurved extension. *Anther cap* cucullate. *Pollinia* two, ovoid, caudicles whitish, with a stretched whale tail shape.



LCDP: *Masdevallia bellissima* Bogarín, Pupulin & Karremans. **A.** Habit. **B.** Flower. **C.** Dorsal sepal and petals. **D.** Synsepal and lip. **E.** Petal, adaxial view. **F.** Lip, adaxial and abaxial views. **G.** Column and lip, lateral view. **H.** Anther cap. **I–J.** Different views of pollinarium.



Masdevallia fulvescens

ROLFE

GARD. CHRON. SER. 3(8): 325. 1890

Synonyms: *Reichantha fulvescens* (Rolfe) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 105: 13. 2006.

Type: Costa Rica: without locality, Dec. 1889, imported by *F. Horsman s.n.* (holotype, K).

Illustrated specimen: Costa Rica. Heredia: San Isidro, 1688 m, 30 diciembre 2013. *D. Bogarín et al. 10823* (JBL-spirit; LCDP voucher).

Plant epiphytic, caespitose, erect to suberect, up to 11 cm tall. Roots flexuous, to 1 mm wide. *Ramicauls* erect to suberect, up to 2 cm long, enclosed by 2–3 tubular, white sheaths 7–15 mm long. *Leaves* light green becoming dark green when mature, erect to suberect, coriaceous, smooth, oblanceolate to spatulate, from an aequilateral base, emarginated, with a tiny apiculus, 3–9 cm long including the petiole, 1.5–2.0 cm wide, the base gradually narrowed into the petiole 15–20 mm long. *Inflorescence* successive-flowered; *peduncle* light green, smooth, suberect, to 8 cm long, with two bracts, one at the base and the other near to the pedicel; *floral bract* light green, tubular, 12 × 4 mm; *pedicel* light green, terete, 13 mm long. *Ovary* terete, light green, with 6 longitudinal grooves, 4 × 3 mm. *Flowers* fleshy, the dorsal sepal yellow with four cardinal channels, the synsepal white at the base, with two channels wine-red on the sides, the blade purple with six channels, dark purple, four yellow veins at the base and two white veins towards the tails, the sepaline tails yellow in the dorsal sepal and greenish yellow in the lateral sepals, the petals and the lip white, sparsely dotted with purple. *Dorsal sepal* oblong, 8.5 cm long including tail, 0.7 cm wide, connate 1.6 cm to the lateral sepals to form a sepaline tube, basally narrow, the free portion 7 cm long including the 6 cm long and thin tail. *Lateral sepals* subrhombic, 9 cm long including the tails, connate 1.6 cm to form a lamina 1.7 cm wide when expanded, the free portion 7 cm long including the tail, each half basally deltoid, narrowed apically into a thin, descending and backward to 5.7 cm long apical tail. *Petals* ovate, oblique, unguiculate, 5–6 × 3 mm, apex rounded with an additional apicule on the upper margin, the labellar margin entire, thickened at the base to form an inconspicuous callus. *Lip* subpandurate, obtuse, 5 × 2 mm, the base subcordate, with a joint

connecting to the column foot, with a minute bulky callus along the central vein. *Column* white with purple dots, semiterete, 5 × 1 mm, column foot 1–2 mm long, the apex lacerate. *Anther cap* white, cucullate. Pollinia two, yellow, ovoid, on a whitish caudicle.

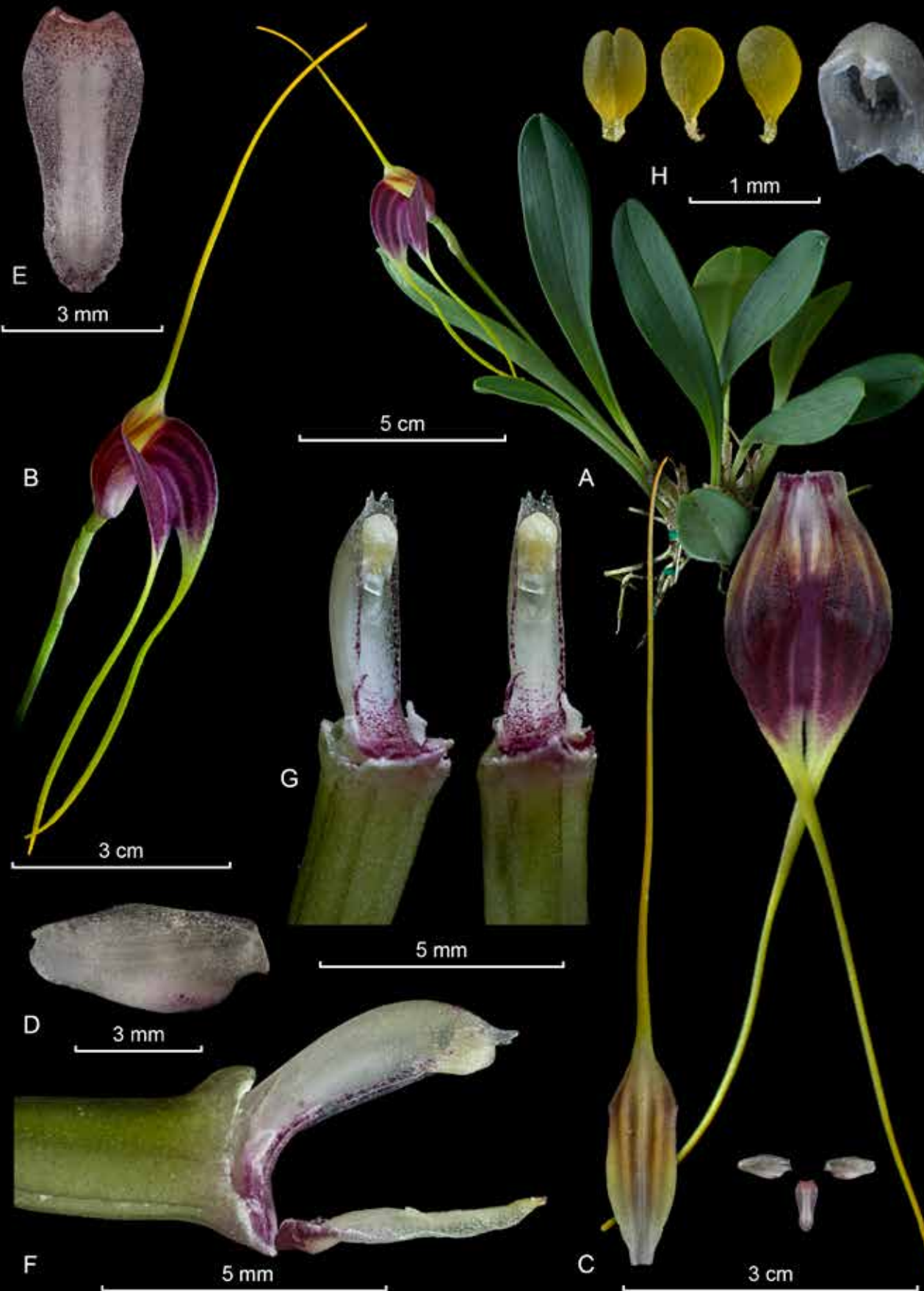
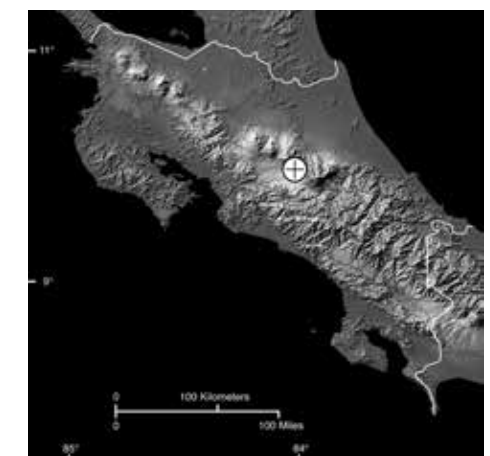
Etymology: From the Latin *fulvescens*, “tawny”, referring to the yellowish-brown color of the flowers.

Masdevallia fulvescens belongs to a group of morphologically similar and genetically closely related species, including *M. calura*, *M. reichenbachiana*, *M. rolfeana* and *M. schroederiana*. It is mainly distinguished from its close relatives by the slightly arched sepaline tube, (a straight funnel-shaped in the other species), which is distinctly compressed laterally.

References:

Luer, C. A. 2000. Icones pleurothallidarum. XXI. Systematics of *Masdevallia*, Part Two. *M.* subgenus *Masdevallia*, section *Coriaceae*, section *Dentatae*, section *Duriae*, section *Reichenbachianae*, *M.* subgenus *Pygmaeia*. *Monogr. Syst. Bot. Missouri Bot. Gard.* 82, 265–518.

Oses, L. 2017. *Filogenia molecular de las especies de Masdevallia Ruiz & Pav. (Orchidaceae) de Costa Rica* (tesis de Licenciatura). Ciudad Universitaria Rodrigo Facio, Costa Rica.



LCDP: *Masdevallia fulvescens* Rolfe. A. Habit. B. Flower. C. Perianth. D. Petal adaxial view. E. Lip adaxial view. F. Column and Lip, lateral view. G. Column ventral views. H. Pollinarium and anther views.



Masdevallia fulvescens

ROLFE

GARD. CHRON. SER. 3(8): 325. 1890

Synonyms: *Reichantha fulvescens* (Rolfe) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 105: 13. 2006.

Type: Costa Rica: without locality, Dec. 1889, imported by F. Horsman s.n. (holotype, K).

Illustrated specimen: Costa Rica. Heredia: San Isidro, 1688 m. 30 diciembre 2013. D. Bogarín et al. 10803 (JBL-spirit; LCDP voucher).

Plant epiphytic, caespitose, erect to suberect, up to 12 cm tall. *Roots* whitish green to pale brown, smooth, to 1 mm in diameter. *Ramicauls* up to 15 mm long, enclosed by 2–3 tubular sheaths 5–15 mm long. *Leaves* the base gradually narrowed into the petiole, the blade smooth, coriaceous, oblanceolate to spatulate, from an aequilateral base, emarginated, inconspicuous apiculus, 7–10.5 cm long including the petiole, 1.0–1.5 mm wide, petiole 15–50 mm long. *Inflorescence* successive, with a single flower open at time; *peduncle* suberect, 5–7 cm long, bracts two; *floral bract* light green, tubular, 10 × 2 mm; *pedicel* light green, 11–13 mm long. *Ovary* terete, with 6 longitudinal grooves, 3–4 mm long. *Flowers* fleshy, the dorsal sepal whitish at the base, yellow tinged with faint purple in the center, the synsepal pale purple basally, white in the middle, turning yellow on each side, with four faint crimson grooves, from two purple blotches at the base that extend towards the apex, turning wider and more marked on the blade, the sepaline tails greenish yellow, the petals and the lip white, finely dotted with purple dots. *Dorsal sepal* obovate, 90 mm long including tail, 7 mm wide, connate 12 mm to the lateral sepals forming a sepaline tube, basally narrow, the free portion 80 mm long including the tail, apical tail to 70 mm long. *Lateral sepals* subrhombic, 88 mm long including the tails, connate 13 mm to form a lamina 17 mm wide when expanded, the free portion 75 mm long including the tail, each half basally deltoid, projecting into a fairly thin, descending, slightly twisted to 60 mm long and narrow apical tail. *Petals* ovate, oblique, unguiculate 5.3 × 2.6 mm, apically rounded with an additional apicule on the upper margin, the margin entire, thickened in the lower basal margin to form an inconspicuous callus. *Lip* articulate to the column foot, basally bluntly sagittate to subcordate, subpandurate, obtuse, 5 × 2 mm, with a low longitudinal, central callus. *Column* white dotted with purple, semiterete,

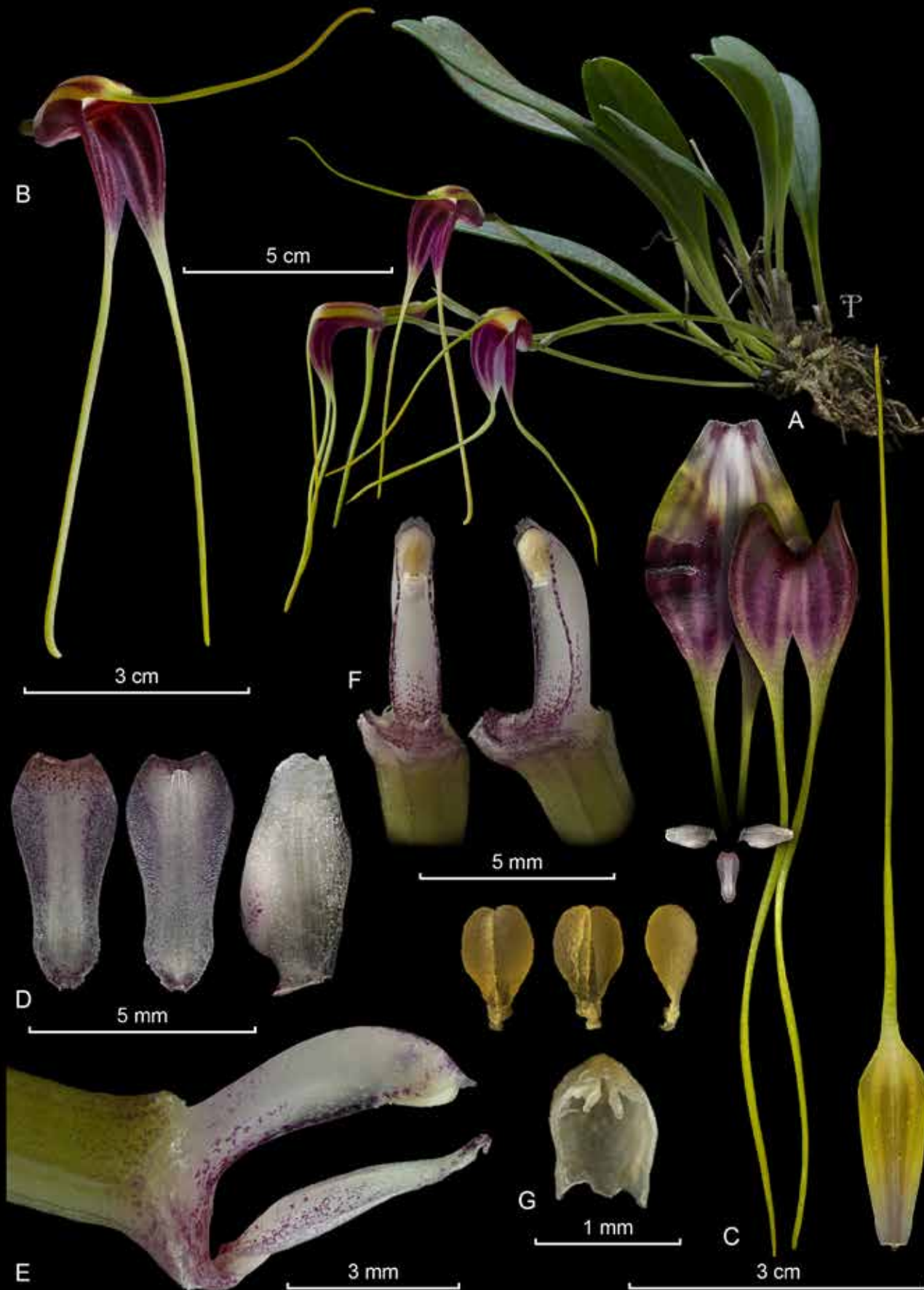
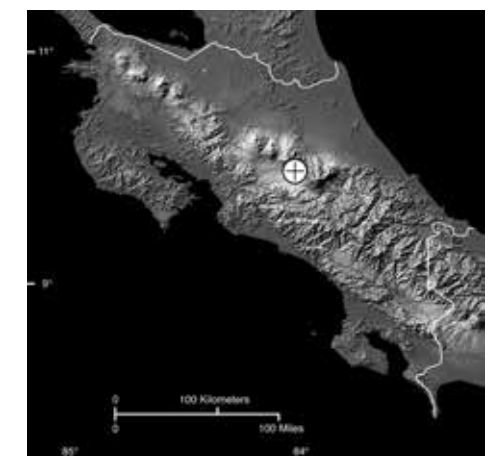
5 × 1 mm, column foot 2 mm long, the apex irregularly serrate. *Anther cap* white, cucullate. *Pollinia* two, yellow, ovoid, on a whale tail-shaped caudicle.

Etymology: From the Latin *fulvescens*, “tawny”, referring to the yellowish-brown color of the flowers.

It is noteworthy that another plant from the same population (Bogarín 10823(a), also in this series), shows discrete differences at the intraspecific level. The length of the petiole of the current specimen is up to 3 cm longer. The dorsal sepal has a more yellow color pattern, with very weak purple channels, and a larger yellow and white area at the base of the lateral sepals. The lateral tails and the free portion of the sepaline tube are distinctly recurved.

References

Luer, C. A. 2000. Icones pleurothallidarum. XXI. Systematics of *Masdevallia*, Part Two. *M.* subgenus *Masdevallia*, section *Coriaceae*, section *Dentatae*, section *Durae*, section *Reiehenbachianae*, *M.* subgenus *Pygmaeia*. *Monogr. Syst. Bot. Missouri Bot. Gard.* 82, 265-518.



LCDP: *Masdevallia fulvescens* Rolfe. A. Habit. B. Flower. C. Perianth. D. Lip adaxial and abaxial views, petal views. E. Column and lip, lateral view. F. Column ventral views. G. Pollinarium and anther views.



Masdevallia fulvescens

ROLFE

GARD. CHRON. SER. 3(8): 325. 1890

Synonyms: *Reichantha fulvescens* (Rolfe) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 105: 13. 2006.

Type: Costa Rica: without locality, Dec. 1889, imported by *F. Horsman s.n.* (holotype, K).

Illustrated specimen: Costa Rica. Heredia: San Isidro, 1688 m. 30 diciembre 2013. *D. Bogarín 10803(a)*, *M. Bonilla*, *A. Villalobos*, *G. Villalobos* & *J.J. Zúñiga* (JBL-spirit; LCDP voucher).

Plant epiphytic, caespitose, up to 8 cm tall. *Roots* whitish brown, smooth, flexuous, to 1 mm in diameter. *Ramicauls* almost indistinguishable at the base of the blade, erect to suberect, up to 1 cm long, enclosed by 2–3 tubular sheaths to 15 mm long. *Leaves* green the base gradually narrowed in a light green petiole, erect to suberect, coriaceous, oblanceolate to spatulate from an aequilateral base, emarginated, inconspicuous apiculus, 3–7 × 0.5–1.2 cm including the petiole 10–30 mm long. *Inflorescence* successive-flowered with a single flower born at once; *peduncle* smooth, suberect, 7.5 cm long, with two bracts, one at the base and the other near to the pedicel; *floral bract* tubular, 9–10 × 2 mm; *pedicel* light green, 9 mm long. *Ovary* terete, light green, with some indistinct wine-colored spots, with 6 longitudinal grooves, 2 × 1–2 mm. *Flowers* fleshy, the dorsal sepal yellow tinged with faint purple along the channels adjacent to the nerves and with a small white area at the base, the lateral sepals white along the nerves, pale yellow on each upper side, with faint purple red channels, two purple blotches at the base surrounded by white, the sepaline tails yellow turning a little orange when aging, the petals white, the lip and the column white with very small purple red dots pattern. *Dorsal sepal* oblong to elliptic, 70 × 8 mm long, 8 mm wide, connate 10 mm to the lateral sepals forming a narrow sepaline tube, the free portion 55 mm long including the 50 mm long descending apical tail. *Lateral sepals* subrhombic, 75 mm long including the tails, connate 10 mm to form a lamina 13 mm wide when expanded, the free portion 63 mm long including the ca. 50 mm long tail, each half basally with a joint connected to the column foot. *Petals* asymmetrically ovate, oblique, unguiculate, 5 × 2 mm, the apex acute to rounded, the labellar margin with a low, inconspicuous, longitudinal callus. *Lip* oblong, base subtruncate, hinged beneath, convex, recurved with an incurved apex, 4.8 × 1.8 mm. *Column* semiterete, 5 mm long. *Anther cap* white,

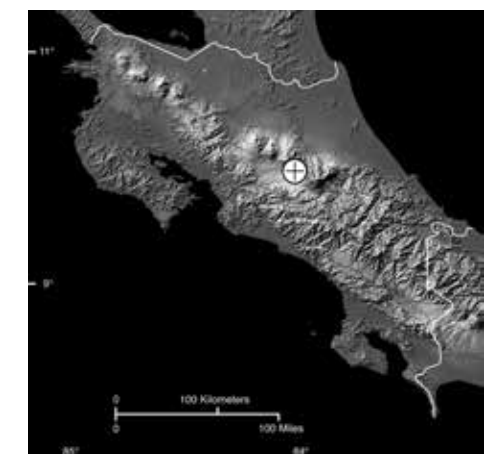
cucullate. *Pollinia* two, yellow, ovoid, with a whale tail-shaped caudicle.

Etymology: From the Latin *fulvescens*, “tawny”, referring to the yellowish-brown color of the flowers.

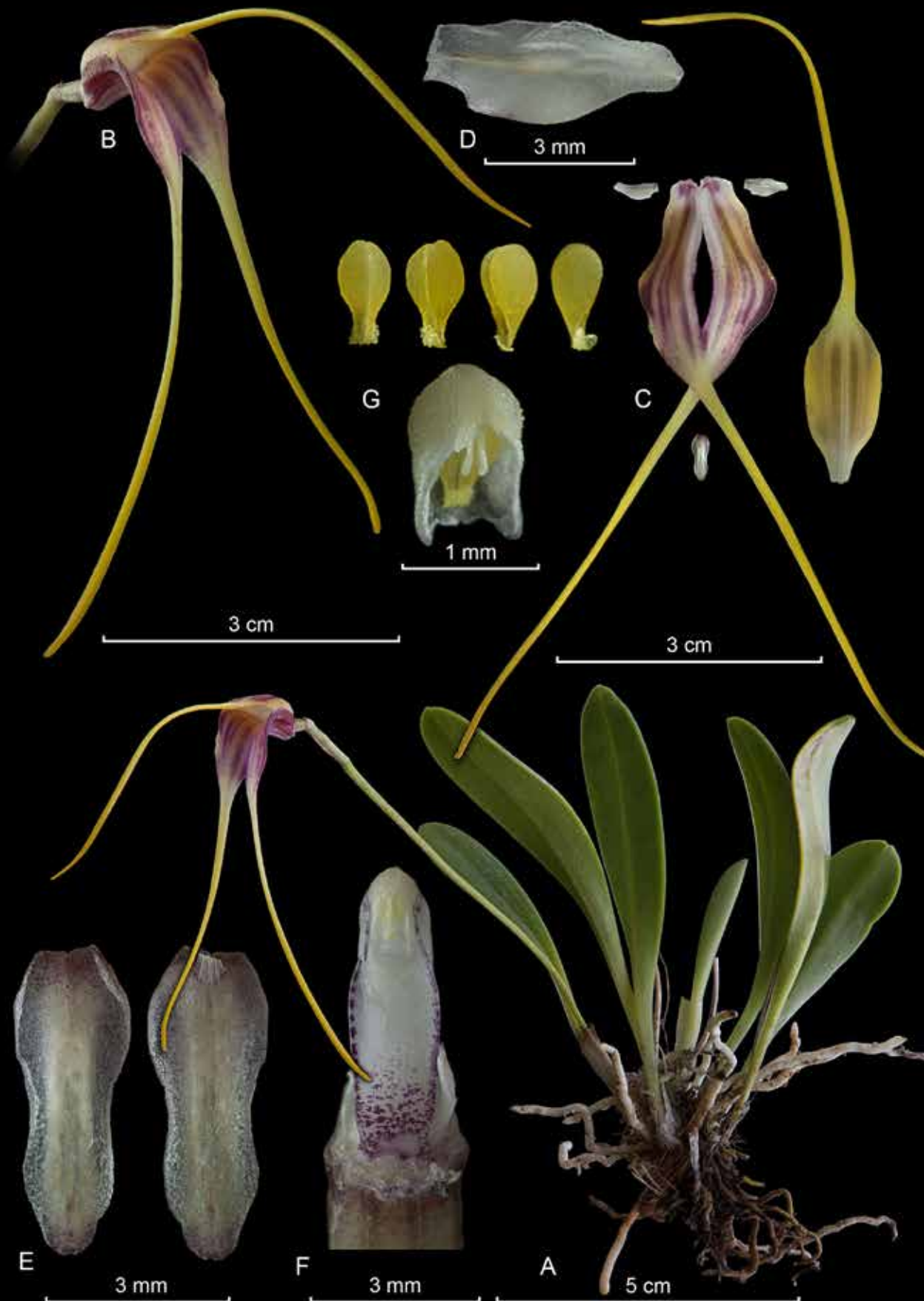
Even though this specimen is the same illustrated in other plates of this series (*Bogarín 10803*), there are visually more differences between the two flowerings of this individual plant than those recorded with another specimen of *M. fulvescens* from the same population (see, in this series, *Bogarín 10823*). The height of the plant decreased, under artificial cultivation, to 4 cm, making the inflorescence overshoot it. The lateral sepals have a bleached appearance. The tails, both dorsal and lateral, as observed in the first simultaneous flowering of this plant, present different orientations, showing how much plastic this characteristic can be in this species. On the other hand, the morphology of the lip and the column remains very consistent, possibly because of the more specific relationship of these organs with the pollinator.

References:

Luer, C. A. .2000. Icones Pleurothallidarum. XXI. Systematics of *Masdevallia*, Part Two. *M. subgenus Masdevallia*, section *Coriaceae*, section *Dentatae*, section *Durae*, section *Reiehenbachianae*, *M. subgenus Pygmaeia*. *Monogr. Syst. Bot. Missouri Bot. Gard.* 82, 265-518.



LCDP: *Masdevallia fulvescens* Rolfe. A. Habit. B. Flower. C. Perianth. D. Petal. E. Lip adaxial and abaxial views. F. Column ventral view. G. Pollinarium and anther views.



Pleurothallis angusta

AMES & C. SCHWEINF.
SCHEDUL. ORCHID. 8: 23. 1925

Type: Costa Rica, in cultivation at Las Conchas, probably native of Cachi. C. H. Lankester 850 (holotype, AMES).

Illustrated specimen: Costa Rica. Cartago: Turrialba, Tayutic, Moravia de Chirripó. On the road to Platanillo, in remaining forest on the side of the road. 1160 m. 15 December 2013. A.P. Karremans 6175 & M. Contreras Fernández (JBL-spirit; LCDP voucher).

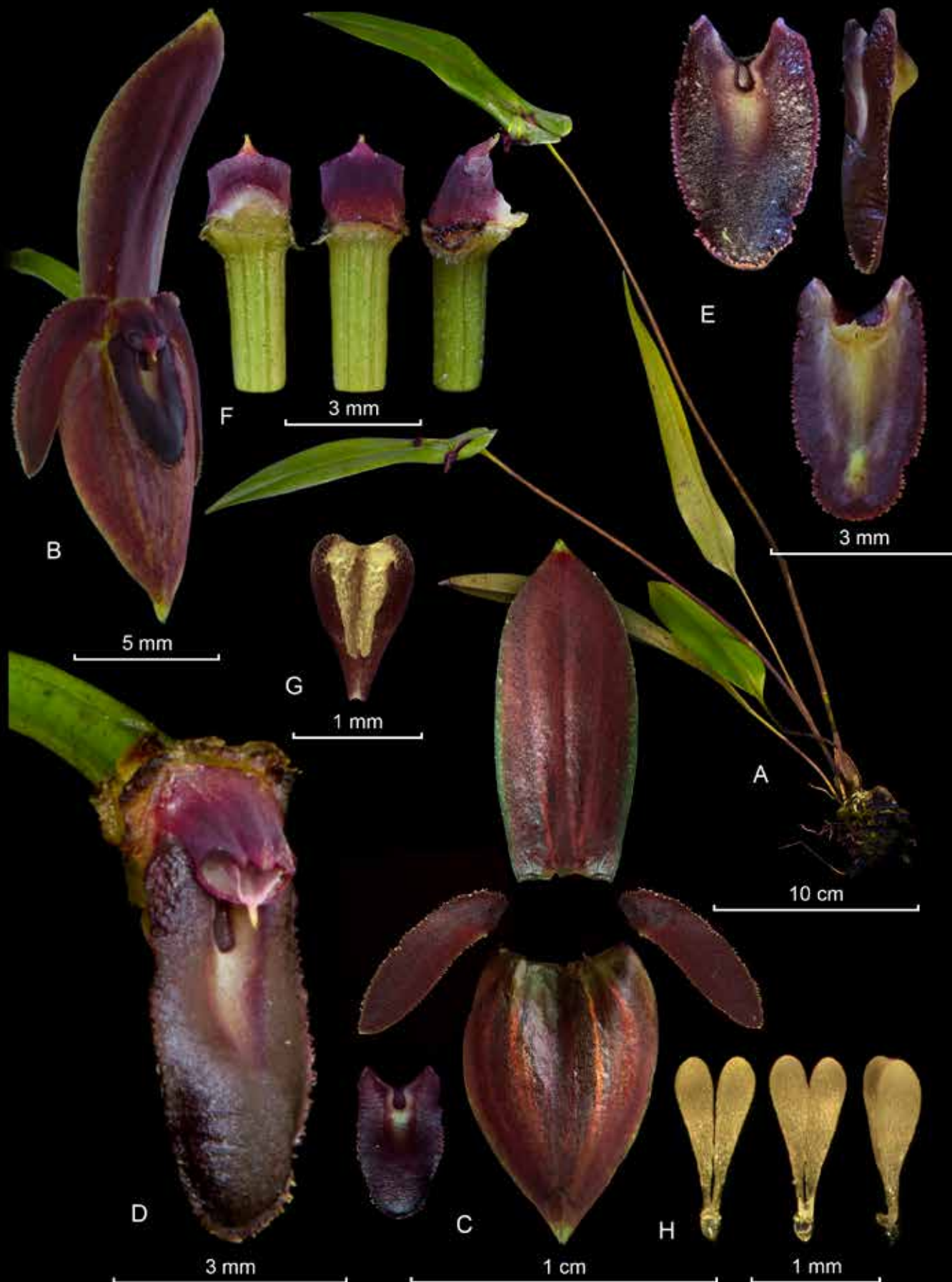
Plant epiphytic, caespitose, erect to suberect, to 50 cm tall. Roots slender, flexuous, ca. 1 mm in diameter. **Ramicauls** terete, slender, 24–35 cm long, 2–3 mm in diameter, green suffused with dark red, provided with a tubular, short, truncate sheath to 2.5 cm long at the base, and a longer, tubular, tightly adpressed, obtuse sheath below the middle, to 5–7 cm long. **Leaf** borne erect at the apex of the ramicaul, becoming horizontal and revolute along the margins in the basal half with age, coriaceous, sessile, lanceolate, acute, 8.0–16.5 × 2–3 cm, cordate at the base, the mid-vein channeled on the adaxial surface, prominent on the abaxial surface, grass-green to dark green. **Inflorescence** 1–2 flowered, from a prostrate spatheaceous bract ca. 1 cm long, brown, dry-papyraceous when mature, eventually dissolving with age. **Pedicel** terete, pale green, 11–14 mm long, bending towards the margin of the leaf. **Ovary** subclavate, terete, 5–7 mm long. **Flowers** dark purple, suffused with yellow on the margins of the sepals and petals. **Dorsal sepal** ovate, acute, 10.5–11.0 × 4.5–5.0 mm, 3-veined. **Lateral sepals** connate into a broadly ovate, acute synsepal, 9–10 × 5–6 mm, 5-veined. **Petals** falcate to subovate, obtuse, 6.3–7.0 × 1.5–2.0 mm, 1-veined, ciliate, often reflexed below synsepal. **Lip** unguiculate, hinged to the column foot, geniculate, thick, ligulate, minutely ciliate, basally bilobed, obtuse, 4–5 × 3 mm; glenion deeply recessed between the margins of the hypochile, ca. 0.51 mm long. **Column** short, transversely subrectangular, dorsoventrally complanate, ca. 1.2–1.8 × 1.8 mm, the anther apical, the stigma apical, bilobed. **Anther cap** obtriangular, truncate, bilobed at the base, 2-celled. **Pollinia** 2, narrowly oblong-pyriform, attached to an elliptic viscidium through a short, cylindrical caudicula.

Etymology: From the Latin *angustus*, “narrow”, probably referring to the narrow, oblong leaves of the species.

Pleurothallis angusta grows in humid montane forests. The plants are similar to those of *P. tonduzii*, but the lanceolate leaves become revolute with age. The pedicel bending towards the side of the leaf, and the minutely ciliate petals and lip, distinguish this species from its relatives.

References:

Ames, O. & Schweinfurth, C. 1925. New or noteworthy species of orchids from the American Tropics. *Schedulae Orchidiana* 8: 1-84.



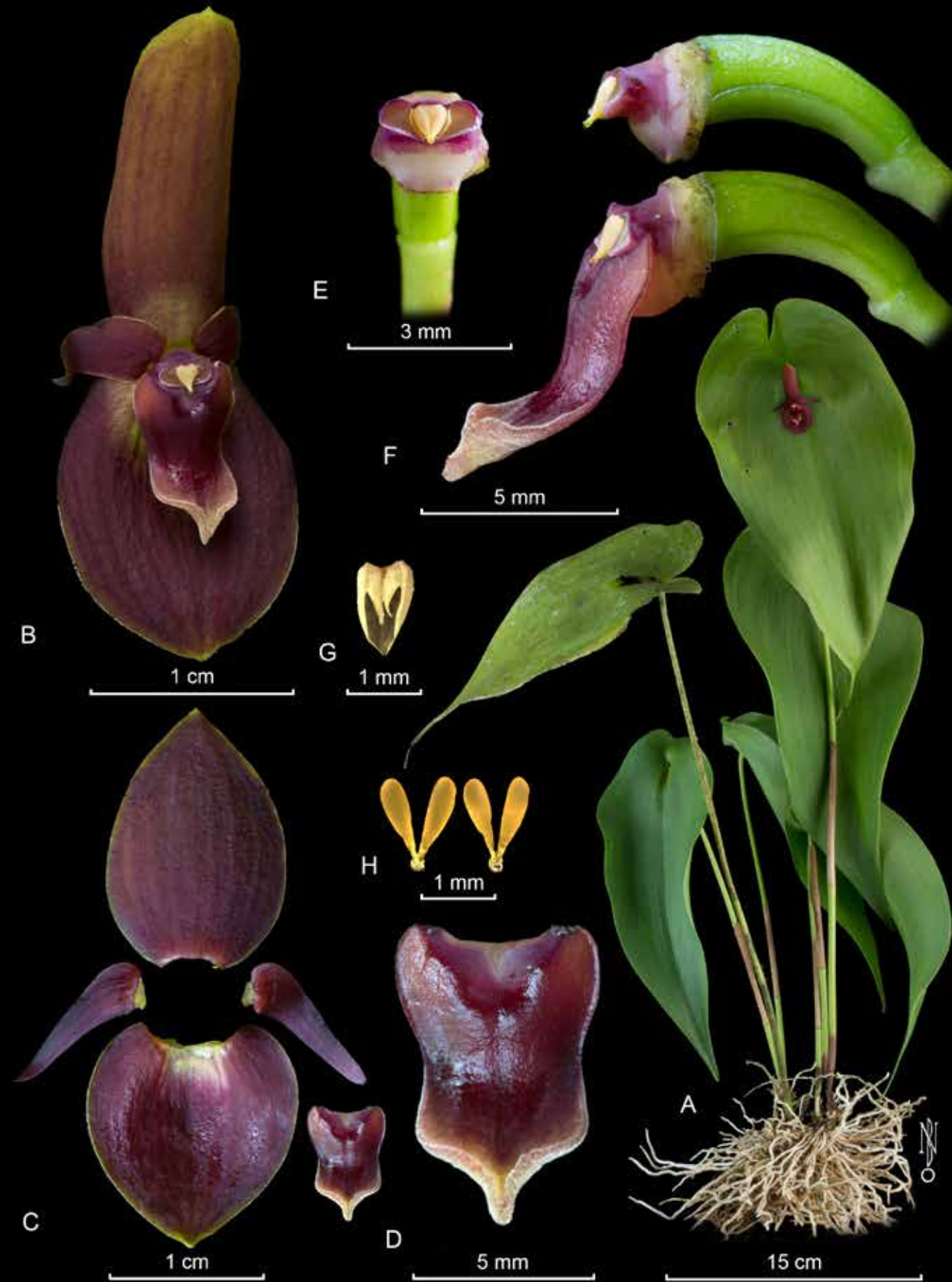
LCDP: *Pleurothallis angusta* Ames & C. Schweinf. A. Habit. B. Flower. C. Perianth. D. Column and lip, three quarters view. E. Lip, adaxial, lateral, and abaxial views. F. Column, abaxial, adaxial, and lateral views. G. Anther cap. H. Pollinarium, abaxial, adaxial, and lateral views.



Pleurothallis cardiothallis

RCHB.F.

BOT. ZEITUNG (BERLIN) 15: 158. 1857



Synonyms: *Humboltia cardiothallis* (Rchb.f.) Kuntze, Revis. Gen. Pl. 2: 667. 1891.
Acronia cardiothallis (Rchb.f.) Luer Monogr. Syst. Bot. Missouri Bot. Gard. 103: 106. 2005.
Zosterophyllanthos cardiothallis (Rchb.f.) Szlach. & Kulak, Richardsoniana 6(4): 187. 2006.

Type: Ex Anglia in hortum Schillerianum introducta, G.W. Schiller s.n. (holotype, W).

Illustrated specimen: Costa Rica. Cartago: Turrialba, Santa Teresita, Guayabo, Monumento Nacional Guayabo, around the main trails. May 26 2015. A.P. Karremans 6580, D. Bogarín & F. Pupulin (JBL-spirit; LCDP voucher).

Plant epiphytic, caespitose, erect to suberect, up to 48 cm tall. **Roots** slender, flexuous, ca. 1 mm in diameter. **Ramicauls** terete, slender, 21–45 cm long, with two tubular sheaths, one at the base, 3.0–4.0 cm long, and another below the middle, 5.0–8.5 cm long, the bracts glumaceous, green becoming papyraceous. **Leaf** apical, becoming sub-pendent, thinly coriaceous, flexible, sessile, ovate, narrowly acute, 20–25 × 7–12 cm, deeply cordate at the base, the basal lobes not overlapping, matte. **Inflorescence** subfascicled, flowers solitary, usually produced singly in succession, from a reclined spathaceous bract to 2 cm long, papyraceous, disintegrating. **Pedicel** terete, ca. 1 cm long. **Ovary** terete-subclavate, curved, 5 mm long. **Flowers** short-lived, with temporary activity, spreading; purple colored, the dorsal sepal apically fading dull yellow, with the base and margins of the sepals greenish-yellow, the lip purple with the apex whitish-yellow, the column purple with the foot white. **Dorsal sepal** erect, ovate, acute, 16.0–17.9 × 8.9–11.6 mm, margins reflexed, 13-veined. **Lateral sepals** connate into a broadly ovate, subacute synsepal, subconcave in the middle, margins reflexed, 14.4–16.4 × 13.0–13.7 mm, each half 7-veined. **Petals** narrowly triangular-lanceolate, obliquely asymmetric, subsigmoid, acuminate, reflexed, uncinata, 11.0–11.6 × 3.2 mm, 3-veined. **Lip** unguiculate, hinged to the column foot, geniculate from a thickened base, peltate, basally truncate with rounded angles, obtuse, abruptly acute-apiculate, the apical margins thickened-infolded, finely pubescent-velutine abaxially, the abaxial midvein thickened, 8.2 × 5.5 mm; glenion on a deeply concave surface between the

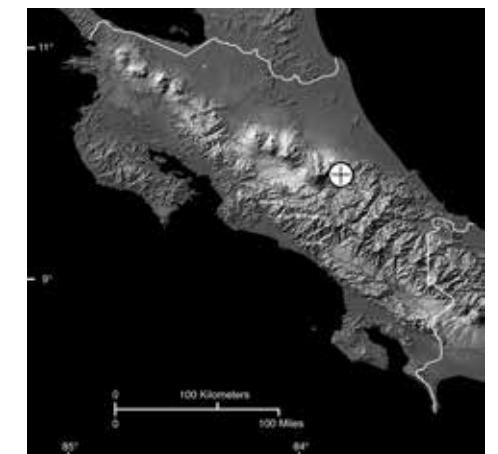
lateral hypochile, less than 1 mm long. **Column** short and stout, transversely subrectangular, complanate, ca. 2 × 3 mm, foot less than 0.5 mm long, the anther apical, bent, the stigma apical, bilobed. **Anther cap** yellow, cucullate, cordate, 2-celled. **Pollinia** 2, yellow, narrowly ovoid-pyriform, ca. 1 mm long, attached to a drop-like viscidium.

Etymology: from the Greek *kardiā*, “heart”, and *thallós*, “stem”, in reference to the heart-shaped leaf.

Pleurothallis cardiothallis are large plants bearing large purple flowers; a yellow variant is also illustrated here. On anthesis the flowers are more or less cucullate, fully spreading only after a few days. The species can be recognized by the fully reflexed sepals, the peltate lip with the apical margins thickened and folded inwards, revealing the papillose abaxial surface. The closest relatives are *P. oncoglossa*, whose lip ends into a conical, uncinata callus, and *P. navisepala*, which has much smaller flowers usually produced 2–4 at once.

References:

Pupulin, F., M. Díaz-Morales, J. Aguilar & M. Fernández. 2017. Two new species of *Pleurothallis* (Orchidaceae: Pleurothallidinae) allied to *P. cardiothallis*, with a note on flower activity. *Lankesteriana* 17: 329–356.



LCDP: *Pleurothallis cardiothallis* Rchb.f. A. Habit. B. Flower. C. Perianth flattened. D. Detail of the lip. E. Column, ventral view. F. Column without and with the lip, lateral view. G. Anther cap. H. Pollinarium.



Pleurothallis cardiothallis

RCHB.F.

BOT. ZEITUNG (BERLIN) 15: 158. 1857

Synonyms: *Humboltia cardiothallis* (Rchb.f.) Kuntze, Revis. Gen. Pl. 2: 667. 1891.

Acronia cardiothallis (Rchb.f.) Luer Monogr. Syst. Bot. Missouri Bot. Gard. 103: 106. 2005.

Zosterophyllanthos cardiothallis (Rchb.f.) Szlach. & Kulak, Richardsonia 6(4): 187. 2006.

Type: Ex Anglia in hortum Schillerianum introducta, G.W. Schiller s.n. (holotype, W).

Illustrated specimen: Costa Rica. Cartago: Jiménez, Pejivalle, La Marta, shores of Río Gato, 750 m. 3 Nov 2006. F. Pupulin 6414, R.L. Dressler, R. Gómez, A.P. Karremans & G. Rojas (JBL-spirit; LCDP voucher).

Plant epiphytic, caespitose, erect to suberect, to 50 cm tall. **Roots** slender, flexuous, ca. 1 mm in diameter. **Ramicauls** terete, slender, 38–50 cm long, 2–3 mm in diameter, yellowish green, provided with two tubular, subobtuse sheaths to 30 mm long at the base, and a tightly adpressed, truncate sheath just below the middle, to 6 cm long, the bracts glumaceous, green, becoming brown, dry-papyraceous with age. **Leaf** borne horizontally, becoming curved-subpendent with age, thinly coriaceous, flexible, sessile, ovate, narrowly acute to abruptly subcuminuate, 17–21 × 8–10 cm, deeply cordate at the base, the basal lobes not overlapping, grass green, matte. **Inflorescence** a fascicle of solitary flowers, usually produced singly in succession, rarely in pairs, from a reclined spathaceous bract to 2 cm long, dry-papyraceous, disintegrating with age. **Pedicele** terete, green, to 10 mm long. **Ovary** terete-subclavate, curved, 5–7 mm long. **Flowers** spreading, short-lived (to 6 days), with temporary activity, strongly reflexed at complete anthesis, uniformly yellow, the lip brighter, the column greenish white. **Dorsal sepal** erect, ovate, subacute, 9–12 × 6–7 mm, margins reflexed, 13-veined. **Lateral sepals** connate into a broadly ovate, subacute synsepal, margins reflexed, 9–11 × 8–9 mm, 10-veined. **Petals** narrowly triangular-lanceolate, subsigmoid, acuminate, strongly reflexed at maturity, 6–7 × 2 mm, 3-veined. **Lip** unguiculate, hinged to the column foot, geniculate from a thickened base, peltate, basally truncate with rounded angles, obtuse, abruptly acute-apiculate, the apical margins thickened-infolded, finely pubescent-velutine abaxially, the abaxial midvein thickened, 4 × 3 mm; glenion on a slightly concave-recessed plate between the lateral margins of the hypochile, less than 1 mm long. **Column** short and stout, transversely subrectangular, dorsiven-

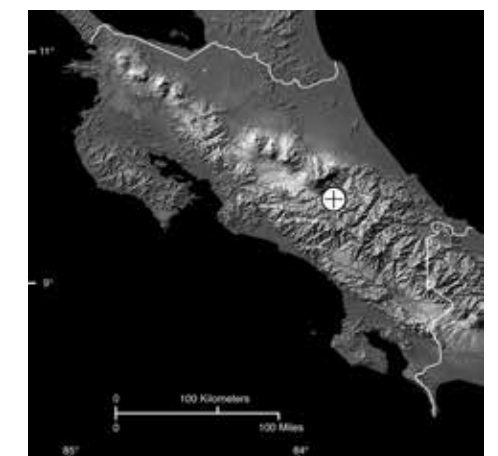
trally complanate, with a short foot, ca. 2 × 3 mm, the anther apical, bent, the stigma apical, bilobed. Anther cap cucullate, cordate, 2-celled. Pollinia 2, narrowly ovoid-pyriform, ca. 1 mm long, attached to a peltate viscidium through two short, cylindrical caudicles.

Etymology: from the Greek *kardiā*, “heart”, and *thallós*, “stem”, in reference to the heart-shaped leaf.

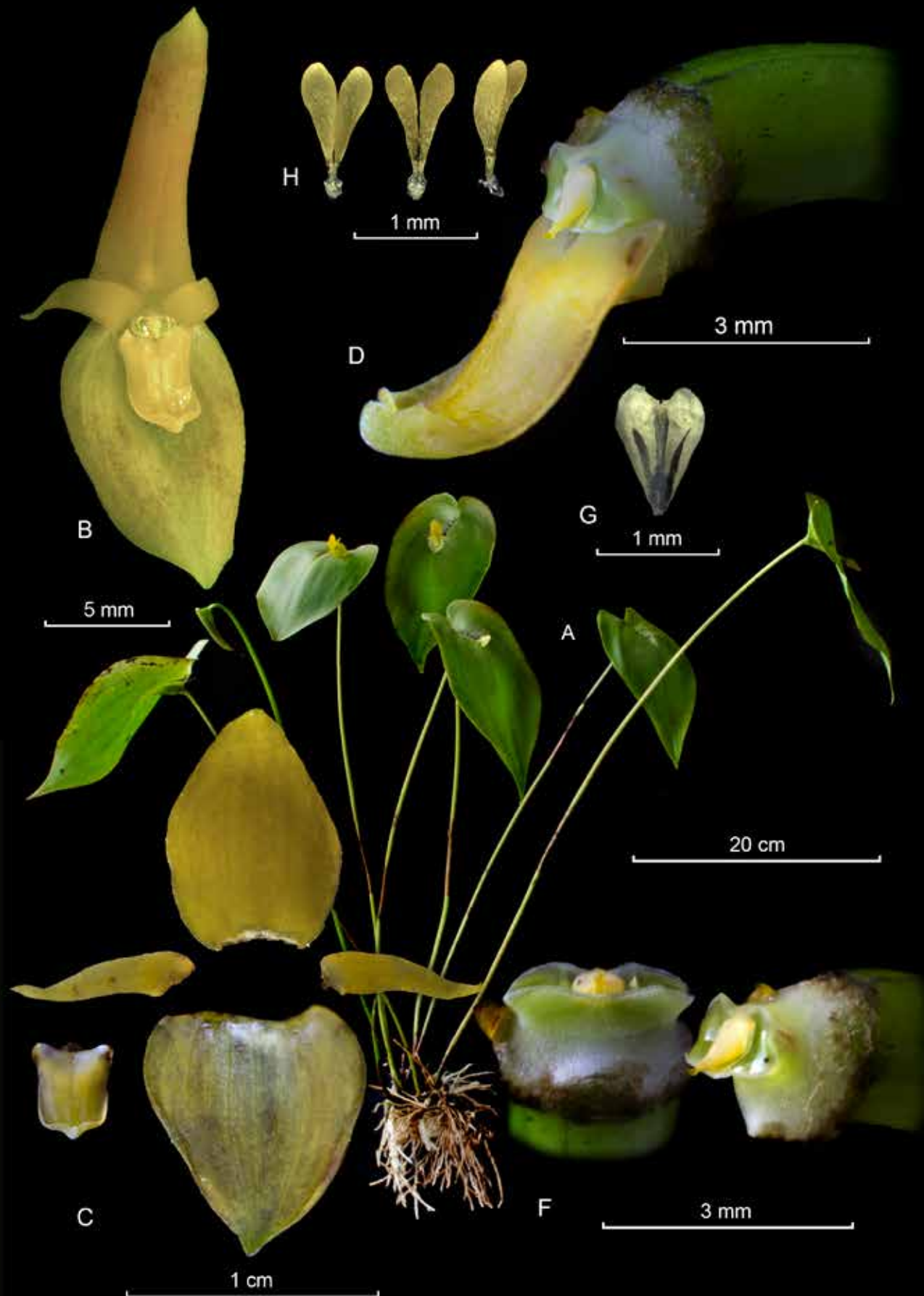
The large flower up to 35 mm in size opening and closing over three to four days until reaching complete anthesis with strongly reflexed sepals, the peltate lip with the apical margins thickened and folded in, revealing the papillose abaxial surface, distinguish *P. cardiothallis* from its relatives. The closest species are *Poncoglossa*, whose lip ends into a conical, uncinuate callus, and *P. navisepala*, which has much smaller flowers usually produced 2–4 at once. The yellow phase in species which normally have purple flowers is quite common in *Pleurothallis*, including *Macrophyllae-Fasciculatae* group.

References:

Pupulin, F., M. Díaz-Morales, J. Aguilar & M. Fernández. 2017. Two new species of *Pleurothallis* (Orchidaceae: Pleurothallidinae) allied to *P. cardiothallis*, with a note on flower activity. *Lankesteriana* 17: 329–356.



LCDP: *Pleurothallis cardiothallis* Rchb.f. A. Habit. B. Flower. C. Perianth. D. Column and lip, lateral view. E. Column, ventral view. F. Column, three quarters view. G. Pollinarium, three views. H. Anther cap.



Pleurothallis compressa

LUER

LINDLEYANA 11(2): 75. 1996

Synonyms: *Acronia compressa* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 103: 112. 2005.
Zosterophyllanthos compressus (Luer) Szlach. & Kulak, Richardiana 6(4): 188. 2006, as *Z. compressa*.

Type: Costa Rica. Cartago: Turrialba, without further collection data, flowered in cultivation at the Lankester Botanical Garden, Cartago, 7 March 1995, C. Luer 17380 (holotype, CR; isotype, MO).

Illustrated specimen: Costa Rica. Cartago: Cartago, San Francisco, Muñeco, Finca Loma Verde and Jilguero, road to Alto Belén, between Río Sombrero and Quebrada Patarrá, 1542 m. 22 Jul 2010. D. Bogarín 7839, M. Fernández, R. Trejos & C. Smith (JBL-spirit; LCDP voucher).

Plant epiphytic, caespitose, subpendent, to 30 cm tall. **Roots** slender, flexuous, 1–2 mm in diameter. **Ramicauls** terete becoming ancipitous at apex, slender, 14–30 cm long, 2–5 mm in diameter, yellowish green, provided with a tubular, truncate sheath to 2 cm long at the base, and a truncate sheath below the middle, to 6 cm long, the bracts glumaceous, pale green, becoming dry-papyraceous with age. **Leaf** reclined toward the pendent-curved ramicaul, thinly coriaceous, flexible, sessile, narrowly lanceolate-ovate, acuminate, 11–18 × 4–6 cm, deeply cordate at the base, the basal lobes not overlapping. **Inflorescence** a solitary flower, borne pendent from a suberect, spathaceous, diagonally truncate bract 10 mm long, dry-papyraceous; peduncle terete, facing down, to 15 mm long. **Pedicele** terete, to 7 mm long. **Ovary** subclavate, curved rounded in section, reddish brown, 5–6 mm long. **Flowers** non-resupinate, the sepals reddish brown, the petal light ocher-brown, the lip dull orange, the column white. **Dorsal sepal** ovate, acute, 6 × 4 mm, 3-veined. **Lateral sepals** connate into a subrounded, apically deeply excised synsepal, 6 × 5 mm, the apices free for 2 mm, acute, abruptly apiculate, each half 2-veined. **Petals** narrowly triangular-falcate, acuminate, 1 × 1 mm, 1-veined. **Lip** hinged to the column foot, broadly triangular-rheniform, basally truncate with rounded angles, broadly obtuse, apiculate, sparsely verrucose, 2 × 3 mm, strongly conduplicate at the base, the margins slightly reflexed; glenion raised on a cushion-like callus between the margins of the hypochile, less than 1 mm long. **Column** short,

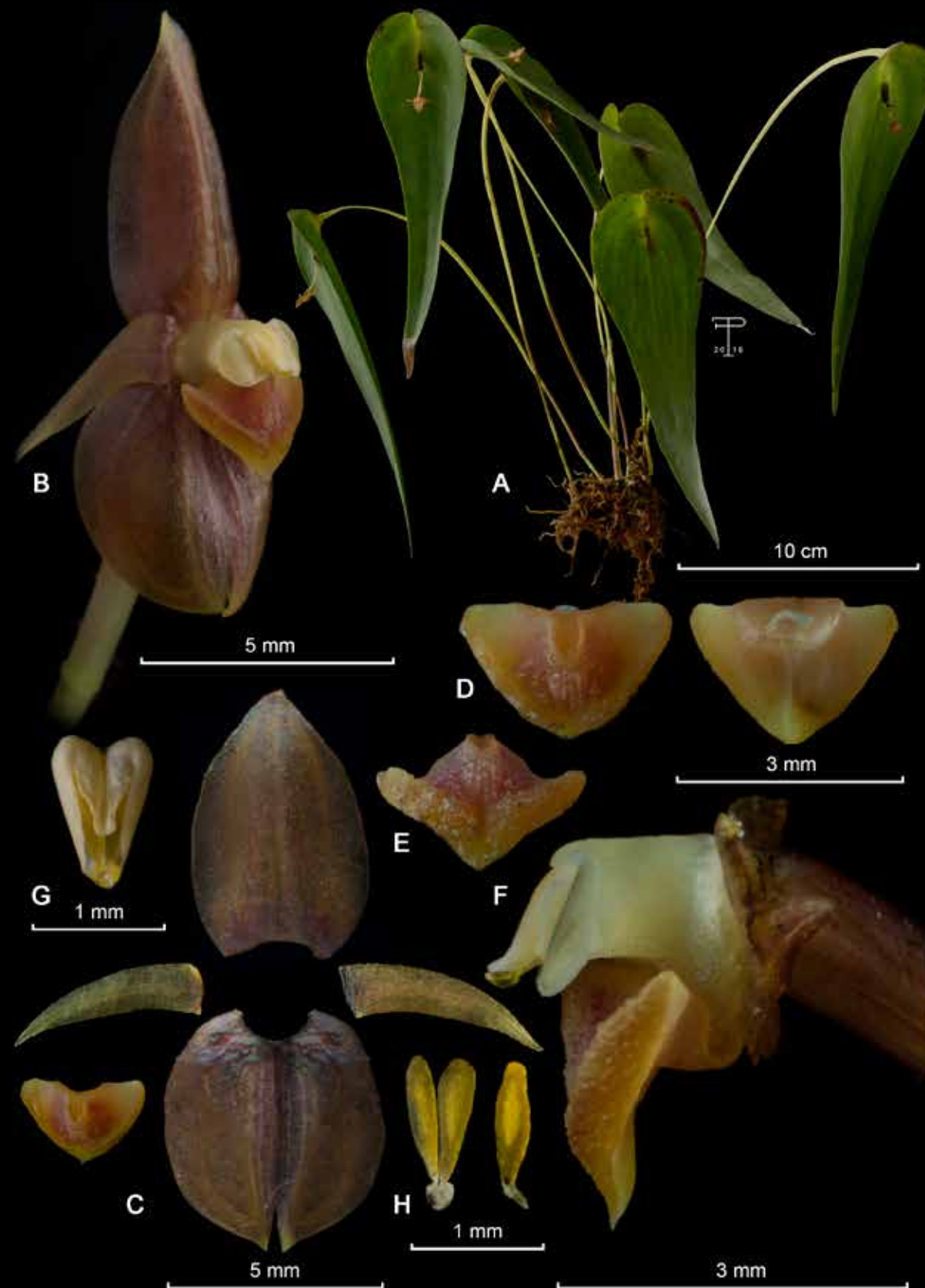
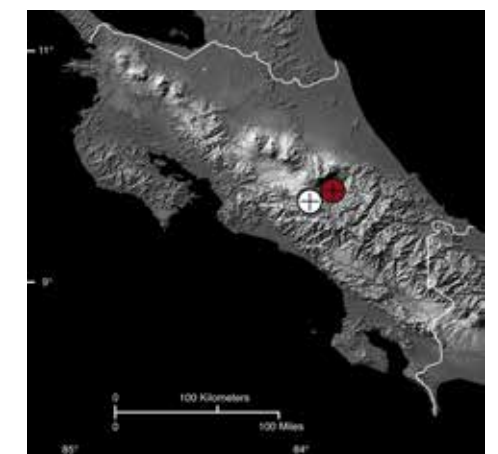
transversely subrectangular, dorsiventrally complanate, ca. 2 × 2 mm, apically diagonally truncate seen from the side, the anther apical, bent, the stigma apical, bilobed. **Anther cap** cucullate, narrowly ovate-triangular, cordate, 2-celled. **Pollinia** two, narrowly oblong-pyriform, attached to a peltate-subrounded viscidium through two short, cylindrical caudicles.

Etymology: from the Latin *compressus*, “compressed, flattened”, in reference to the laterally compressed ramicaul.

The curved, ancipitous ramicauls and pendent, narrowly lanceolate-ovate, acuminate leaves deeply cordate at the base, and the small brown flower borne pendently beneath the axial surface of the leaf, completely reflexed (or laterally “compressed”) easily distinguish *P. compressa* from any other species in the genus.

References:

- Luer, C. A. 1996. New species in the Pleurothallidinae from Costa Rica. *Lindleyana* 11: 54–89.
- Luer, C. A. 2005. Icones Pleurothallidarum XXVI. Systematics of *Acronia*, section *Macrophyllae-Fasciculatae*. *Monographs in Systematic Botany from the Missouri Botanical Garden* 103: 57–274.



LCDP: *Pleurothallis compressa* Luer. A. Habit. B. Flower. C. Perianth. D. Lip, adaxial and abaxial views. E. Lip, frontal view. F. Ovary, column and lip, lateral view. G. Anther cap. H. Pollinarium, two views.



Pleurothallis fantastica

AMES

BOT. MUS. LEAFL. 4: 41. 1936

Synonyms: *Acronia fantastica* (Ames) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 103: 134. 2005.

Type: Costa Rica: San José: vicinity of El General, epiphyte on trees by a river, 830 m, Jan. 1936, A.F. Skutch 2391 (holotype, AMES; isotype, AMES).

Illustrated specimen: Costa Rica. Puntarenas: Coto Brus, San Vito, Estación Biológica Las Cruces, Reserva Biológica, Río Java, Sendero Ridge, 1340 m. 6 Oct 2018. M. Blanco 5087, N. Jiménez, O. Alvarado, M. Cedeño, K. Gil & M.J. Mata (JBL-spirit; LCDP voucher).

Plant epiphytic, caespitose, arching to pendent, up to 37 cm tall. **Roots** slender, flexuous, ca. 1 mm in diameter. **Ramicauls** slender, 10–23 cm long, 1–2 mm in diameter, terete at the base, becoming slightly ancipitous distally, pale green, with two basal, short, tubular, obtuse sheaths, and another tubular, cylindrical, tightly adpressed sheath below the middle, the lower ones 8–14 mm long, the upper to 40 mm long, the sheaths dry-papyraceous, brown. **Leaf** borne at the apex of the ramicaul, pendent, rigidly coriaceous, sessile, narrowly ovate, acute, tapering to a subacuminate, mucronate apex, concave at the base, green, matte, 10–14 cm long, 1.7–2.2 cm wide, the basal lobes suberect, decurrent on the ramicaul for about 15 mm. **Inflorescence** a fascicle of solitary flowers, produced in succession from a prostrate, rectangular, obliquely truncate, glumaceous, green, spathaceous bract emerging above the base of the leaf 5–7 mm long, becoming brown, dry-papyraceous when mature and eventually fugacious; the peduncle terete, mostly adanate to the leaf, terete, to 2 cm long. **Pedicel** terete, green, 5–6 mm long. **Ovary** terete, greenish yellow, the mid-lobe and the disc of the lip reddish brown. **Dorsal sepal** erect, elliptic, subacute, the margins reflexed, 6–7 × 4 mm, 5-veined. **Lateral sepals** connate into a broadly elliptic, obtuse, minutely emarginate synsepal, the margins reflexed, 5 × 4 mm, each lateral sepal 4-veined. **Petals** broadly asymmetrically lanceolate, subfalcate, acute, glandulose, the margins cellular 5–6 × 3 mm, 3-veined. **Lip** fleshy, adnate to the base of the column, transversely 3-lobed, 3 × 4 mm when spread, the lateral lobes transversely elliptic-rheniform, obliquely erect, minutely glandulose, the midlobe elliptic-subquadrate, bilobu-

late-retuse, distinctly glandulose, with a minute abaxial apiculum, ca. 1 × 1 mm, the disc with a low, bilobed callus. **Column** terete, stout, distinctly dilated distally, minutely glandulose, ca. 3 × 2 mm, the anther apical, incumbent, the stigma apical, bilobed. **Anther cap** cucullate, ovate, subcordate, truncate, two-celled. **Pollinia** two, narrowly ovoid, attached to an elliptic viscidium.

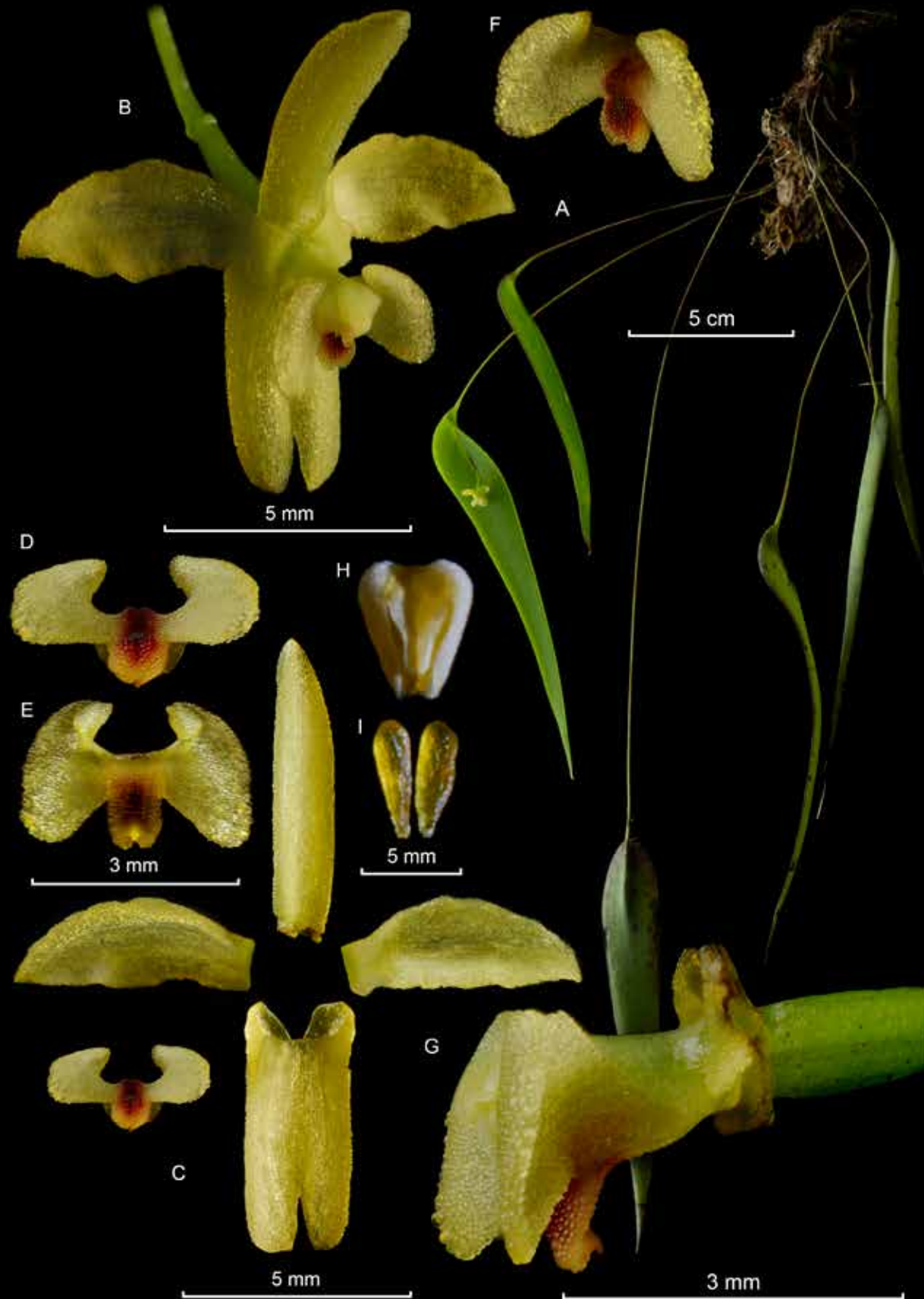
Etymology: From the Latin *fantasticus*, “imaginary”, but also “wonderful, marvelous”, in allusion to the odd flowers in this species.

The long, narrow, pendent leaves, born on a distally ancipitous ramicaul, which are cuneate (not cordate) at the base, and the flower with a distinctly three-lobed lip, the lateral lobes broad, elliptic, spread out, and the midlobe small, excised, easily distinguish *Pleurothallis fantastica* both vegetatively and florally from any other species in the genus.

References:

Ames, O. 1936. A new *Pleurothallis* from Costa Rica. *Botanical Museum Leaflets, Harvard University* 4: 41–46.

Luer, C. A. 1985. Eine neue *Pleurothallis*-Art aus Costa Rica: *Pleurothallis horichii*. *Die Orchidee* 36: 23–25.



LCDP: *Pleurothallis fantastica* Ames. A. Habit. B. Flower. C. Perianth. D. Lip, spread, adaxial view. E. Lip, spread, abaxial view. F. Lip, three quarters view. G. Ovary, column and lip, lateral view. H. Anther cap. I. Pollinia.



Pleurothallis gonzaleziorum

PUPULIN, M. DÍAZ & PRIDGEON
VANISHING BEAUTY. VOL. 2: 855. 2020

Type: Costa Rica. Alajuela: Zarcerro, Palmira, Bosque de Paz Biological Preserve, growing in the orchid garden, 1534 m. 20 August 2016. *M. Díaz 269*, *N. Belfort & A.P. Karremans* (holotype, JBL-spirit; LCDP voucher).

Plant epiphytic, caespitose, erect to suberect, to 60 cm tall. **Roots** slender, flexuous, ca. 1 mm in diameter. **Ramicauls** terete, slender, 25–40 cm long, 2–3 mm in diameter, yellowish green, provided with two tubular, short, truncate sheaths to 4 cm long at the base, and a longer, tubular, tightly adpressed, broadly obtuse sheath below the middle, to 7–8 cm long, the bracts glumaceous, pale green when young, becoming brown, dry-papyraceous with age. **Leaf** borne horizontally at the apex of the ramicaul, becoming subpendent with age, thinly coriaceous, flexible, sessile, ovate, acuminate, 12–17 × 6–8 cm, deeply cordate at the base, grass green, matte. **Inflorescence** a solitary flower, usually produced singly, rarely in pairs, from a prostrate spathaceous bract 2–3 cm long, brown, dry-papyraceous when mature, eventually dissolving with age. **Pedice**l terete, pale green, 17–22 mm long. **Ovary** subclavate, terete, 8–9 mm long. **Flowers** glabrous, solid pale yellow, short-lived (usually 5, rarely to 6 days), opening and closing several times during anthesis. **Dorsal sepal** broadly ovate, obtuse, 15–19 × 13–16 mm, 9–11-veined. **Lateral sepals** connate into a broadly ovate, obtuse to subacute synsepal, 14–16 × 13–16 mm, 10-veined. **Petals** narrowly triangular-falcate, acute, 11–12 × 3–4 mm, 3-veined. **Lip** unguiculate, hinged to the column foot, geniculate, peltate, basally truncate with rounded angles, obtuse, 5–6 × 5 mm, conduplicate at the base, the apical margins thickened; glenion deeply recessed between the thickened margins of the hypochile, ca. 1 mm long. **Column** short, transversely subrectangular, dorsiventrally complanate, ca. 2 × 3 mm, the anther apical, bent, the stigma apical, bilobed. **Anther cap** obtriangular, acute, bilobed at the base, 2-celled. **Pollinia** 2, narrowly oblong-pyriform, attached to an elliptic viscidium through a short, cylindrical caudicle.

Eponymy: The name honors Federico González's family from Bosque de Paz Biological Reserve where the species was found,

and who has avidly supported orchid research in the reserve since 2004.

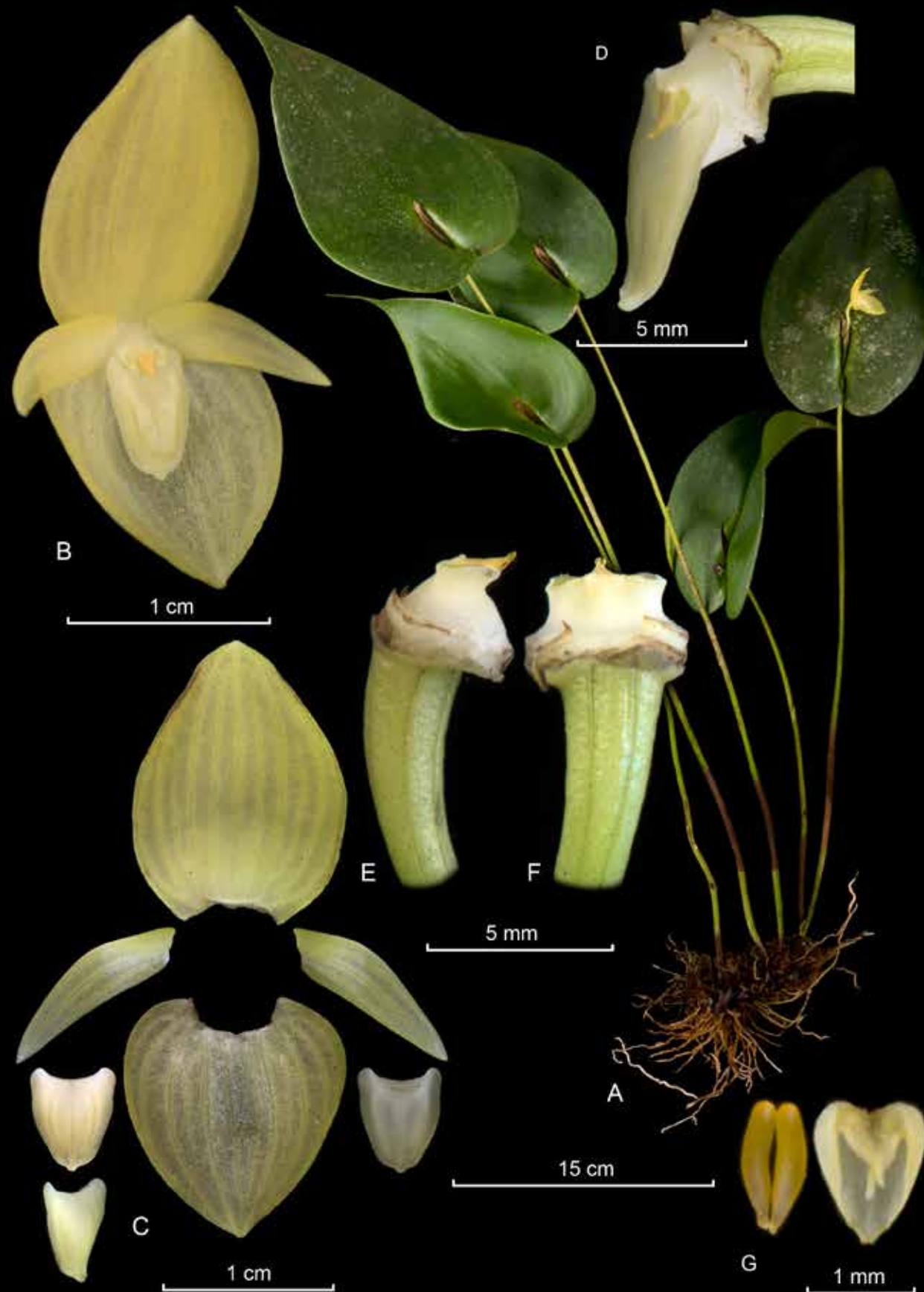
Pleurothallis gonzaleziorum is similar to *P. cardiothallis*, from which it differs in the distinctly triangular lip (*vs.* peltate), glabrous on the underside (*vs.* papillose), with the apical margins non-involute. The general shape of the lip is more similar to that of *P. oncoglossa*, but in the latter species the lip apex is thickened into a conical callus, bent back as a hook, whereas in *P. gonzaleziorum* it is straight and thin.

References:

Pridgeon, A. P. 2020. *Pleurothallis*. Pp. 850–909 in: F. Pupulin (ed.). *Vanishing Beauty. Native Costa Rican Orchids. Vol. 2: Lacaena–Pteroglossa*. Koeltz Botanical Books, Oberreifenberg.



LCDP: *Pleurothallis gonzaleziorum* Pupulin, M. Díaz & Pridgeon. **A.** Habit. **B.** Flower. **C.** Perianth (with three views of the lip). **D.** Column and lip, lateral view. **E, F.** Column, three quarters and abaxial views. **G.** Anther cap and pollinarium.



Pleurothallis grandilingua

PUPULIN, M.DÍAZ & PRIDGEON
VANISHING BEAUTY. VOL. 2: 851. 2020

Type: Costa Rica. San José: Tarrazú, San Lorenzo, ca. 4 km southeast of Santa Marta, road to Bajo Reyes, 1475 m. 20 November 2008, flowered in cultivation at Lankester Botanical Garden, 22 July 2016. *D. Bogarín 5638, R.L. Dressler, M. Fernández, R. Gómez & R. Trejos* (holotype, JBL-spirit; LCDP voucher).

Plant epiphytic, to 30 cm tall, caespitose. **Roots** slender, flexuous, ca. 1.5 mm in diameter. **Ramicauls** 11–18 cm long, enclosed by 1–2 tubular, obtuse, tightly adpressed, papyraceous, brown sheaths, the first one basal, ca. 2 cm long, the second inserted in the lower third of the ramicaul, 4–5 cm long. **Leaves** coriaceous, dark green, paler on the underside, narrowly lanceolate, acute to subacuminate, 9–12 × 2–3 cm, rounded at the conduplicate base, the midvein protruding abaxially into a rounded keel, slightly decurrent on the stem. **Inflorescence** a single flower, exerted from a narrow triangular, acute, brown, papery, prostrate spatheaceous bract 1.5 cm long; peduncle filiform, ca. 2 cm long. **Floral bract** triangular-ovate, subacute, glumaceous, to 2 mm long. **Pedice** terete, 2 cm long. **Ovary** terete-subclavate, rounded, stout, ca. 2 cm long. **Flowers** not completely spreading, with the sepals purple-red on a yellowish background, paler between veins, the apex green, the petals purple, marked with green along the margins, the lip uniformly purple, the column dark purple, the anther pink. **Dorsal sepal** elliptic, acute, with a rounded apicule, 13 × 8 mm, 5-veined. **Lateral sepals** fused into an ovate, acute, rounded-apiculate, 5-veined syssepal, 12 × 9 mm, yellow-hyaline at the base. **Petals** narrowly lanceolate-ligulate, subacuminate, 7–8 × 2 mm, irregularly denticulate-erose along the margins, the base thickened into a pad-like callus. **Lip** subrectangular-subpandurate, convex, with a shallow median groove, 7 × 4 mm, the geniculate base cordiform, the lateral lobes elliptic, minutely erose, apically slightly inflated-convex, the ipochile transversely hemielliptic, rounded, ca. 1 × 2 mm, provided with a minute apicule and a hemispherical, papillose callus underneath. **Column** short, thick, dorsiventrally flattened-cylindrical, with a median keel toward the apex, 2 mm long, with the anther apical, bent, and the stigma apical, bilobed. **Anther cap** ovate, cucullate, 2-celled. **Pollinia** 2, pyriform, apically attenuate-recurved, on a rounded viscidium.

Etymology: From the Latin *grande*, “large”, and *lingua*, “tongue”, in allusion to the large size of the lip in relation to other parts of the flower, uncommon in species of *Pleurothallis*.

Pleurothallis grandilingua is allied to the Costa Rican and western Panamanian endemic *P. tonduzii* Schltr., from which it can be distinguished by the broader leaves, the mostly purple flowers (*vs.* the sepals greenish yellow to pink, the petals rose), the narrower synsepal, the ligulate petals (*vs.* falcate), and the subrectangular, slightly convex lip with the apex extended (*vs.* sagittate, the apex abruptly bent upwards and then strongly geniculate).

References:

Pridgeon, A. P. 2020. *Pleurothallis*. Pp. 850–909 in: F. Pupulin (ed.). *Vanishing Beauty. Native Costa Rican Orchids. Vol. 2: Lacaena–Pteroglossa*. Koeltz Botanical Books, Oberreifenberg.



LCDP: *Pleurothallis grandilingua* Pupulin, M.Díaz & Pridgeon. **A.** Habit. **B.** Flower. **C.** Perianth (with three views of the lip). **D.** Column and lip, lateral view. **E, F.** Column in three quarters and abaxial views. **G.** Anther cap and pollinarium.



Pleurothallis navisepala

PUPULIN, J. AGUILAR & M. DÍAZ
LANKESTERIANA 17(2): 344. 2017

Type: Costa Rica. Alajuela: San Ramón, Ángeles, Balsa, road between San Ramón and La Fortuna de San Carlos, 1150 m. 29 May 2013. F. Pupulin 8435, D. Bogarín, M. Díaz, & M. Fernández (holotype, JBL-spirit; LCDP voucher).

Plant epiphytic, caespitose, erect to suberect, to 25 cm tall. **Roots** slender, flexuous, ca. 1 mm in diameter. **Ramicauls** terete, slender, 15–23 cm long, 2–3 mm in diameter, yellowish green, provided with two tubular, short, obtuse sheaths to 15 mm long at the base, and a longer, tubular, tightly adpressed, subobtuse to truncate sheath below the middle, to 4 cm long, the bracts glumaceous, pale green when young, becoming brown, dry-papyraceous with age. **Leaf** borne horizontally at the apex of the ramicaul, becoming curved-subpendent with age, thinly coriaceous, flexible, sessile, ovate, narrowly acute to acuminate, 5–14 × 3–7 cm, deeply cordate at the base, grass-green, matte. **Inflorescence** a solitary flower, usually produced singly, rarely in pairs, from a reclined spathaceous bract to 11 mm long, brown, dry-papyraceous when mature, eventually dissolving with age. **Pedice**l terete, green, 5–8 mm long. **Ovary** terete-subclavate, curved, rounded in section, 5–8 mm long. **Flowers** not completely spreading, opening and closing several times during anthesis, short-lived (to 5 days), the sepals purple, sparkingly pale reddish and microscopically pubescent-glandulous abaxially, the synsepal with a large, basal, pale greenish yellow, hyaline blotch, the petals purple, the lip purple-magenta. **Dorsal sepal** erect, ovate, acute, 5–7 × 3–4 mm, the margins microscopically glandulose, 7–9 veined. **Lateral sepals** connate into a broadly ovate, obtuse, deeply cymbiform synsepal, the margins microscopically glandulose, 5–6 × 6–8 mm when spread, 9–11 veined. **Petals** narrowly triangular-subfalcate, subsigmoid, acuminate, 4 × 1 mm, porrect, apically incurved, 3-veined. **Lip** unguiculate, hinged to the column foot, strongly geniculate, peltate, basally truncate with rounded angles, acute, apiculate, infolded, 5–8 × 3–5 mm, strongly conduplicate at the base, the apical margins thickened, inrolled, finely pubescent abaxially; glenion recessed between the thickened margins of the hypochile, ca. 1 mm long, the front of the glenion with a line of short papillae extending to the margins of the lip. **Column** short, transversely subrectangular, dorsiventrally complanate, ca. 1 × 2–3 mm, the anther apical, bent, the stigma apical,

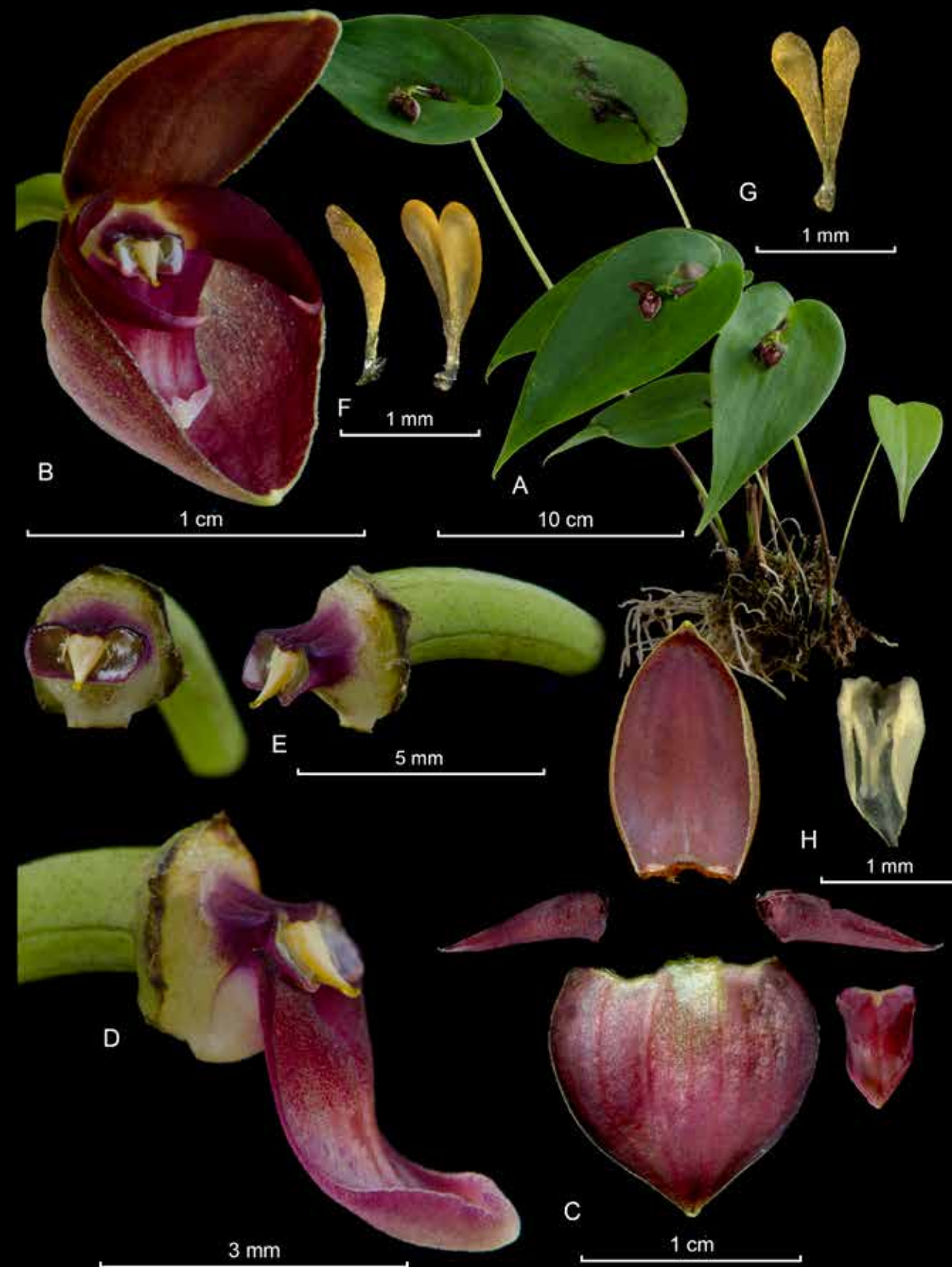
bilobed. **Anther cap** oblong, acute, bilobed at the base, 2-celled. **Pollinia** 2, narrowly oblong-pyriform, 1 mm long, attached to an elliptic viscidium through a short, cylindrical caudicle.

Etymology: From the Latin *navis*, “ship”, and *sepala*, “sepals”, in reference to the boat-shaped synsepal.

Pleurothallis navisepala is similar in habit to medium sized specimens of *P. cardiothallis*, but the flowers easily allow distinction between the two species. The former frequently produces two to four flowers at once, bearing comparatively small flowers that do not spread out completely, provided with a deeply concave-navicular synsepal and porrect petals, while in the latter the flowers are produced singly, very rarely in pairs; they are large flowers for the genus, with the margins of the sepals and the petals reflexed at maturity. The size of the peltate lip is very similar between the two species, so that the ratio lip:synsepal is notably greater in *P. navisepala*, the lip occupying most of the concave synsepal.

References:

Pupulin, F., M. Díaz-Morales, J. Aguilar & M. Fernández. 2017. *Pleurothallis*. Two new species of *Pleurothallis* (Orchidaceae: Pleurothallidinae) allied to *P. cardiothallis*, with a note on flower activity. *Lankesteriana* 17(2): 329–356.



LCDP: *Pleurothallis navisepala* Pupulin, J. Aguilar & M. Díaz. A. Habit. B. Flower. C. Perianth flattened. D. Column and lip, lateral view. E. Column, frontal and three quarters views. F–G. Pollinarium, three views. H. Anther cap.



Pleurothallis navisepala

PUPULIN, J. AGUILAR & M. DÍAZ
LANKESTERIANA 17(2): 344. 2017

Type: Costa Rica. Alajuela: San Ramón, Ángeles, Balsa, road between San Ramón and La Fortuna de San Carlos, 1150 m. 29 May 2013. F. Pupulin 8435, D. Bogarín, M. Díaz, & M. Fernández (holotype, JBL-spirit).

Illustrated specimen: Costa Rica. Alajuela: Ángeles, Reserva Forestal de San Ramón [Reserva Biológica A. M. Brenes], 800–1000 m. 30 Dec 1991. M. Freiberg s.n. (JBL-spirit; LCDP voucher).

Plant epiphytic, caespitose, erect to suberect, to about 20 cm tall. *Roots* slender, flexuous, ca. 1 mm in diameter. *Ramicauls* terete, slender, 11–17 cm long, 2–3 mm in diameter, yellowish green, provided with two tubular, short, obtuse sheaths to 15 mm long at the base, and a longer, tubular, tightly adpressed, subobtuse to truncate sheath below the middle, to 3 cm long, the bracts glumaceous, pale green when young, becoming brown, dry-papyraceous with age. *Leaf* borne horizontally at the apex of the ramicaul, becoming curved-subpendent with age, thinly coriaceous, flexible, sessile, ovate, narrowly acute to acuminate, 5–9 × 3–5 cm, deeply cordate at the base, grass-green, matte. *Inflorescence* a solitary flower, usually 2–4 produced simultaneously, from a reclining spathaceous bract to 10 mm long, brown, dry-papyraceous when mature, eventually dissolving with age. *Pedicel* terete, green, 5–7 mm long. *Ovary* terete-subclavate, curved, rounded in section, 5–7 mm long. *Flowers* not completely spreading, with temporal activity, short-lived (to 5 days), uniformly bright yellow. *Dorsal sepal* erect, elliptic-ovate, obtuse, minutely acute, 7–12 × 6–8 mm, the margins microscopically glandulose, 7–9 veined. *Lateral sepals* connate into a broadly ovate, obtuse, deeply cymbiform synsepal, the margins microscopically glandulose, 8–10 × 8–10 mm when spread, 9–11 veined. *Petals* narrowly triangular, asymmetrical-subsygmoid, acuminate, 7 × 2 mm, subcorrect, apically incurved, 3-veined. *Lip* unguiculate, hinged to the column foot, strongly geniculate, peltate, basally truncate with rounded-obtuse angles, acute, apiculate, infolded, 6 × 4 mm, strongly conduplicate at the base, the apical margins thickened, inrolled, finely pubescent abaxially; glenion recessed between the thickened margins of the hypochile, ca. 1 mm long. *Column* short, transversely subrectangular, dorsiventrally complanate, ca. 1 × 2–3 mm, the anther apical, bent, the stigma apical, bilobed. *Anther cap* triangu-

lar-cordate, acute, bilobed at the base, 2-celled. *Pollinia* 2, narrowly oblong-pyriform, 1 mm long, attached to an elliptic-peltate viscidium through a short, cylindrical caudicle.

Etymology: From the Latin *navis*, “ship”, and *sepala*, “sepals”, in reference to the boat-shaped synsepal.

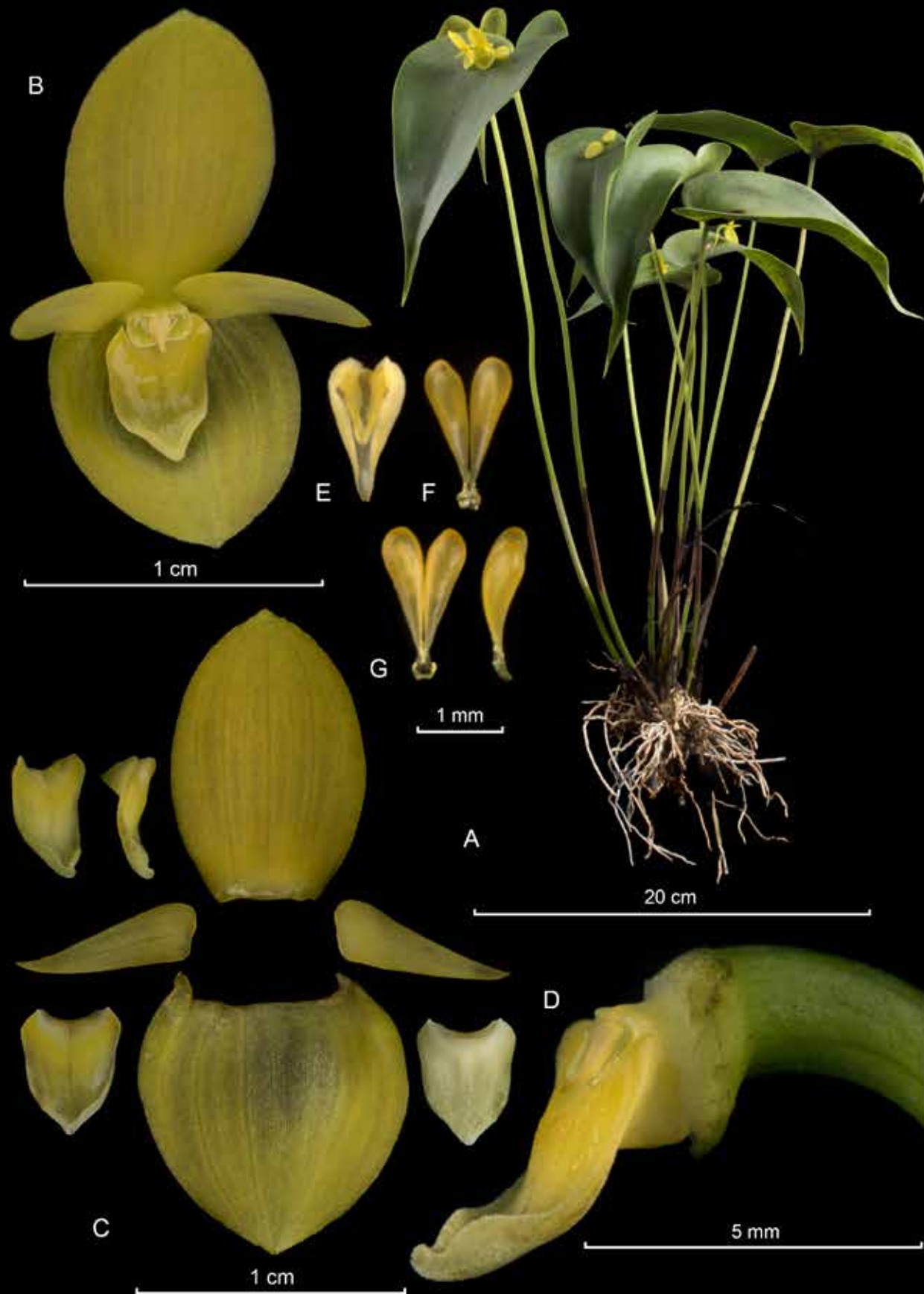
Pleurothallis navisepala is similar to *P. cardiothallis*, but usually produces two to four flowers at once (*vs.* flowers produced singly), bearing comparatively small flowers (*vs.* large) that do not spread out completely (*vs.* reflexed at maturity), provided with a deeply concave-navicular synsepal and porrect petals. The lip of *P. navisepala* is similar in size to that of *P. cardiothallis*, but the synsepal is much smaller, so that the ratio lip:synsepal is notably greater in the former. As in other species of the *P. cardiothallis* complex, *P. navisepala* exhibits two color morphs, one with purple flowers on a greenish white background and another with solid, bright yellow flower, which frequently coexist in the same populations.

References:

Pupulin, F., M. Díaz-Morales, J. Aguilar & M. Fernández. 2017. *Pleurothallis*. Two new species of *Pleurothallis* (Orchidaceae: Pleurothallidinae) allied to *P. cardiothallis*, with a note on flower activity. *Lankesteriana* 17(2): 329–356.



LCDP: *Pleurothallis navisepala* Pupulin, J. Aguilar & M. Díaz. **A.** Habit. **B.** Flower. **C.** Perianth (the lip in ventral, dorsal, lateral, and three quarters views). **D.** Ovary, column and lip, lateral view. **E.** Anther cap. **F–G.** Pollinarium, three views.



Pleurothallis oncoglossa

LUER

LINDLEYANA 11: 86. 1996

Synonyms: *Acronia oncoglossa* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 103: 166. 2005.
Zosterophyllanthos oncoglossus (Luer) Szlach. & Kulak, Richardiana 6(4): 191. 2006.

Type: Costa Rica. Without collection data, collected by Leon Gliesenstein, flowered in cultivation by P. & A. Jesup in Bristol, CT, 10 Dec 1988, C. Luer 13833 (holotype, MO).

Illustrated specimen: Costa Rica. Cartago: Jiménez, Pejibaye, Tucurrique, Bajos del Humo, between the rivers Humo and Vueltas, east side of Cerros Duán, 1396 m. 24 November 2008. D. Bogarín 5686, R.L. Dressler, R. Gómez & R. Trejos (JBL; LCDP voucher).

Plant epiphytic, caespitose, erect, to 38 cm tall. **Roots** slender, flexuous, ca. 1 mm in diameter. **Ramicauls** terete, slender, 12–31 cm long, 1–3 mm in diameter, yellowish green, provided with a tubular, short, truncate sheath, 1.0–2.5 cm long at the base, and a longer, tubular, tightly adpressed, truncate sheath below the middle, to 5–11 cm long, the bracts brown, dry-papyraceous. **Leaf** borne suberect at the apex of the ramicaul, becoming subpendent with age, thinly coriaceous, flexible, sessile, ovate, acuminate, 10.5–14.5 × 4.5–5.5 cm, deeply cordate at the base, matte green. **Inflorescence** a solitary flower, from a prostrate spathaceous bract 1–2 cm long, brown, dry-papyraceous when mature, eventually dissolving with age. **Pedicel** terete, pale green, ca. 12 mm long. **Ovary** subclavate, terete, ca. 11.5 mm long. **Flowers** dark red suffused with pale yellow on the base of the petals, sepals and lip. **Dorsal sepal** broadly ovate, obtuse, 15–17 × 12–15 mm, 9-veined. **Lateral sepals** connate into a broadly ovate, obtuse synsepal, 14–16 × 14–16 mm, 9–10 veined. **Petals** narrowly ovate-falcate, acute, 11–12 × 3–4 mm, 3-veined. **Lip** unguiculate, hinged to the column foot, geniculate, triangular, basally truncate with rounded angles, acute, 7–8 × 4–5 mm, the apex thickened into a conical callus bent into a hook; glenion recessed in the middle of the hypochile, slender, ca. 1 mm long. **Column** short, transversely subrectangular, dorsiventrally complanate, ca. 3 × 4 mm, the anther apical, bent, the stigma apical, bilobed. **Anther cap** cordate, acute, bilobed at the base, bent up at the apex, 2-celled. **Pollinia** 2, narrowly oblong-pyriform, bent

up at the apex, attached to an elliptic viscidium through short, cylindrical caudicula.

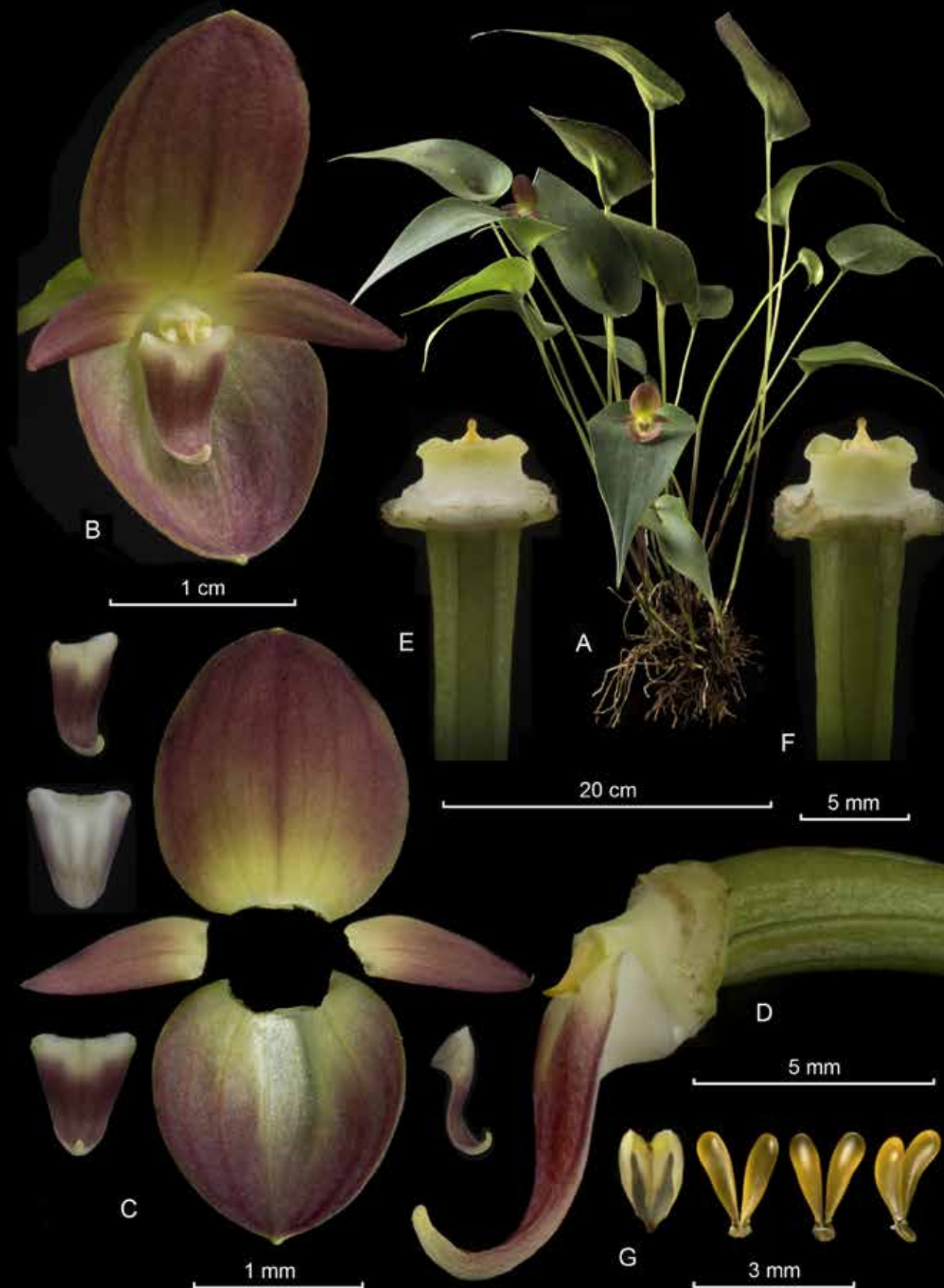
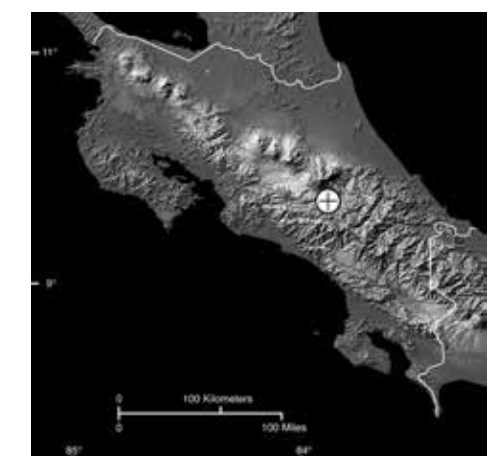
Etymology: From the Greek words *ὄγκος* (*ónkos*), “topknot on the masks of classic tragedy”, and *γλῶσσα* (*glôssa*), “tongue”, in reference to the callous projection at the apex of the lip.

Pleurothallis oncoglossa is similar to *P. cardiothallis*, from which it differs in the distinctly triangular lip with the apex thickened into a conical callus, bent up as a hook (vs. peltate). *Pleurothallis oncoglossa* is also similar to *P. scotinantha*, but in the latter the lip is not hooked, the perianth is solid dark purple instead of dark red on a pale yellow background, and the plants are bigger overall.

References:

Luer, C. A. 1996. New species in the Pleurothallidinae (Orchidaceae) from Costa Rica. *Lindleyana* 11: 54–113.

Szlachetko, D. L. & Kulak, M. Nouvelles combinaisons dans le genre *Zosterophyllanthos* Szlachetko & Margónska (Orchidaceae, Pleurothallidinae). *Richardiana* 6: 183–195.



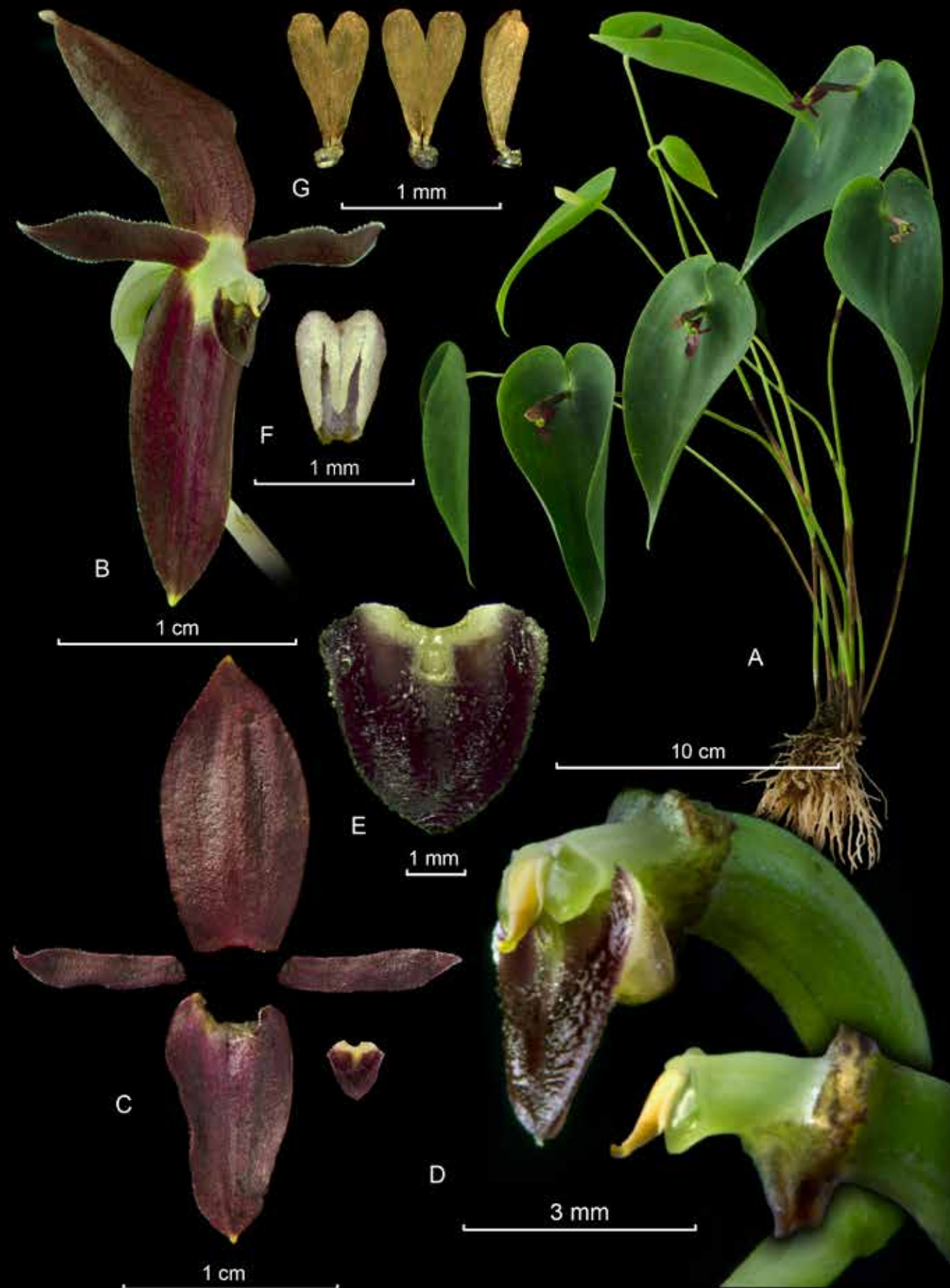
LCDP: *Pleurothallis oncoglossa* Luer. A. Habit. B. Flower. C. Perianth (four views of the lip). D. Column and lip, lateral view. E, F. Column, abaxial and adaxial views. G. Anther cap and pollinarium.



Pleurothallis phyllocardia

RCHB.F.

BEITR. ORCHID.-K. C. AMER. 97. 1866



Synonyms: *Humboltia phyllocardia* (Rchb.f.) Kuntze, Revis. Gen. Pl. 2: 668. 1891.
Zosterophyllanthos phyllocardius (Rchb.f.) Szlach. & Marg., Polish Bot. J. 46(2): 120. 2002.
Acronia phyllocardia (Rchb.f.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 103: 173. 2005.

Type: Costa Rica. Desengaño, 31 May 1858, *Wendland s.n.* (lectotype, W).

Illustrated specimen: Costa Rica. Puntarenas: Coto Brus, Parque Pittier, June 1995, *G. Carnevali s.n.* (JBL; LCDP voucher).

Plant epiphytic, caespitose, erect to suberect, to 26 cm tall. *Roots* slender, flexuous, ca. 1 mm in diameter. *Ramicauls* terete, slender, 16–26 cm long, 1–2 mm in diameter, yellowish green, provided with a tubular, short, truncate sheath to 2.5 cm long at the base, and a longer, tubular, tightly adpressed, obtuse sheath below the middle, to 3.7–4.5 cm long, the bracts glumaceous, pale green when young, becoming brown, dry-papyraceous with age. *Leaf* borne horizontally at the apex of the ramicaul, becoming subpendent with age, coriaceous, sessile, ovate, acute, 9.0–10.5 × 3.5–4.5 cm, deeply cordate at the base, grass-green, matte, becoming dull green with age. *Inflorescence* a solitary flower, from an erect spathaceous bract 1.4–1.6 cm long, green, dry-papyraceous when mature, eventually dissolving with age. *Pedice*l terete, pale green, bending down throughout anthesis, 13–16 mm long. *Ovary* subclavate, terete, 4–6 mm long. *Flowers* solid dark purple. *Dorsal sepal* ovate, acute, minutely papillose on the adaxial surface, reflexed, 13–14 × 5–7 mm, 5-veined. *Lateral sepals* connate into an ovate, acute synsepal, minutely papillose on the adaxial surface, reflexed, 10–13 × 4–5 mm, 5-veined. *Petals* linear-oblong, subfalcate, acute, bent backward throughout anthesis, the margins ciliate, 8–9 × 1–2 mm, 3-veined. *Lip* unguiculate, hinged to the column foot, geniculate, deltoid, obtuse, 3.5 × 2.5 mm, verrucose on the adaxial surface of the apical half, minutely papillose on the margins and around the glenion; glenion recessed between the elevated edges of hypochile, ca. 1 mm long. *Column* short, transversely subrectangular, dorsiventrally complanate, ca. 2 × 1 mm,

the anther apical, bent, the stigma apical, bilobed. *Anther cap* obcordate, truncate, bilobed at the base, 2-celled. *Pollinia* 2, narrowly oblong-pyriform, attached to an elliptic viscidium through short, cylindrical caudiculae.

Etymology: From the Greek words *φύλλον* (*phúllon*), “leaf”, and *κάρδιᾶ* (*kardíā*), “heart”, in reference to the heart-shaped leaves.

Pleurothallis phyllocardia is recognized by the glabrous flowers borne from an erect bract with the peduncle and pedicel bent downwards, reclining the flowers toward the leaves, and the linear-oblong petals. The *P. phyllocardia* group from Costa Rica comprises about ten species that are mainly characterized by the large habit (longer than 15 cm), the inflorescence born from an erect to suberect spathaceous bract and flowers that remain open after reaching complete anthesis until they fade.

References:

Pupulin, F., Díaz-Morales, M., Fernández, M. & Aguilar, J. 2017. Two new species of *Pleurothallis* (Orchidaceae: Pleurothallidinae) from Costa Rica in the *P. phyllocardia* group. *Lankesteriana* 17(2): 153–164.



LCDP: *Pleurothallis phyllocardia* Rchb.f. A. Habit. B. Flower. C. Perianth. D. Column and lip (three quarters view), and column (lateral view). E. Lip, adaxial view. F. Anther cap. G. Pollinarium, adaxial, abaxial, and lateral views.



Pleurothallis pudica

PUPULIN, J. AGUILAR & M. DÍAZ
LANKESTERIANA 17(2): 154. 2017

Type: Costa Rica. San José: Pérez Zeledón, Paramo, Los Ángeles, along the road to San Gerardo de Dota, mountains to the north of Río División, on a line with the center Los Ángeles, 1700 m. 29 May 2014. A.P. Karremans, G. Meza & L. Oses 6249 (holotype, JBL; isotype, JBL; LCDP voucher).

Plant epiphytic, caespitose, erect, up to 27 cm tall. **Roots** slender, flexuous, ca. 1 mm in diameter. **Ramicauls** terete, slender, 16–26 cm long, 1–2 mm in diameter, pale green, with two basal, tubular, obtuse sheaths of different sizes, the lower one loose, 12–13 mm long, the upper tightly clasping 15–20 mm long, and a sub-basal, tubular, obtuse, tight sheath ca. 4 cm long, the sheaths dry-papyraceous, brown. **Leaf** borne at the apex of the ramicaul, reclinate toward the stem, thinly coriaceous, flexible, sessile, ovate, acute, shortly subacuminate, 5–8 × 3–5 cm, deeply cordate at the base, the basal lobes sometimes overlapping, green, matte. **Inflorescence** with a solitary flower, from an erect, rectangular-clavate, truncate, spatheaceous bract 1–2 cm long, glumaceous, green, becoming brown, dry-papyraceous when mature. **Pedicel** terete, green, to ca. 2 cm long. **Ovary** terete, curved-geniculate, 6–7 mm long. **Flowers** spreading, reclined toward the leaf, non-resupinate, the sepals purple-red, the petals and lip dark purple, pubescent-hirsute adaxially. **Dorsal sepal** erect, elliptic-lanceolate, acute, 9–10 × 4–5 mm, 3-veined, pubescent-tomentose, more densely toward the apex, the trichomes white, translucent. **Lateral sepals** connate into an ovate, subobtusely synsepal, the margins slightly reflexed, pubescent-tomentose, distinctly shorter than the dorsal sepal, 7 × 4–5 mm, 5-veined. **Petals** narrowly lanceolate-ligulate, subporrect, angulate-deflexed in the proximal third, acute, ciliate, 7 × 2 mm, 1-veined. **Lip** unguiculate, hinged to the column foot, strongly geniculate, broadly ovate-triangular, basally truncate with obtuse angles, broadly obtuse, minutely apiculate, the margins glandulose, the basal margins erect, 2 × 3 mm, covered with coarse papillae at the base; glenion raised on a thick callus on the disk, less than 1 mm long. **Column** short, stout, transversely subrectangular, dorsiventrally complanate, ca. 3 × 3 mm, the anther apical, incumbent, the stigma apical, bilobed. **Anther cap** cucullate, ovate, subcordate, truncate, two-celled. **Pollinia** two, narrowly ovate-pyr-

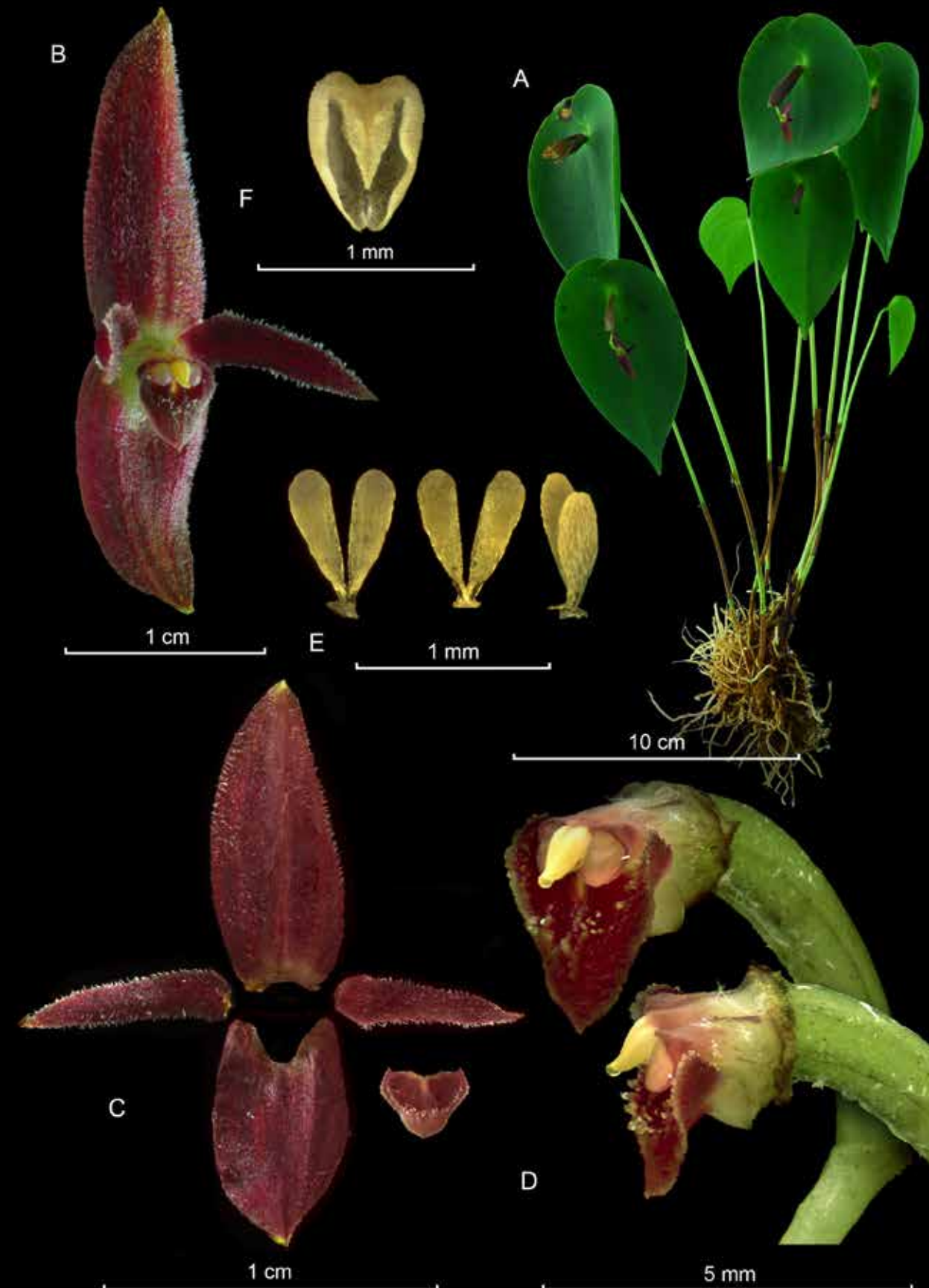
iform, attached to an elliptic viscidium.

Etymology: From the Latin *pudicus*, “chaste, modest, shamefaced”, in reference to the habit of turning the face of the flower toward the leaf, hiding it from the view of the observer.

Pleurothallis pudica is easily recognized among the species of the *P. phyllocardia* group by the pubescent-hirsute flowers reclinate over the leaf and non-resupinate. Besides this, the flowers of *P. pudica* can be distinguished from those of *P. phyllocardia* by the characteristic indumentum of the abaxial surface of the petals, the reflexed margins of the sepals, and the angulate-deflexed shape of the petals.

References:

Pupulin, F., M. Díaz-Morales, M. Fernández & J. Aguilar. 2017. Two new species of *Pleurothallis* (Orchidaceae: Pleurothallidinae) from Costa Rica in the *P. phyllocardia* group. *Lankesteriana*, 17(2), 153–164.



LCDP: *Pleurothallis pudica* Pupulin, J. Aguilar & M. Díaz. A. Habit. B. Flower (shown in resupinate position to facilitate comparison with other taxa of the group). C. Perianth flatten. D. Ovary, column and lip, lateral and three quarters views. E. Pollinarium, three views. F. Anther cap.



Pleurothallis rectipetala

AMES & C. SCHWEINF.
SCHED. ORCH. 8: 32. 1925

Synonyms: *Acronia rectipetala* (Ames & C. Schweinf.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 103: 180. 2005.
Zosterophyllanthos rectipetalus (Ames & C. Schweinf.) Szlach. & Kulak, Richardiana 6: 192. 2006.

Type: Costa Rica. [Cartago:] Cachi, cultivated at Cartago and flowered in Jun 1924, C. H. Lankester 915 (holotype, AMES).

Illustrated specimen: Costa Rica. Cartago: Jiménez, Pejibaye, Tucurrique, Bajos del Humo, between Humo and Vueltas rivers, eastern slope of Cerros Duán, 1396 m. 24 Nov 2008. D. Bogarin 5743, R.L. Dressler, R. Gómez & R. Trejos (JBL; LCDP voucher).

Plant epiphytic, caespitose, erect, up to 30 cm tall. **Roots** slender, flexuous, ca. 1 mm in diameter. **Ramicauls** terete, slender, 18–29 cm long, 1–2 mm in diameter, pale green, with two basal, tubular, obtuse sheaths, 1–2 cm long, and a longer, sub-basal, tubular, obtuse, tight sheath 6–7 cm long, the sheaths dry-papyraceous, brown. **Leaf** borne at the apex of the ramicaul, horizontal to sub-reclinate toward the stem, thinly coriaceous, flexible, sessile, ovate, acute, shortly subacuminate, 11–14 × 4–7 cm, deeply cordate at the base, the basal lobes not overlapping, the margins incurved, green, matte. **Inflorescence** a solitary flower, born from an erect, oblanceolate, rounded to subtruncate, spathaceous bract to 15 mm long, glumaceous, green, becoming brown, dry-papyraceous when mature. **Pedice**l terete, green, to ca. 15 cm long, completely hidden within the spathe. **Ovary** terete, curved, 5 mm long. **Flowers** spreading-reflexed, the sepals dull brownish purple, the dorsal sepal fading greenish yellow towards the margins, the petals purple tinged with yellow apically, the lip purple, the column white. **Dorsal sepal** erect, broadly elliptic-lanceolate, obtuse, 6–7 × 4 mm, the margins reflexed, five-veined. **Lateral sepals** connate into an ovate, subobtuse, apically subexcise synsepal, the margins reflexed, 12 × 8 mm, each half of the synsepal four-veined. **Petals** linear-lanceolate to linear-oblong, acute, minutely apiculate, denticulate in the distal third, reflexed at maturity, 5–6 × 2 mm, single-veined. **Lip** unguiculate, hinged to the column foot, thick and fleshy, ovate-peltate, basally truncate with obtuse angles, obtuse-rounded, the sides smooth, 3 × 2 mm, densely papillose throughout, the

papillae coarser at the base; glenion raised on a thick, velutine callus on the labellar base, less than 1 mm long. **Column** short, stout, transversely subrectangular, dorsiventrally complanate, with a short foot, ca. 2 × 2 mm, the anther apical, incumbent, the stigma apical, bilobed. **Anther cap** cucullate, ovate, subcordate, subtruncate, two-celled. **Pollinia** two, narrowly ovate, apically attenuate, attached to an elliptical viscidium.

Etymology: From the Latin *rectus*, “straight”, in reference to the shape of the petals.

Pleurothallis rectipetala can be distinguished by the combination of the comparatively large, cordate leaves, the erect spathe with the flowers barely exerted from it, the dull purple flowers with linear-oblong, reflexed petals and the very thick, ovate-peltate lip. It is most similar to *P. radula*, which has yellow flowers and a irregularly crenate lip, and to *P. luna-crescens*, which has a crescent-shaped flower with much longer, narrower petals.

References:

Ames, O. & C. Schweinfurth. 1925. New or noteworthy species of orchids from the American tropics. *Schedulae Orchidiana* 8: 1–91.



LCDP: *Pleurothallis rectipetala* Ames & C. Schweinf. A. Habit. B. Flower. C. Perianth. D. Lip, adaxial view. E. Lip, three quarters view. F. Ovary, column and lip, lateral view. G. Column, ventral and lateral views. H. Pollinarium, three views. I. Anther cap.



Pleurothallis scotinantha

PUPULIN, M. DÍAZ & J. AGUILAR
LANKESTERIANA 17(2): 337. 2017

Type: Costa Rica. San José: Pérez Zeledón, Cajón, Montecarlo, 3.5 km northeast of Montecarlo, margins of Río Peña Blanquita, 1261 m. 28 Jul. 2009. *D. Bogarín 7355 & F. Pupulin* (holotype, JBL; isotype, JBL; LCDP voucher).

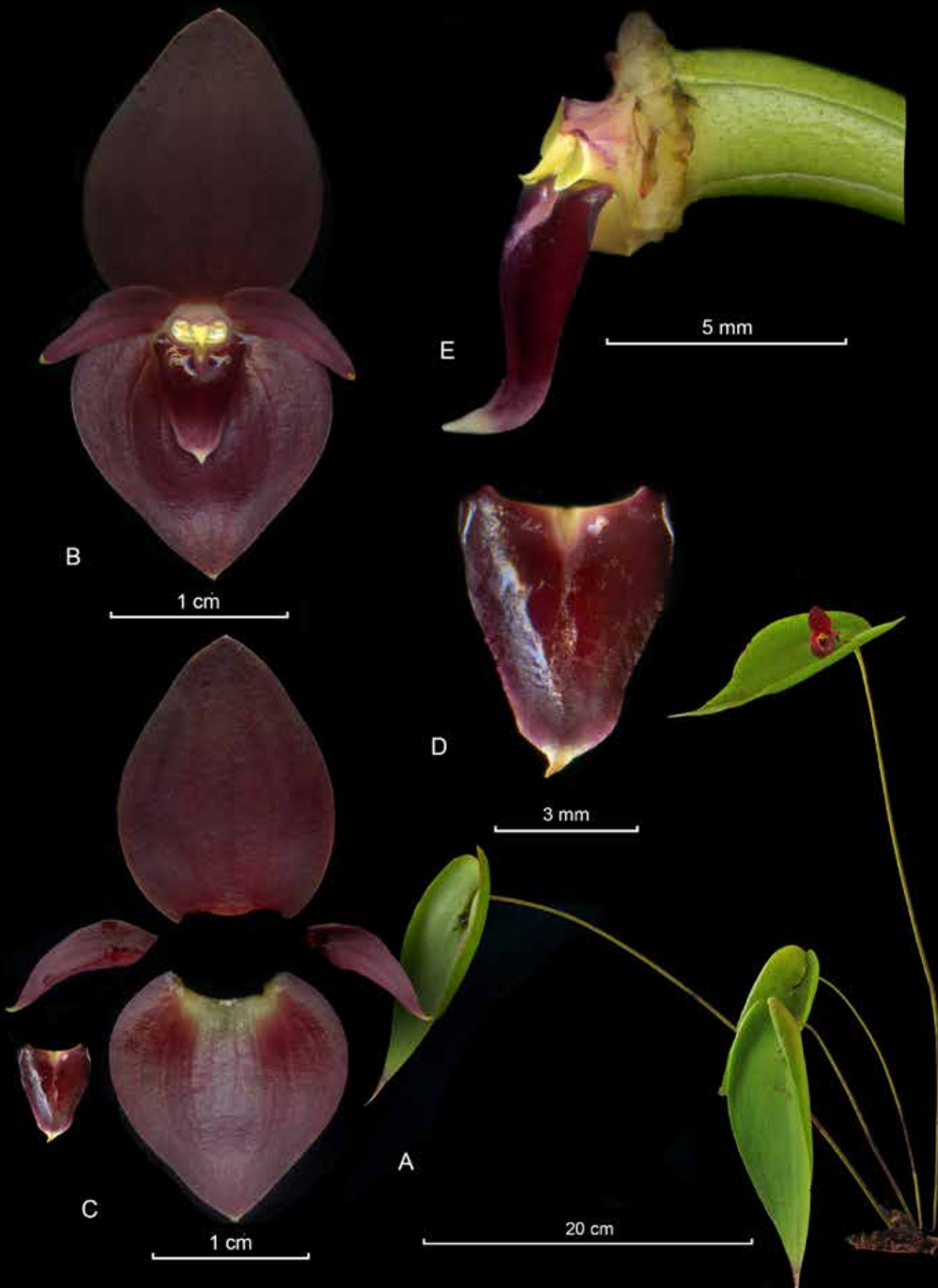
Etymology: From the Greek words *σκοτεινός* (*skotinós*), “dark”, and *άνθος* (*ánthos*), “flower”, in reference to the solid, dark-purple flower of the species, uncommon in this group.

Plant epiphytic, caespitose, erect to suberect, to 50 cm tall. *Roots* slender, flexuous, 1–2 mm in diameter. *Ramicauls* terete, slender, 29–43 cm long, 2–4 mm in diameter, yellowish green, provided with a tubular, short, truncate sheath to 3–4 cm long at the base, and a longer, tubular, tightly adpressed, truncate sheath below the middle, to 4–6 cm long, the bracts glumaceous, pale green when young, becoming brown, dry-papyraceous with age. *Leaf* borne horizontally at the apex of the ramicaul, becoming subpendent with age, thinly coriaceous, flexible, sessile, ovate, acute to acuminate, 16–19 × 7–8 cm, deeply cordate, forming two slightly imbricate lobes at the base, grass-green, matte. *Inflorescence* a solitary flower, usually produced singly, rarely in pairs, from a reclined spatheaceous bract 10–15 mm long, brown, dry-papyraceous when mature, eventually dissolving with age. *Pedicle* terete, pale green, 22–26 mm long. *Ovary* clavate, rounded in section, 4–8 mm long. *Flowers* solid dark purple with pale yellow tips on sepals, petals and lip, opening and closing several times during anthesis, short-lived (usually 5, rarely to 6 days). *Dorsal sepal* broadly ovate, subacute, 14–18 × 11–19 mm, 9–11-veined. *Lateral sepals* connate into a broadly ovate-subrounded, subacute synsepal, 11–20 × 15–20 mm, 9–11-veined. *Petals* subfalcate, acute, 11–14 × 2–4 mm, 3–5-veined. *Lip* unguiculate, hinged to the column foot, triangular, basally truncate with rounded angles, acuminate, 6–7 × 4–5 mm, strongly conduplicate at the base, apex with the margin finely pubescent; glenion deeply recessed between the margins of the hypochile, ca. 1 mm long. *Column* short, transversely subrectangular, dorsiventrally complanate, ca. 1 × 4 mm, the anther apical, bent, the stigma apical, bilobed. *Anther cap* obtriangular, acute, bilobed at the base, 2-celled. *Pollinia* two, narrowly oblong-pyriform, attached to an elliptic viscidium through a short, cylindrical caudicle.

In outline, the lip of *P. scotinantha* is triangular, similar to that of *P. oncoglossa*, and as in *P. oncoglossa* the flower is fully spread in the late morning and early afternoon. The dark purple, blackish, glossy color of the flower, the triangular, flat, dark purple lip fading into a small white region towards the apex, whitish on the underside, are, however, useful characters to distinguish it from *P. oncoglossa*, which has light purple-red flowers on a greenish yellow background, the sepals fading yellow-green toward the base, and a characteristic, callose hook at the apex of the lip.

References:

Pupulin, F., M. Díaz-Morales, J. Aguilar & M. Fernández. 2017. *Pleurothallis*. Two new species of *Pleurothallis* (Orchidaceae: Pleurothallidinae) allied to *P. cardiothallis*, with a note on flower activity. *Lankesteriana* 17: 329–356.



LCDP: *Pleurothallis scotinantha* Pupulin, M. Díaz & J. Aguilar. A. Habit. B. Flower. C. Perianth. D. Lip, adaxial view. E. Column and lip, lateral view.



Pleurothallis tapantiensis

PUPULIN, M. DÍAZ & PRIDGEON
VANISHING BEAUTY. VOL. 2: 853. 2020

Type: Costa Rica. Cartago: Paraíso, Orosi, Tapantí, Tapantí National Park, Oropéndola trail, shores of Río Grande de Orosi, 1376 m. 11 December 2014. *D. Bogarín* 11273, *M. Fernández*, *L. Taylor* & *J. Sharma* (holotype, JBL; LCDP voucher).

Plant epiphytic, caespitose, erect to suberect, to 23 cm tall. *Roots* slender, flexuous, ca. 1 mm in diameter. *Ramicauls* terete, slender, 15–22 cm long, yellowish green, provided with two basal, tubular, obtuse sheaths 1.7–6.0 cm long, the bracts glumaceous, pale green with minute purple warts when young, becoming brown, dry-papyraceous with age. *Leaf* borne horizontally at the apex of the ramicaul, becoming curved-subpendent with age, thinly coriaceous, flexible, sessile, ovate, narrowly acute, acuminate, 7–12 × 4–6 cm, deeply cordate at the base, grass-green, matte. *Inflorescence* a solitary flower, from a reclined, rectangular, acute, spatheaceous bract to 2 cm long, brown, dry-papyraceous when mature, eventually dissolving with age. *Pedicel* terete, green, 8–12 mm long. *Ovary* terete-subclavate, curved, rounded in section, 3–5 mm long. *Flowers* spreading, becoming partially reflex with age, short-lived (to 5 days), opening and closing several times during anthesis, solid purple. *Dorsal sepal* erect, ovate, obtuse, 10–11 × 7–8 mm, 7–9-veined, the lateral margins reflexed. *Lateral sepals* connate into a broadly ovate, obtuse synsepal, 9–10 × 8–9 mm when spread, 9–11-veined, the margins reflexed at maturity. *Petals* narrowly triangular-subfalcate, acute, 6–7 × 1 mm, 3-veined, reflexed. *Lip* unguiculate, hinged to the column foot, peltate, basally truncate with rounded angles, obtuse, with the apex slightly infolded, 6–7 × 3.0–3.5 mm, conduplicate at the base, the apical margins thickened; glenion recessed between the thickened area between the margins of the hypochile, ca. 1 mm long. *Column* short, transversely subrectangular, dorsiventrally complanate, ca. 1 × 2–3 mm, the anther apical, bent, the stigma apical, bilobed. *Anther cap* obtriangular, acute, bilobed at the base, 2-celled. *Pollinia* 2, narrowly oblong-pyriform, attached to an elliptic viscidium through a short, cylindrical caudiculae.

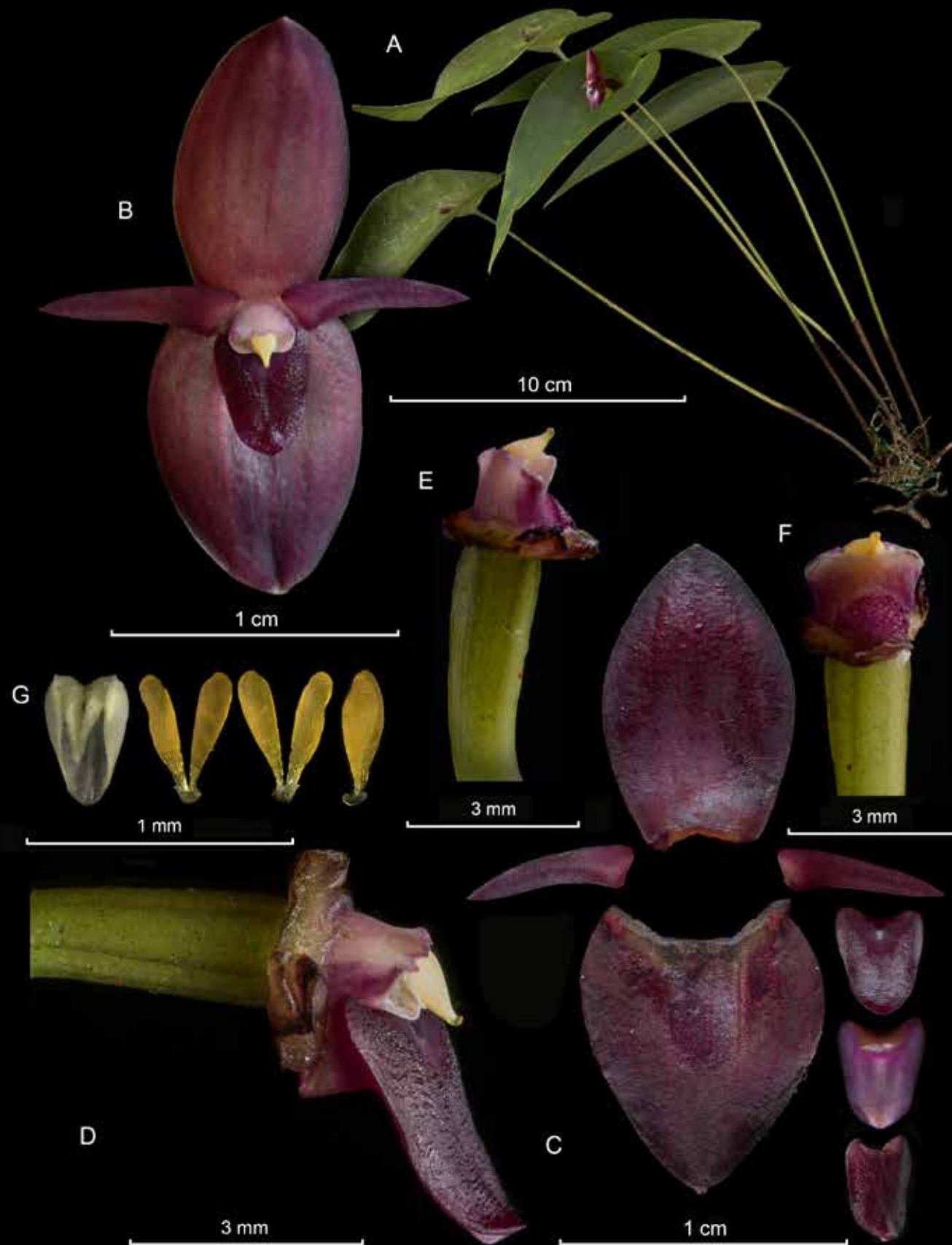
Etymology: Named after the Tapantí National Park, in the north-

ern region of the Cordillera de Talamanca where the species was originally found. In the indigenous Cabécar language, the word tapantí has several meanings, mostly related to water: “clear water”, “a zone of many waters”, “torrent from the heavens”.

Among the species of *Pleurothallis* close to *P. cardiothallis* provided with a peltate lip, *P. tapantiensis* may be easily recognized by the lip that is glabrous and uniformly purple underneath (vs. papillose, whitish), with the apical margins straight (vs. involute, forming a pseudoapicule), provided for all its length with thin, irregular, transverse grooves. As most other species in this group, the flowers of *P. tapantiensis* change in openness diurnally, opening early in the morning, and usually remaining fully spread until noon, when the petals incurve and the lateral sepals lose turgor and fold over each other. The process repeats for 4 to 5 days, after which the flower fades.

References:

Pridgeon, A. P. 2020. *Pleurothallis*. Pp. 850–909 in: F. Pupulin (ed.). *Vanishing Beauty. Native Costa Rican Orchids. Vol. 2: Lacaena–Pteroglossa*. Koeltz Botanical Books, Oberreifenberg.



LCDP: *Pleurothallis tapantiensis* Pupulin, M. Díaz & Pridgeon. A. Habit. B. Flower. C. Perianth (three views of the lip). D. Column and lip, lateral view. E, F. Column in three quarters and abaxial views. G. Anther cap and pollinarium.



Pleurothallis tonduzii

SCHLTR.

BEIH. BOT. CENTRALBL., ABT. 2. 36(3): 397. 1918

Synonyms: *Acronia tonduzii* (Schltr.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 103: 199. 2005.
Zosterophyllanthos tonduzii (Schltr.) Szlach. & Kulak, Richardiana 6(4): 193. 2006.

Type: Costa Rica. [Alajuela:] Forêts de San Ramón 1500–1600 m, May 1913, A. Tonduz s.n. (holotype, B, destroyed; neotype, designated by Pupulin *et al.*, 2016: 310: tracings of the original drawing of the holotype, made under Schlechter's supervision, AMES-23680; illustration of the flower from the holotype published by Mansfeld, 1931: no. 144).

Illustrated specimen: Costa Rica. Alajuela: Bajos del Toro, Cataratas, without collector. December 1999, flowered in cultivation at Jardín Botánico Lankester, 11 Jun 2019. JBL-02455 (JBL; LCDP voucher).

Plant epiphytic, caespitose, erect, up to 23 cm tall. **Roots** slender, flexuous, 1–2 mm in diameter. **Ramicauls** terete, slender, 4–10 cm long, 1–2 mm in diameter, dark green, with 1–3 basal, tubular, obtuse sheaths, the lowest ones much shorter, 1–5 cm long, dry-papyraceous, brown when mature. **Leaf** borne at the apex of the ramicaul, erect, slightly arched towards the apex, coriaceous, flexible, sessile, narrowly-elliptic, acute, 5–13 × 1–2 cm, obtuse at the base, the basal margins suberect, the margin flat, dark green. **Inflorescence** a successive, solitary flower, subtended by a bract ca. 1 mm long, green, becoming brown, dry-papyraceous when mature. **Pedicle** terete, green, 13 cm long. **Ovary** terete, curved, 7 mm long. **Flowers** spreading-inflexed, the sepals yellow, stained light purple, the dorsal sepal adaxially brownish and abaxially vinaceous along veins, the petals vinaceous, the lip dark fuchsia, lustrous, the column light fuchsia. **Dorsal sepal** arched, concave, ovate, acute, 15 × 8 mm, the margins inflexed, seven-veined. **Lateral sepals** connate into an ovate, acute, synsepal, the margins inflexed, 12–13 × 9 mm, each half four-veined. **Petals** narrowly linear-lanceolate, acuminate, denticulate, divergent, apically somewhat inflexed at maturity, 9 × 2 mm, one-veined. **Lip** unguiculate, hinged to the column foot, thick, fleshy, almost porrect, pandurate, basally truncate with rounded angles, abruptly recurved on the apical third, subacute, the sides denticulate, revolute on the distal half, when spread out 7 × 5 mm, minutely verrucose; glenion raised

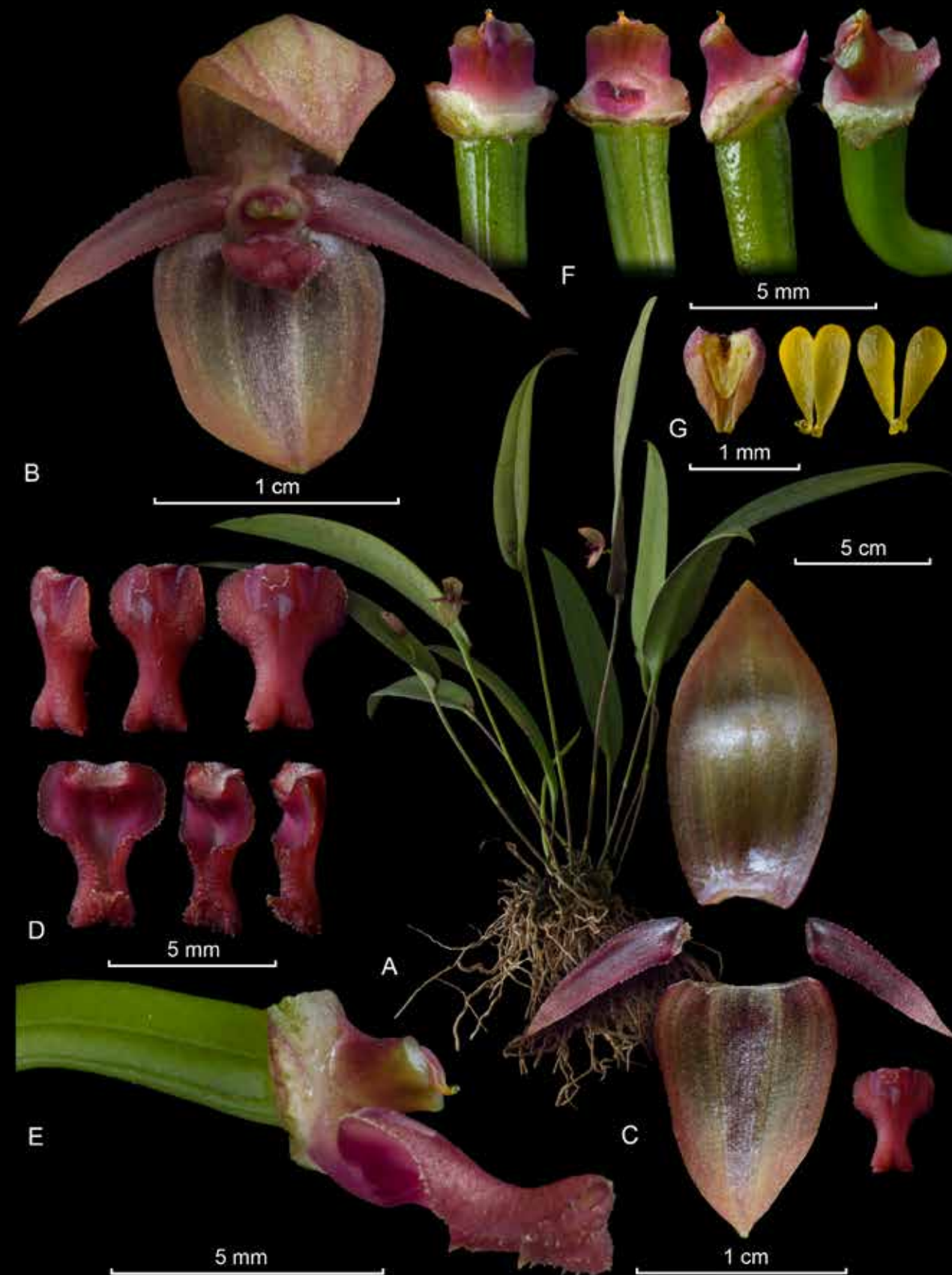
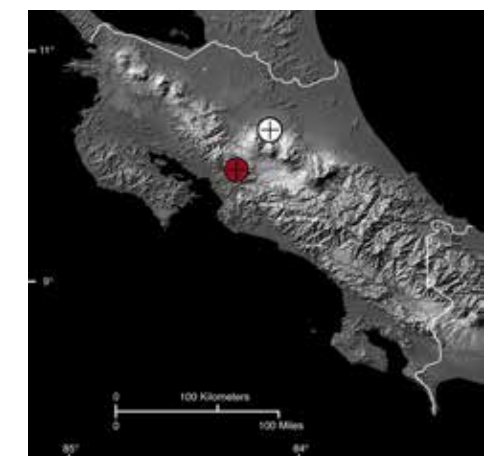
on a minute, dull callus on the disk, less than 1 mm long. **Column** short, stout, transversely subrectangular, dorsiventrally complanate, with a thick foot ca. 1 mm long, 2 × 2 mm, the anther apical, the stigma apical, bilobed. **Anther cap** cucullate, ovate, subtruncate, truncate, two-celled, 0.95 × 0.75 mm. **Pollinia** two, claviform, 1.0 × 0.35 mm, attached to a globose viscidium.

Eponymy: Named after the Swiss botanist Adolphe Tonduz, who discovered the species.

Pleurothallis tonduzii can be distinguished by the combination of long, narrow, erect leaves, apically arched, the dark fuchsia, pandurate, verrucose lip, almost porrect, abruptly recurved on the apical third, and the sides revolute on the distal half. It is similar to *Pleurothallis telamon* Luer (a species described from Panama), which has horizontal to pendulous leaves and an oblong, flat lip.

References:

Luer, C. A. 2005. Icones Pleurothallidarum XXVII: *Dryadella* and *Acronia* section *Macrophyllae-Fasciculatae*. Monogr. Syst. Bot. Missouri Bot. Gard., 103, 1–311.



LCDP: *Pleurothallis tonduzii* Schltr. A. Habit. B. Flower, front view. C. Perianth dissected and flattened. D. Lip, adaxial and oblique view (above), abaxial, oblique and lateral view (under). E. Ovary, column and lip, lateral view. F. Column, dorsal, ventral and lateral view. G. Anther cap, ventral view. Pollinarium, two views.



Pleurothallis tonduzii

SCHLTR.

BEIH. BOT. CENTRALBL., ABT. 2. 36(3): 397. 1918

Synonyms: *Acronia tonduzii* (Schltr.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 103: 199. 2005.
Zosterophyllanthos tonduzii (Schltr.) Szlach. & Kulak, Richardiana 6(4): 193. 2006.

Type: Costa Rica. [Alajuela:] Forêts de San Ramón 1500–1600 m, May 1913, *A. Tonduz s.n.* (holotype, B, destroyed; neotype, designated by Pupulin *et al.*, 2016: 310: tracings of the original drawing of the holotype, made under Schlechter's supervision, AMES-23680; illustration of the flower from the holotype published by Mansfeld, 1931: no. 144).

Illustrated specimen: Costa Rica. Puntarenas: Buenos Aires, Buenos Aires, between Santa Rosa and Convento, shores of Quebrada Santa María, 824 m. 20 Mar 2013, flowered in cultivation at Jardín Botánico Lankester, 18 Oct 2015. *A.P. Karremans 5840, D. Bogarín, J. Cambroneró & F. Pupulin* (JBL; LCDP voucher).

Plant epiphytic, caespitose, erect, up to 32 cm tall. Roots slender, flexuous, ca. 1 mm in diameter. **Ramicauls** terete, slender, 15–23 cm long, 2 mm in diameter, dark green with 2–3 basal, tubular, obtuse sheaths, the lowest ones much shorter, 3–5 cm long, dry-papyraceous, brown when mature. **Leaf** borne at the apex of the ramicaul, erect, slight or notably arched towards the apex, coriaceous, flexible, sessile, narrowly-elliptic, acute, becoming uncinatate towards the apex, 10–16 × 3 cm, cordate at the base, the basal lobes inflexed, not overlapping, the margin flat, dark green. **Inflorescence** a successive, solitary flower, subtended by a spatheaceous bract ca. 1 mm long, green, becoming brown, dry-papyraceous when mature. **Pedicel** terete, green, 15 cm long. **Ovary** terete, curved, 5 mm long. **Flowers** spreading-inflexed, the sepals yellowish green, the petals yellowish green, abaxially stained with pale purple, the lip dark fuchsia, dull, the column fuchsia. **Dorsal sepal** arched, concave, ovate, acute, 12 × 7 mm, abaxially sulcate, the margins inflexed, seven-veined. **Lateral sepals** connate into an ovate, acute synsepal, the margins inflexed, 10 × 9 mm, each half four-veined. **Petals** narrowly linear-lanceolate, acuminate, minutely denticulate, apically inflexed, 7–8 × 2–3 mm, one-veined. **Lip** unguiculate, hinged to the column foot, thick, fleshy, porrect, pandurate, basally subcordate with rounded angles, abruptly recurved on the apical third, subacute, the sides denticulate, revolute, when

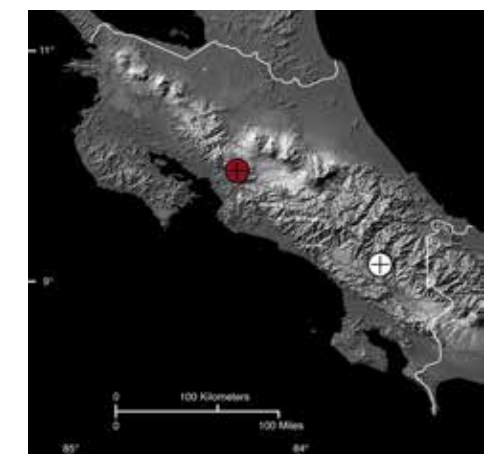
spread out 6.4 × 3.9 mm, minutely verrucose; glenion raised on a minute, dull callus on the disk, less than 1 mm long. **Column** short, stout, transversely subrectangular, dorsiventrally complanate, with a thick foot ca. 1 mm long, 1 × 1 mm, the anther apical, the stigma apical, bilobed. **Anther cap** cucullate, ovate, cordate, truncate, two-celled, 1.0 × 0.9 mm. **Pollinia** two, claviform, 1.1 × 0.4 mm, attached to an elliptic viscidium.

Eponymy: Named after the Swiss botanist Adolphe Tonduz, who discovered the species.

Pleurothallis tonduzii can be distinguished by the combination of long, narrow, erect leaves, apically arched or up to becoming uncinatate, the dark fuchsia, pandurate, verrucose lip, almost porrect, abruptly recurved on the apical third, and the sides revolute. It is similar to *P. telamon* Luer from Panama, which has horizontal to pendulous leaves and an oblong, flat lip.

References:

Luer, C. A. 2005. Icones Pleurothallidarum XXVII: *Dryadella* and *Acronia* section *Macrophyllae-Fasciculatae*. Monogr. Syst. Bot. Missouri Bot. Gard., 103, 1–311.



LCDP: *Pleurothallis tonduzii* Schltr. A. Habit. B. Flower, oblique view. C. Perianth dissected and flattened. D. Lip, adaxial and oblique view (above), abaxial, oblique and lateral view (under). E. Ovary, column and lip, lateral view. F. Anther cap and pollinarium, two views.



Pleurothallis vide-vallis

KARREMANS & J.E. JIMÉNEZ
PHYTOTAXA 349: 189. 2018

Type: Costa Rica. Guanacaste: Bagaces, Fortuna, Protector Zone Volcán Miravalles, top of the volcano along the trail, 1929 m. 17 Dec 2014. I. Calderón & J.E. Jiménez 96 (holotype: JBL-spirit; LCDP voucher).

Plant epiphytic, erect, up to 20 cm tall. **Roots** flexuous, thin, 0.5–1.0 mm diameter, densely subfasciculate. **Ramicaul** erect, up to 8–14 cm long, covered by tubular sheaths tightly adpressed and close to the base, up to 5 cm long. **Leaves** horizontal or nearly so, sessile, acuminate, 7.0–11.0 × 2.5–3.0 cm, deeply cordate. **Inflorescence** a fascicle of simultaneously open flowers, 3–6 at a time, subtended by a spatheous bract 1–2 cm long; pedicels terete, 5–6 mm long, pale green. **Ovary** sub-clavate, 4–5 mm long, green. **Flowers** pale yellow, suffused with pink. **Dorsal sepal** slightly concave, elliptic, obtuse, 5-veined, 12.0–12.5 × 5.0–6.0 mm. **Lateral sepals** connate in a weakly concave synsepal, oblong, sub-acute, 6-veined, with the 2-central veins fused near the apex, 12.0–13.0 × 5.5–6.0 mm. **Petals** elliptic, oblique, acute, 6.5–7.0 × 2.3–2.5 mm. **Lip** pale yellow, whitish basally, lanceolate to narrowly panduriform, sigmoid, acute, shortly apiculate, 3.4–3.6 × 1.3–1.5 mm, minutely papillose, with a callus raised at the base, bearing a raised glenion, basally hinged to the column foot. **Column** straight, transversely subrectangular, with a column foot, 2.0–2.3 × 1.9–2.1 mm, anther and stigma apical. **Anther cap** ovate, cucullate, acute at the base, bilobed at the apex, 2-celled, ca. 0.6 × 0.4 mm. **Pollinia** 2, narrowly ovate-pyriform, 0.6 mm long, connected to a round viscidium.

Etymology: From the Latin, *videre*, to see, and *vallis*, valley, referring to the Miravalles Volcano, which in Spanish means overlooking the valleys.

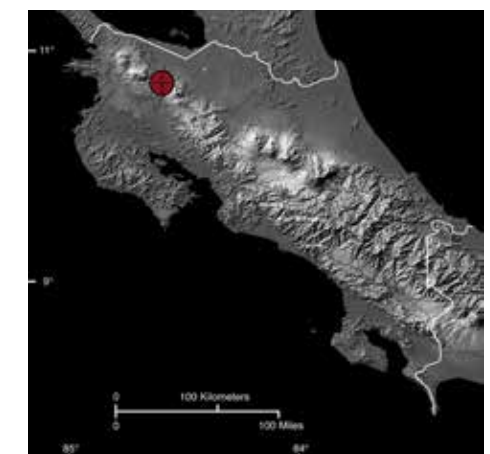
Among the members of *Pleurothallis* sect. *Macrophyllae-Fasciculatae* (Luer 2005), *P. vide-vallis* can be recognized by the fascicled inflorescence of numerous simultaneous flowers and the broad petals. It is similar to *Pleurothallis bothros* Luer but is distinguished by the non-spreading, pale yellow flowers diversely suffused with

pink, the elliptic and oblique petals (*vs.* oblong and straight), the lanceolate to narrowly panduriform, sigmoid, acute, ca. 3.8 × 1.4 mm (*vs.* ovate, recurved and obtuse, 3.5 × 2.5 mm). *Pleurothallis hawkingii* Karremans & J.E. Jiménez, is similar, but the two species conspicuously differ in the labellum.

References:

Karremans, A.P. & J.E. Jiménez. 2018. *Pleurothallis hawkingii* and *Pleurothallis vide-vallis* (Orchidaceae; Epidendroideae), two new species from Cordillera de Guanacaste in Costa Rica. *Phytotaxa* 349: 185–191.

Luer C.A. 2005. Icones Pleurothallidinarum XXVII. *Dryadella* and *Acroria* sect. *Macrophyllaceae-Fasciculatae*. *Mongr. Syst. Bot. Missouri Bot. Gard.* 103: 1–311.



LCDP: *Pleurothallis vide-vallis* Karremans & J.E. Jiménez. **A.** Habit. **B.** Flower. **C.** Perianth. **D.** Column and lip, lateral view. **E.** Column ventral and dorsal view. **F.** Diverse views of the lip. **G.** Anther cap and pollinarium.



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Format: Photoshop PSD file with layers, RGB mode with 16 bits. Used photographs must be in RAW, NEF, DNG or similar, and edited in order to adjust from brightness, contrast, temperature, etc. Color calibrations is highly recommended so that colors are closest to nature.

Scale bars: White, horizontal, 6 pixels wide, with two sides that rise 10 pixels above the scale.

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Acianthera lojiae (Schltr.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 254. 2004.

Synonyms: Only homotypic synonyms should be listed.

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Use a multiplication symbol “×” instead of the letter “x” to separate length and width (1.0–1.1 × 3.2–3.3 mm).

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The authors must show they have studied the original description (protologue) and its elements (type material). They are encouraged to submit the studied elements together with the LCDP and plate as either web-links or as separate files in .PDF, .JPG or .TIFF. These original elements may include the protologue, original publication, holotype, isotype, lectotype, neotypes, paratypes, illustrations of type material, etc. Material not associated with the original description should not be submitted. Authors are not required to provide all elements, but at least those that allowed for an interpretation of the studied specimen. The anexes are not published with the icon.



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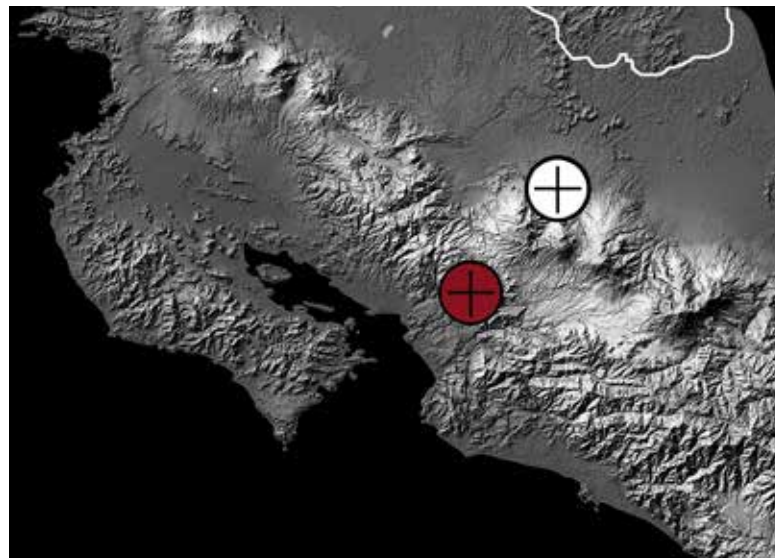
Adam P. Karremans.
Jardín Botánico Lankester, Universidad de Costa Rica
Cartago, Costa Rica
E-mail: adam.karremans@ucr.ac.cr

Sebastián Vieira Uribe
Jardín Botánico Joaquín Antonio Uribe
Medellín, Colombia
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