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A NEW SPECIES OF *PLEUROTHALLIS* (PLEUROTHALLIDINAE) FROM THE SOUTHWESTERN ANDES OF COLOMBIA IN THE NATIONAL NATURAL PARK FARALLONES DE CALI

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Abstract. A new species of *Pleurothallis* from subsection *Macrophyllae-Fasciculatae* is described and illustrated. The new species is compared with *Pleurothallis folsomii* from Panama. *Pleurothallis celsia* is most similar to a group of species with small, yellow flowers but it can be recognized mainly by its lip, which is widely ovate, the surface and margin pilose and papillate, and the base of the glenion densely vesiculose.

Resumen. Se describe e ilustra una nueva especie de *Pleurothallis* de la subsección *Macrophyllae-Fasciculatae*. La especie nueva se compara con *Pleurothallis folsomii* de Panamá. *Pleurothallis celsia* es similar a un grupo de especies con flores pequeñas, amarillas, pero se puede reconocer principalmente por su labelo, que es ampliamente ovado, con la superficie y el margen pilosos y papilados, y la base del glenion densamente vesiculosa.

Keywords / Palabras clave: Alto Anchicayá, Celsia, Orchidaceae, sistemática, systematics, taxonomía, taxonomy

Introduction. *Pleurothallis* R.Br. (Brown 1813) is one of the most diverse genera in terms of species richness of orchids within the subtribe Pleurothallidinae. It can be found in Central America and some countries of South America with more than 500 species described to date (Karremans & Vieira-Uribe 2020, Luer 1986, 1989, 1998, 1999, 2005), and Colombia is the country with the most recorded species of *Pleurothallis*, with 247 species (Bernal *et al*. 2016, Karremans *et al*. 2023, Ministerio de Ambiente y Desarrollo Sostenible y Universidad Nacional de Colombia 2015).

The members of the *Pleurothallis* subsection *Macrophyllae-Fasciculatae* Lindl. (Lindley 1859, Luer 1986) are identifiable mainly by their sessile leaves with a typically cordate base, flowers arranged in a fascicle, lateral sepals connate into a synsepal that is somewhat similar to the dorsal sepal, a bilobed stigma, and a lip lying on or slightly elevated above the synsepal (Luer 2005, Sierra-Ariza 2023, Wilson *et al.* 2018).

Here, we describe and illustrate a new species of *Pleurothallis* subsection *Macrophyllae-Fasciculatae* from the Tropical Moist Forest from Valle del Cauca Department in the Western Andes of Colombia, morphologically similar to a diverse group of species with small yellow flowers up to 3 cm long and cordate leaves.

Materials and methods. The description and drawings were prepared from living specimens and flowers preserved in 70% alcohol. Flowers were dissected, measured, and photographed using Celestron

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Handheld Digital Microscope Pro. Vegetative structures were measured from dried material and reproductive structures from spirit material. Digital images were taken with a Nikon D750 and a Nikon 105mm f/2.8 macro lens. Sketches from living and preserved specimens were digitized, and the images were used for diagramming a draft composite template in Adobe Photoshop® CS6. A digital composite line drawing was then made (lines and stippling) in Procreate illustration application for iPad 6th generation tablet computer (Bogarín *et al*. 2019). The new species was described following the botanical terminology by Beentje (2010) and Stearn (1992). All original descriptions of related species were consulted for detailed comparisons (Luer 2005). We consulted specimens from the following herbaria: AMES, COL, CUVC, HUA, JAUM, JBB, VALLE, CAUP and MO (online), and no additional material of the new species was found.

Taxonomic treatment

Pleurothallis celsia Gal.-Tar. & J.S.Moreno ***sp. nov.*** (Fig. 1–2).

TYPE: COLOMBIA. Valle del Cauca: Municipio de Buenaventura, represa del Alto Anchicayá, Parque Nacional Natural Farallones de Cali, 976 m, 23 May 2020. *R. Galindo- Tarazona 1463* (holotype: CUVC). (Fig. 1–2)

Diagnosis: *Pleurothallis celsia* is most similar to *Pleurothallis folsomii* (Luer & Endara) J.M.H.Shaw from which it can be distinguished by having a 3-veined dorsal sepal (*vs*. 5-veined) and most notably by its lip, which is widely ovate, the surface and margin pilose and papillate, with the base of the glenion densely vesiculose (*vs*. ovate, the surface smooth and the margins serrate, the base of the glenion smooth).

Plant epiphytic, caespitose, erect to suberect, 15.6–23.0 cm tall. *Roots* slender, up to 0.64 mm in diameter. *Ramicauls* 12.4–19.8 cm long, with a tubular sheath on the lower third and two other sheaths at the base, the sheaths papyraceous, light brown. *Leaf* coriaceous, ovate, acuminate to long acuminate, 7.8–8.2 × 3.85–3.95 cm, the base deeply cordate. *Inflorescence* a fascicle of successive flowers, up to 4 simultaneous flowers, enclosed at the base by a spathaceous bract *ca*. 1.07 cm long; *peduncle* terete, 1.86–2.61 mm long; *floral bract* tubular, papyraceous, acute, 5.11–6.98 mm long. *Pedicel* terete, 7.7–8.35 mm long. *Ovary* verrucose, terete, longitudinally sulcate, 4.36–4.69 mm long. *Flowers* with the perianth yellow. *Sepals*, membranaceous, glabrous. *Dorsal sepal*, lanceolate, obtuse, 7.21–9.18 × 2.98–4.22 mm, 3-veined, the veins carinate on the adaxial surface. *Lateral sepals* connate into an ovate, acute synsepal, concave at base, 6.08–7.83 × 4.39–5.34 mm, 6-veined. *Petals*, linear, falcate, the surface and margin pilose, acute, 3.43–4.85 × 1.06–1.25 mm, 1-veined. *Lip*, fleshy, widely-ovate, rounded, the surface and margin pilose and papillate, 2.06–2.83 × 1.76–2.54 mm, 3-veined, central lip shallowly concave at the base of the glenion, the glenion obovate, the base with two rounded and elevated, pronounced lobes, densely vesiculose. *Column*, short, semiterete, 1.04–1.20 mm long, with a short foot, thick; stigma apical, bilobed. *Anther cap* yellow-cream, apical, obovate, papillose, 0.85 × 1.67 mm. *Pollinia* two, obovoid.

Eponymy: In honor of the energy company CELSIA, that has contributed to the exploration, description, and conservation of the flora, in particular, orchids, in the Farallones de Cali National Natural Park in collaboration with the National Park, Universidad del Valle, and other institutions of the region. The epithet is used here as a noun in apposition.

Distribution and ecology: *Pleurothallis celsia* was discovered and described as an epiphyte of secondary vegetation along the edge of the roads (Fig. 3) in the western slope of the Western Cordillera, near a hydroelectric dam within the National Natural Park Farallones de Cali, where the species might be very well protected, due to the access for the general public being highly restricted (Moreno *et al*. 2020).

Discussion. *Pleurothallis celsia* (Fig 4A) belongs to a group of species with similar, concolorous yellow flowers that mainly differ by the number of veins in the sepals and the shape and indumentum of the petals and lip. The new species is morphologically most similar to *Pleurothallis folsomii* (Fig. 4B) from Pan-

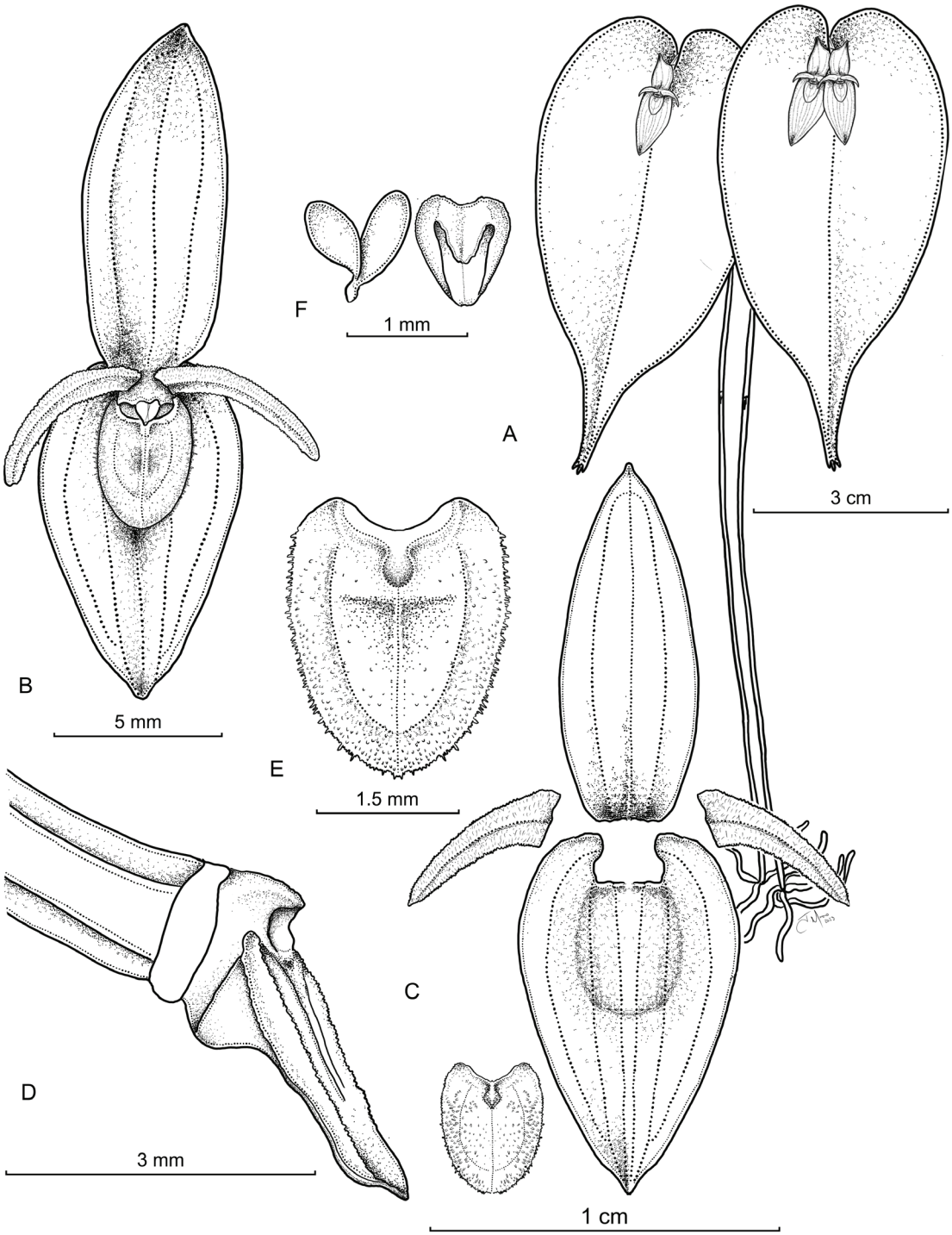

Figure 1. *Pleurothallis celsia* Gal.-Tar. & J.S.Moreno. **A**. Habit. **B**. Flower. **C**. Dissected perianth. **D**. Lip and column lateral view. **E**. Lip, adaxial and abaxial views. **F.** Anther cap and pollinia. Illustration by J.S.Moreno based on the type.

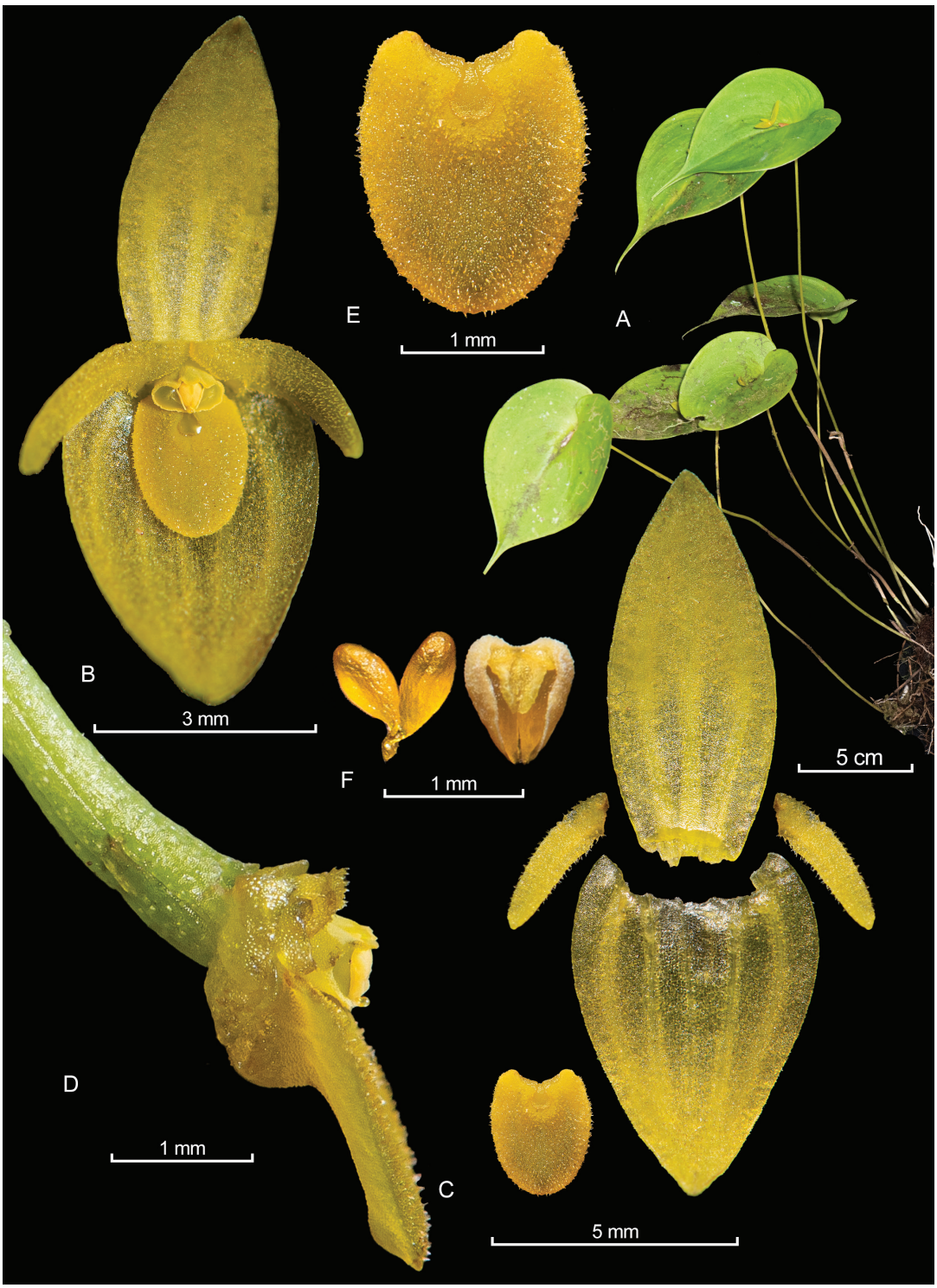

FIGURE 2. *Pleurothallis celsia* Gal.-Tar. & J.S.Moreno. **A**. Habit. **B**. Flower. **C**. Dissected perianth. **D**. Lip and column lateral view. **E**. Lip, adaxial and abaxial views. **F.** Anther cap and pollinia. LCDP by J.S.Moreno.

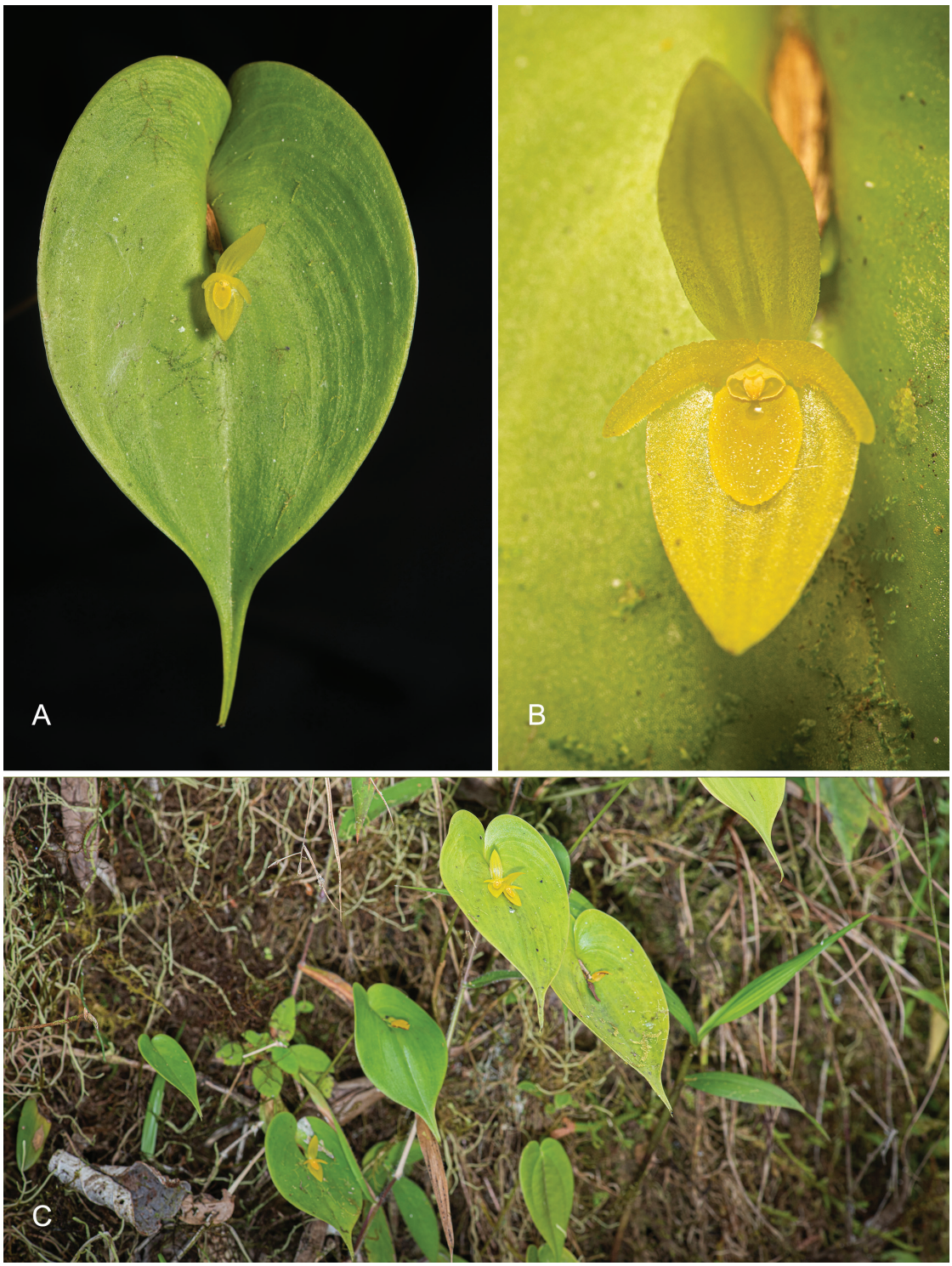

Figure 3. *Pleurothallis celsia* Gal.-Tar. & J.S.Moreno. **A**. Leaf and flower, front side. **B**. Flower. **C**. Habit and growth, *in situ*. Photographs by J.S.Moreno (A, B) and R. Galindo-Tarazona (C).

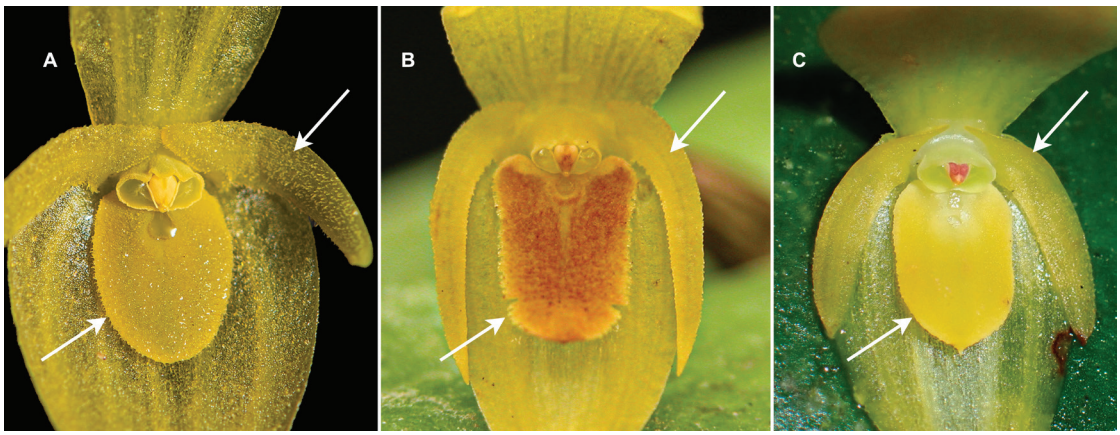

FIGURE 4. Most similar species to *Pleurothallis celsia* Gal.-Tar. & J.S.Moreno. **A**. *Pleurothallis celsia* **B.** *Pleurothallis folsomii* (Luer & Endara) J.M.H.Shaw. **C**. *Pleurothallis carduela* (Luer) J.M.H.Shaw. The white arrows show the margin and surface of the lip and petals of the three species. Photographs by J.S. Moreno (A), M. Wilson (B) and Rudy Gelis (C).

ama as mentioned in the diagnosis, but is also similar to *Pleurothallis carduela* (Luer) J.M.H.Shaw (Shaw 2016) (Fig. 4C) from Ecuador (Luer 2005), a species that is characterized by having a 7-veined dorsal sepal (*vs*. 3-veined), minutely denticulate margin of the petals and smooth indument (*vs*. margin and indument pilose) and the lip elliptical (vs. broadly ovate) with the indument and the margin denticulate (*vs*. indument and margin pilose and papillate).

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LITERATURE CITED

Beentje, H. (2010). *The Kew Plant Glossary an illustrated dictionary of plant Terms*. Royal Botanical Gardens, Kew (eds). Richmond, UK: Kew Publishing.

Bernal, R., Gradstein, S. R. & Celis, M. (2016). Catálogo de plantas y líquenes de Colombia. Bogotá D. C., Cundinamarca, Colombia. Retrieved from http://catalogoplantasdecolombia.unal.edu.co [Accessed 04, 04, 2023].

Bogarín, D., Eberhard, K. & Díaz-Morales, M. (2019). *Lepanthes elusiva* a New Species of *Lepanthes* (Orchidaceae: Pleurothallidinae) from Tapantí Area in Cartago, Costa Rica and a Glance to Other Species of the Genus in a Small Area Around the Río Grande de Orosi in Costa Rica. *Die Orchidee*, 5(03), 17–28.

Brown, R. (1813). Clasis XX. Gynandria-Monandria. *Hortus Kewensis; or, a Catalogue of the Plants Cultivated in the Royal Botanic Garden at Kew*, 5, 188–220.

Karremans, A. P & Vieira-Uribe, S. (2020). *Pleurothallids Neotropical Jewels - Volume I*. Quito, Ecuador: Imprenta Mariscal. 320 pp.

Karremans, A. P., Moreno, J. S., Gil-Amaya, K., Gutiérrez Morales, N., Espinosa, F., Mesa, S., Restrepo, E., Rincón-González, M., Serna, A., Sierra-Ariza, M., & Vieira-Uribe, S. (2023). Colombian Orchidaceae: A Catalogue of the Pleurothallidinae. *Lankesteriana*, 23(2), 181–400.

Lindley, J. (1859). *Folia Orchidacea. An enumeration of the known species of orchids*. London, England: J. Matthews. 9–12 pp.

Luer, C. A. (1986). *Icones Pleurothallidinarum III: Systematics of Pleurothallis. Monographs in Systematic Botany from the Missouri Botanical Garden*, 20, 1–109.

Luer, C. A. (1989). *Icones Pleurothallidinarum* VI. Systematic of Pleurothallis subgenus *Ancipitia*, subgenus *Scopula* and *Trisetella*. Addendum to *Porroglossum*. *Monographs in Systematic Botany, Missouri Botanical Garden*, 31, 1–125.

Luer, C. A. (1998). *Icones Pleurothallidinarum* XVII. Systematics of subgen. *Pleurothallis* sect. *Abortivae*, sect. *Truncatae*, sect. *Pleurothallis*, subsect. *Acroniae*, subsect. *Pleurothallis*, subgen. *Dracontia*, subgen. *Unciferia* (Orchidaceae). *Monographs in Systematic Botany from the Missouri Botanical Garden*, 72, 1–121.

Luer, C. A. (1999). *Icones Pleurothallidinarum* XVIII. Systematics of *Pleurothallis*, subgen *Pleurothallis*, sect *Pleurothallis*, subsect *Antenniferae*, subsect *Longiracemosae*, subsect *Macrophyllae-Racemosae*, subsect *Perplexae*, subgen *Pseudostelis*, subgen *Acuminatia*. Monographs in Systematic Botany from the Missouri Botanical Garden, 76, 1–182.

Luer, C. A. (2005). *Icones Pleurothallidinarum* XXVII: *Dryadella* and *Acronia* section *Macrophyllae-Fasciculatae*: addenda to *Acianthera, Andinia, Dracula, Dresslerella, Lepanthes,* and *Masdevallia;* new taxa, validation of taxa, errata. *Monographs in Systematic Botany from the Missouri Botanical Garden,* 103, 1–311.

Ministerio de Ambiente y Desarrollo Sostenible y Universidad Nacional de Colombia (2015). *Plan para el estudio y la conservación de las orquídeas en Colombia.* Textos: Betancur, J., H. Sarmiento-L., L. Toro-González & J. Valencia. Ministerio de Ambiente y Desarrollo Sostenible, Colombia; Universidad Nacional de Colombia, Bogotá D.C. Pp.336.

Moreno, J.S., Baquero R., L. E., Vieira-Uribe, S. (2020). Two new species of *Lepanthes* (Orchidaceae: Pleurothallidinae) from the Anchicayá river valley in Colombia. *Harvard Papers in Botany*, 25, 99–110. https://doi.org/10.3100/hpib.v25iss1.2020.n13

Shaw, J. M. H. (2016). Quarterly supplement to the international register and checklist of orchid hybrids (Sander´s List), January – March 2016 Registrations. *The Orchid Review*, 124, 1–40.

Sierra-Ariza, M. A. (2023). Two new species of *Pleurothallis* (Pleurothallidinae) subsection *Macrophyllae-Fasciculatae* from the Central Andes of Colombia. *Lankesteriana*, 23(1), 35–44. https://doi.org/10.15517/lank.v23i1.54321

Stearn, W. T. (1992). *Botanical Latin* (4th ed.). Portland, USA: Timber Press.

Wilson, M., Zhao, K., Hampson, H., Frank, G., Romoleroux, K., Jiménez, M. & Pérez, Á. J. (2018). A new species of *Pleurothallis* (Orchidaceae: Pleurothallidinae) in subsection *Macrophyllae-Fasciculatae* with a unique, highly reduced, morphologically distinct labellum. *Lankesteriana*, 18(3), 217–230. doi: 10.15517/LANK.V18I3.35495