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NOMENCLATURAL NOTES IN *MASDEVALLIA* (ORCHIDACEAE: PLEUROTHALLIDINAE) FROM COLOMBIA

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Abstract. We reassess three taxonomic and nomenclatural problems in Colombian *Masdevallia* through the comparison of living plants, herbarium material, and literature. We recognize *M. affinis* as distinct from *M. laevis* based on its pale-yellow flowers, more open sepaline tube, strongly recurved lateral sepals, and lip morphology. We describe *M. assurgens* f. *purpurea* for plants with predominantly purple sepals, yellow tails and a yellow lip marked with dark purple. We also clarify the type citations for *M. bicolor* and its heterotypic synonyms, designate lectotypes for *M. peruviana* and *M. herzogii*, and supersede the previously designated neotype of the latter with original material.

Resumen. Se reevalúan tres problemas taxonómicos y nomenclaturales de *Masdevallia* en Colombia mediante la comparación de plantas vivas, material de herbario, y literatura. Se reconoce *M. affinis* como distinta de *M. laevis* basados en sus flores amarillo pálido, tubo sepalino más abierto, sépalos laterales fuertemente recurvados, y la morfología del labelo. Se describe *M. assurgens* f. *purpurea* para plantas con sépalos predominantemente purpúreos, colas amarillas y un labelo amarillo con marcas púrpura oscuro. Asimismo, se aclaran las citas de tipos de *M. bicolor* y sus sinónimos heterotípicos, se designan lectótipos para *M. peruviana* y *M. herzogii* y se sustituye el neotipo previamente designado de esta última por material original.

Keywords / Palabras clave: color floral, delimitación de especies, especímenes de herbario, floral color, herbarium specimens, lectotipificación, lectotypification, species delimitation, tipificación, Tolima, typification

Introduction. *Masdevallia* Ruiz & Pav. is a species-rich genus of Pleurothallidinae distributed from Mexico to Bolivia and Brazil, with its greatest diversity in the Andes (Karremans, 2016; Karremans & Vieira-Uribe, 2020; Pridgeon, 2005). Its diversity in Colombia has been documented in national catalogs and recent taxonomic studies (Bernal *et al.*, 2015; Karremans *et al.*, 2023). New species continue to be described across its range (Bogarín *et al.*, 2017; Collantes *et al.*, 2021; Galindo-Tarazona *et al.*, 2021; Gutiérrez del Pozo *et al.*, 2022; Monteros *et al.*, 2022; Pessoa & Karremans, 2022). However, species discovery must be accompanied by the reassessment of existing names, especially where broad synonymies obscure the differences between geographically separated populations.

Masdevallia species are generally recognized by a combination of short, one-leaved ramicauls with an annulus below the leaf abscission layer, usually connate and caudate sepals, petals bearing a marginal or longitudinal callus, and a lip hinged to an extension of the column-foot (Luer, 2000a; Pridgeon, 2005). Several of these features also occur in other Pleurothallidinae and are not individually diagnostic

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of the genus. Consequently, the shape, orientation, indumentum and color of the floral organs must be assessed together when delimiting species.

Three problems motivate the present study. First, *M. affinis* Lindl., described from the slopes of Nevado del Tolima, was treated as a synonym of *M. laevis* Lindl. (Luer, 2001; Karremans *et al.*, 2023). Recent collections from the Tolima region allowed a renewed comparison of floral morphology with the original material. Second, purple-flowered plants of *M. assurgens* Luer & R.Escobar differ in color from the pale-flowered expression; documenting this variation allows us to describe it as a color form instead of a distinct species. Third, the type citations of *M. bicolor* Poepp. & Endl. and its synonyms require clarification, particularly for names based on different flowering events in cultivation and on types deposited in the Berlin herbarium (B) and subsequently destroyed.

Materials and methods. Plant material was collected during fieldwork conducted between 2023 and 2026 in the municipality of Ibagué, Tolima, Colombia. Locality, elevation, habitat and geographical coordinates were recorded, and living plants from the study area were examined for morphological descriptions. Flowering material was preserved in 75% ethanol and 25% water. Lankester composite dissection plates (LCDPs) were compiled from photographs taken with a Nikon D5600 camera equipped with a Micro Nikkor 55 mm f/3.5 lens. The plates were assembled in Adobe Photoshop at 300 dpi. Voucher information is provided in the taxonomic treatment, including the cited specimens at JBB and TOLI and the additional collection reported at SURCO. All plant material was collected under the Framework Collection Permit granted by the ANLA to the José Celestino Mutis Botanical Garden of Bogotá, pursuant to Resolution 001971, as amended by Resolution 986.

Living plants were compared with type material and other specimens consulted in Colombian herbaria (COL, FAUC, HUA, JAUM, JBB, MEDEL, TOLI, UDBC and VALLE) and foreign collections (AMES, G, K, MA, MO, P, US, W and Y), through physical specimens or digital images. Herbarium acronyms follow Index Herbariorum (Thiers, 2025). The literature review included treatments from and outside Colombia, particularly the regional monographs of Luer (2000a, 2000b, 2000c, 2001, 2002, 2003), Karremans *et al.* (2023), and Rojas-Alvarado and Karremans (2024). We followed Rojas-Alvarado and Karremans (2024) for inflorescence terminology: a single-flowered coflorescence is distinguished from the entire inflorescence, and its elongated axis is named pseudopeduncle. The comparisons address floral shape, sepal connation and orientation, petal calli, lip morphology and color. Nomenclatural terminology and typification follow the Madrid Code (Turland *et al.*, 2025), particularly Articles 7–9.

Taxonomic treatment

Masdevallia affinis Lindl., Orchid. Linden. 5. 1846. Fig. 1–2.

TYPE: Colombia. Forests between Pan de Azúcar and Boquerón, on the slopes of Tolima, 9000–12000 ft, flowering in January 1843, *J. Linden 1273* (holotype: K-006452237 (K-L)); isotypes: BR-0000006570439, G-00168825, W-R-39210, following Karremans *et al.*, 2023).

Plant epiphytic or growing at ground level, caespitose to shortly ascending, erect, up to 25 cm tall including the inflorescence. *Roots ca.* 1 mm in diameter, flexuous, fleshy. *Ramicauls* 4.0–7.5 cm long, erect, enclosed by 2–3 thin, tubular sheaths. *Leaf* up to 18 cm long including the petiole, erect and thickly coriaceous; blade 8.5–9.2 × 2.5–3.5 cm, rhombic-elliptic, gradually narrowed at the base into a petiole 6–9 cm long, apex obtuse. *Inflorescence* producing successive single-flowered coflorescences. *Pseudopeduncle ca.* 15 cm long, erect, cylindrical. *Floral bracts* 15 mm long, inflated. *Pedicel ca.* 25 mm long, cylindrical. *Ovary ca.* 10 mm long, cylindrical, ribbed. *Flowers* fleshy, pale yellow. *Dorsal sepal ca.* 66 mm long including the tail; blade 30 × 16 mm when expanded, rhombic, puberulent adaxially and connate basally to the lateral sepals for 6–8 mm; apex contracted into a slender, incurved tail *ca.* 35 mm long. *Lateral sepals ca.* 60 mm long including the tails; blades 24–26 × 9–10 mm when expanded, narrowly falcate-oblong, oblique at the base, puberulent adaxially and strongly recurved above the base; each apex contracted into a slender tail *ca.* 33 mm long. *Petals* 9.0–9.5 × 4.0 mm,

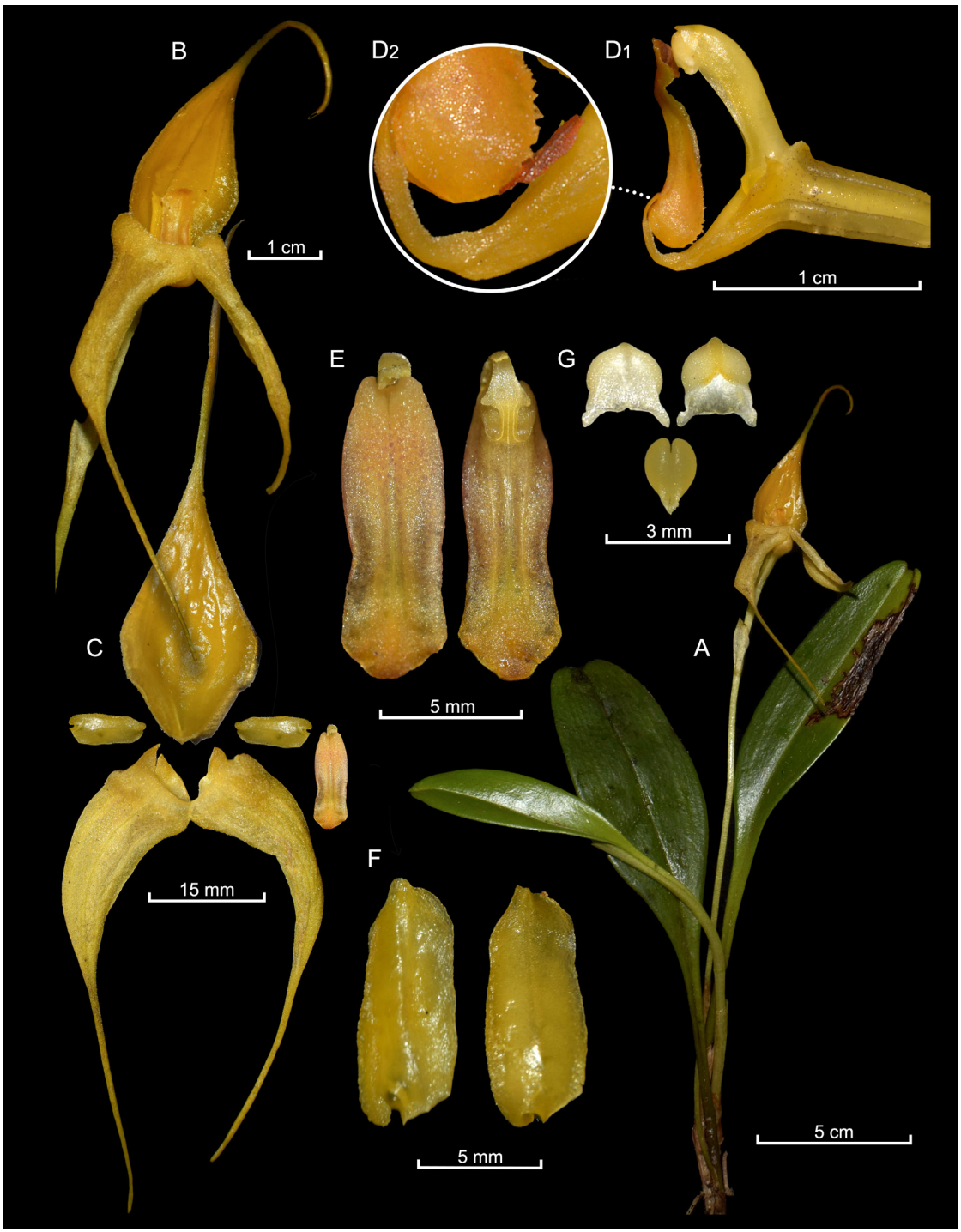

Figure 1. Lankester composite dissection plate of *Masdevallia affinis*. **A**. Plant habit. **B**. Flower, three-quarter view. **C**. Dissected perianth. **D1**. Column and lip, lateral view. **D2**. Detail of the lip surface. **E**. Lip, abaxial and adaxial views. **F**. Petal, two surface views. **G**. Anther cap and pollinarium. Prepared by D. Lozano-Cifuentes from *D. Lozano-Cifuentes & L. Arana 236* (JBB-41549).

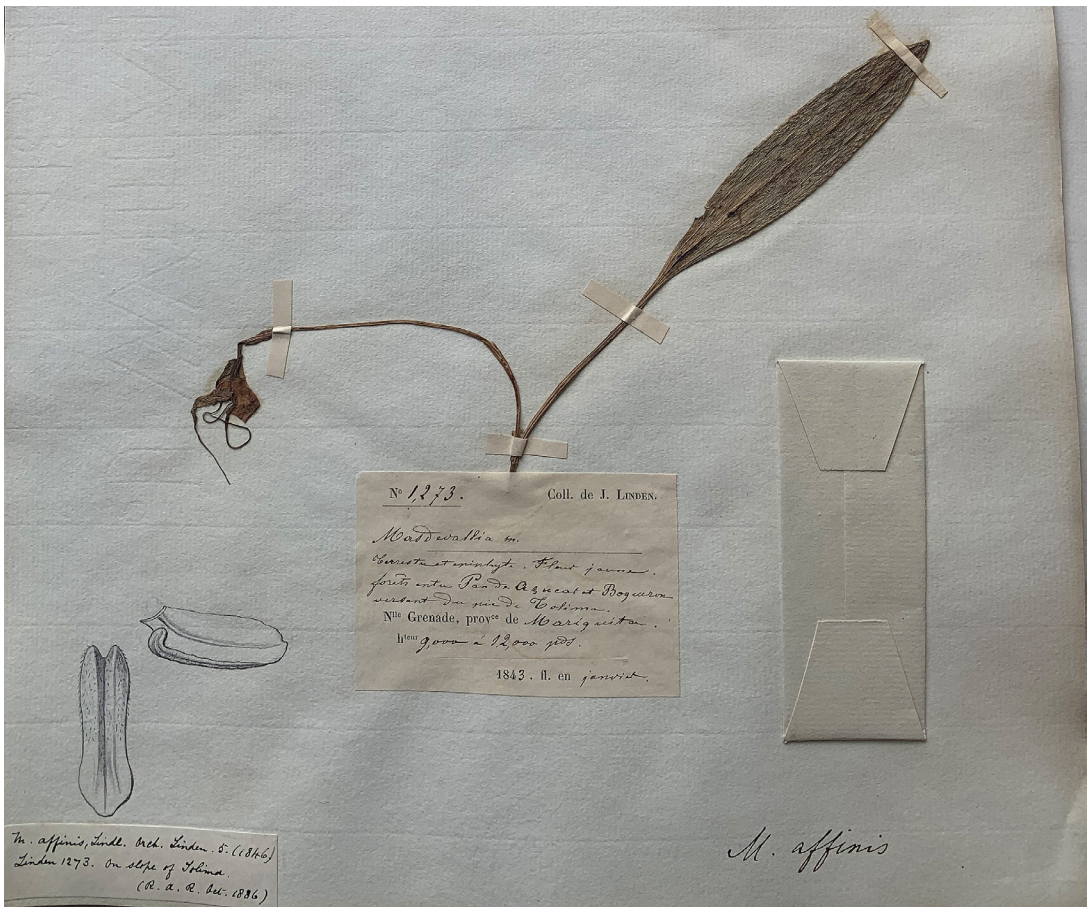

Figure 2. Herbarium sheet and floral drawing associated with *Masdevallia affinis*, *J. Linden 1273* (K!), collected on the slopes of Tolima, Colombia, flowering in January 1843. Captured by A.P. Karremans with the permission of the Board of Trustees of the Royal Botanic Gardens, Kew.

oblong, porrect and tightly flanking the lip and column; margin facing the lip with a low longitudinal callus ending in a blunt tooth above the base; apex shallowly notched. *Lip* 10.5–11.0 × 3.0–3.5 mm, oblong-panduRate, erect, attached basally to the column-foot by a thin, curved process *ca.* 2 mm long; adaxial surface with short trichomes near the base, shallowly sulcate between two low longitudinal calli, slightly broadened below the obtuse apex and somewhat thickened apically. *Column* 8–9 mm long, semiterete, with a stout foot 2–3 mm long. *Anther cap ca.* 1 × 1 mm, cucullate, white. *Pollinarium* composed of two obovate, yellow pollinia united by minute, granular caudicles.

Material examined: COLOMBIA. **Tolima**: Ibagué, El Rancho, Escuela Estambul, 2902 m, 4°36′00.72″N, 75°18′31.00″W, 11 Jan. 2015, *M. Rincón 341* (TOLI-020365). Ibagué, Ruta Sur al Nevado del Tolima, entre Lajas y Tierra de Gigantes, 3200 m, 4°37′26.40″N, 75°19′42.35″W, 21 Mar. 2024, *D. Lozano-Cifuentes & L. Arana 236* (JBB-41549). Ibagué, Ruta Sur al Nevado del Tolima, entre Lajas y Tierra de Gigantes, 3180 m, 4°37′22.48″N, 75°19′42.06″W, 18 Jan. 2026, *D. Lozano-Cifuentes 2348* (SURCO).

Phenology: Flowering material is documented in January and March.

Notes: *Masdevallia laevis* (Fig. 3–4) differs from *M. affinis* in its more conspicuous funnel-shaped sepaline tube, white to pink sepal blades with purple or brown markings, and less strongly recurved lateral sepal blades.

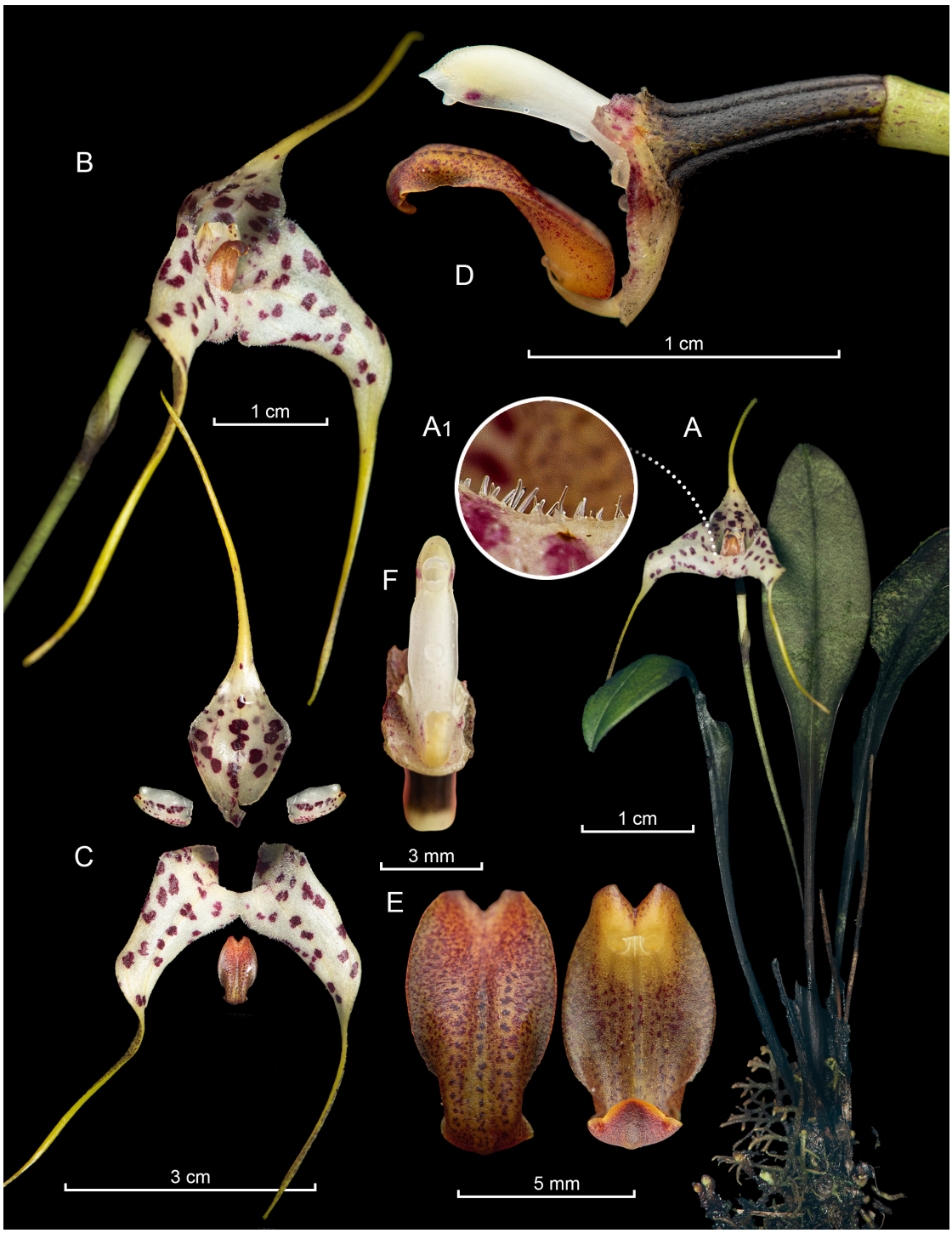

Figure 3. Lankester composite dissection plate of *Masdevallia laevis*. **A**. Plant habit. **A1**. Detail of sepal trichomes. **B**. Flower, three-quarter view. **C**. Dissected perianth. **D**. Column and lip, lateral view. **E**. Lip, two surface views. **F**. Column. Prepared by J. S. Moreno from *J. S. Moreno s.n.* (VALLE), Colombia, Nariño, Laguna De La Cocha, 2821 m, 20 Apr. 2026.

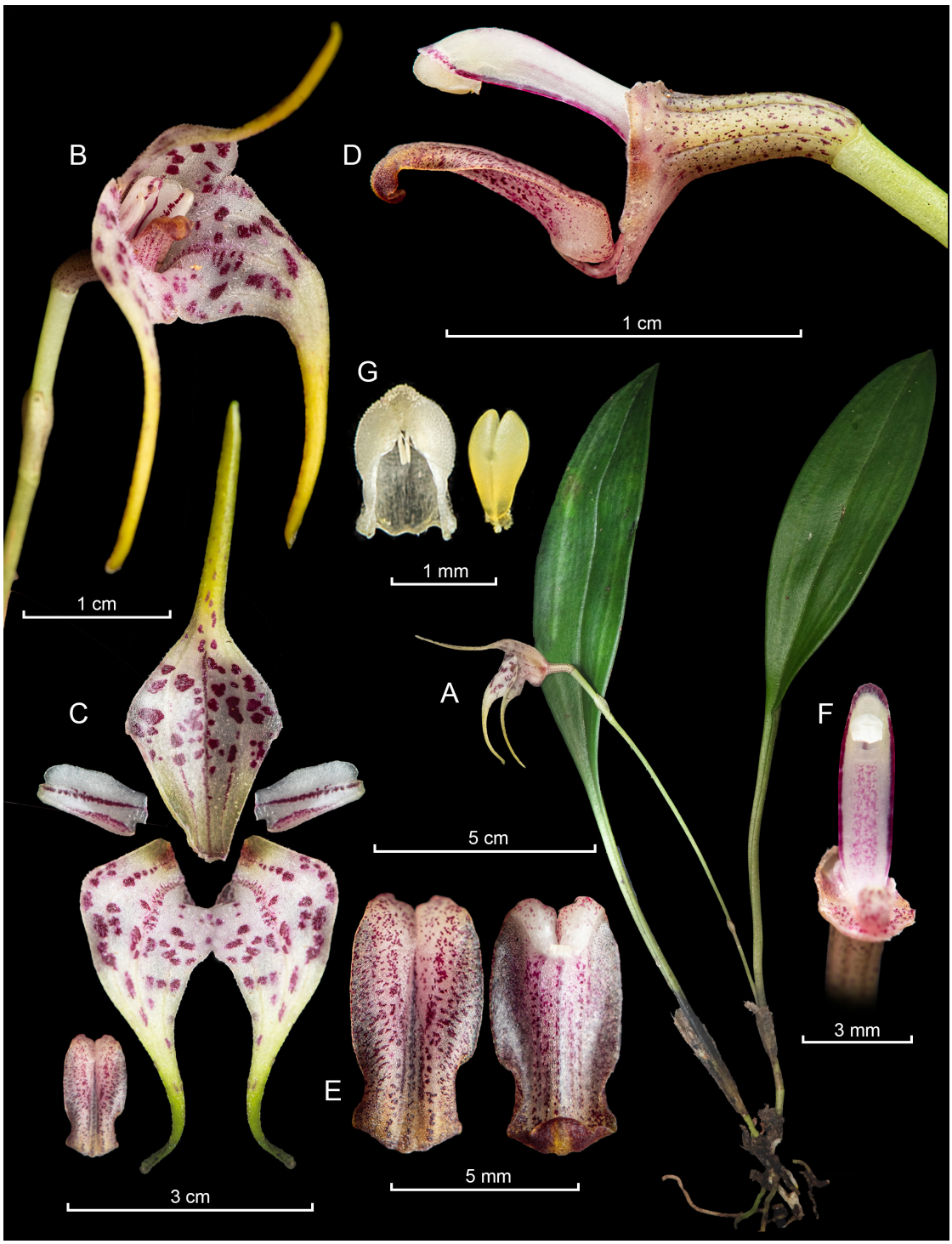

FIGURE 4. Lankester composite dissection plate of *Masdevallia laevis*. **A**. Plant habit. **B**. Flower, three-quarter view. **C**. Dissected perianth. **D**. Column and lip, lateral view. **E**. Lip, two surface views. **F**. Column. **G**. Anther cap and pollinarium. Prepared by J. S. Moreno from *J. S. Moreno s.n.* (VALLE), Colombia, Nariño, Laguna De La Cocha, 2821 m, 20 Apr. 2026.

Masdevallia affinis has pale yellow flowers, a more open basal sepaline tube and strongly recurved lateral sepals, with an erect dorsal sepal whose tail is incurved. Both species possess sepal trichomes, so their presence alone is not diagnostic. The short trichomes visible near the adaxial base of the lip of *M. affinis* should be assessed together with lip shape, sepal architecture and color, rather than used as a single exclusive character.

Masdevallia assurgens f. ***purpurea*** Lozano-Cifuentes, J.S.Moreno & Karremans, ***f. nov***. Fig. 5.

TYPE: Colombia. **Tolima**: municipio de Ibagué, Ruta Sur al Nevado del Tolima, entre Lajas y Tierra de Gigantes, 3200 m, 21 Mar. 2024, *D. Lozano-Cifuentes 128* (holotype: JBB-41545).

Diagnosis: The new form differs from the typical pale-flowered expression of *Masdevallia assurgens* in the predominantly purple sepals and yellow tails, rather than white or yellow sepals with orange tails, and in the yellow lip with dark purple markings, rather than a whitish-yellow lip. The adaxial surface of the dorsal sepal is pale with purple veins.

Plant up to 50 cm tall, large, growing at ground level, scandent. *Rhizomes* 2–6 cm long between ramicauls, erect to suberect. *Roots* up to 1.5 mm in diameter, slender, arising at nodes along the rhizome. *Ramicauls* 5–18 cm long, stout, ascending to erect, enclosed by 1–2 basal sheaths and a loose tubular sheath near the middle. *Leaf* 10–23 × 3.0–4.5 cm including the petiole, erect, elliptic, coriaceous; blade cuneate at the base and subacute to obtuse at the apex; petiole 3–7 cm long. *Inflorescence* producing successive single-flowered coflorescences. *Pseudopeduncle* 10–30 cm long, erect, arising low on the ramicaul, marked with dark purple spots and bearing a tubular bract below the middle. *Floral bract* 15–30 mm long, tubular, acuminate. *Pedicel* 25–40 mm long, cylindrical, marked with dark purple spots. *Ovary* 10–12 × 3–4 mm, cylindrical, dark purple, with six straight ribs. *Flowers* fleshy, with predominantly dark purple sepal surfaces and yellow sepal tails; adaxial sepal surfaces microscopically hairy. *Dorsal sepal* 70–80 × 15–18 mm when expanded; blade obovate, purple abaxially and pale with six purple veins adaxially, connate basally to the lateral sepals for *ca.* 15 mm, forming a broad cylindrical tube; obtuse apex contracted into an erect, slender, yellow tail 40–50 mm long. *Lateral sepals* 65–70 × 27–30 mm when expanded; blades oblong-subfalcate, oblique, purple abaxially and reddish to purple adaxially, connate to each other basally for 5–7 mm and forming a deep mentum with the column-foot; acute, incurved apices contracted into slender, yellow tails 30–40 mm long. *Petals* 10–12 × 5–6 mm, triangular, white, with a broad basal claw; margin facing the lip with a low longitudinal callus ending in a short, retrorse process between the basal and middle thirds; apex narrowly obtuse-subapiculate. *Lip* 16–19 × 6–7 mm when expanded, oblong, yellow with purple spots on the hypochile and mesochile and dark purple on the epichile; hinged base subtruncate and narrowly cleft; apex obtuse and trilobulate. *Column* 10–12 × 2–3 mm, semiterete, white suffused with purple, with a foot *ca.* 9 mm long ending in a slender, incurved extension. *Anther cap* 2.0 × 1.8 mm, cucullate, white with a yellow margin. *Pollinarium* 1.7 × 1.4 mm, composed of two obovate, yellow pollinia united by minute, granular caudicles.

Etymology: From the Latin *purpureus*, purple, referring to the predominant color of the sepals.

Material examined: COLOMBIA. **Chocó**: municipio de Nóvita, flanco occidental del Macizo de Tatamá, Valle de Las Brisas, lado sur, 3600 m, 22 Feb. 1983, *J. H. Torres et al. 2486* (COL-267634, COL-267651). **Tolima**: municipio de Ibagué, corregimiento de Juntas, camino hacia el Nevado del Tolima, Tierra de Gigantes, 3000–3500 m, 20 Jan. 2015, *M. Rincón-González 336* (TOLI).

Phenology: The cited material was collected in flower in January–March and December.

Distribution and ecology: *Masdevallia assurgens* f. *purpurea* is reported from Tolima in the Cordillera Central and Chocó in the Cordillera Occidental. The cited localities include the southern route to Nevado del Tolima, Alto de la Línea, and the Tatamá massif, at elevations of 3000–3600 m, as stated on the cited vouchers. Plants from the Tolima study area grow at ground level in humid Andean forest. Plants occur in association with *M. cucullata* Lindl. and *M. uncifera* Rchb.f.

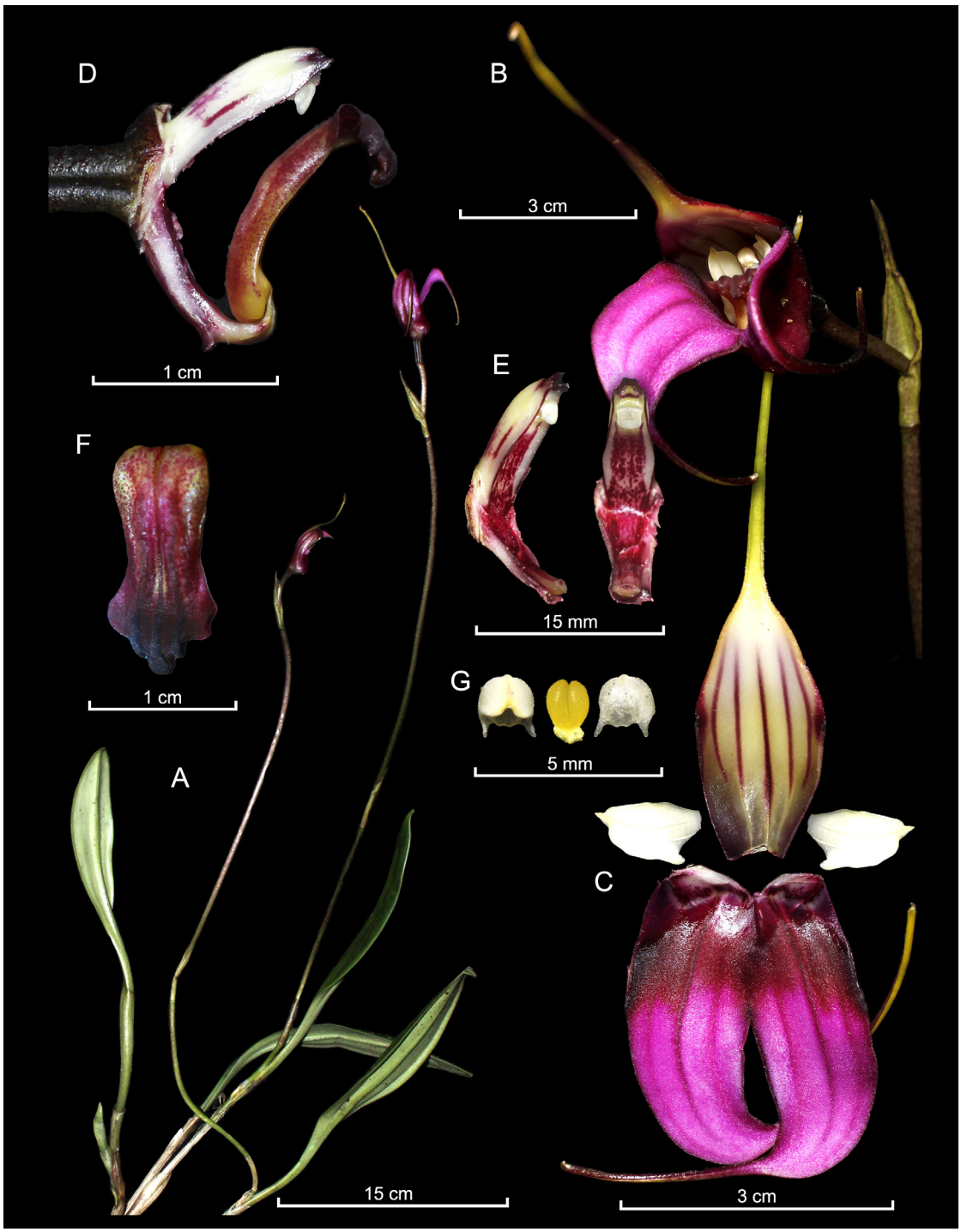

FIGURE 5. Lankester composite dissection plate of *Masdevallia assurgens* f. *purpurea*. **A**. Plant habit. **B**. Flower, three-quarter view. **C**. Dissected perianth, showing the pale adaxial surface of the dorsal sepal with purple veins and the predominantly purple lateral sepals. **D**. Column and lip, lateral view. **E**. Column, lateral and ventral views. **F**. Lip, adaxial view. **G**. Anther cap and pollinarium. Prepared by D. Lozano-Cifuentes from *D. Lozano-Cifuentes 128* (JBB-41545).

Notes: The purple-flowered form is distinguished from the typical expression of *M. assurgens* by floral color, particularly the p*ur*p*l*e sepals, yellow tails, and yellow lip marked with dark purple. These differences are treated at the rank of form rather than as evidence of a distinct species or geographically isolated lineage. Whether this color pattern is genetically fixed or discontinuous within the species remains to be tested.

Masdevallia bicolor Poepp. & Endl., Nov. Gen. Sp. Pl. 2: 6, pl. 108B. 1836. Fig. 6.

TYPE: Peru. Huánuco, forests near Cuchero, on old trees, flowering in January, *E. Poeppig 1662* (holotype: W-0023683, following Karremans *et al.*, 2023).

= *Masdevallia auropurpurea* Rchb.f. & Warsz., Bonplandia 2: 115. 1854.
TYPE: Colombia. Nueva Granada, *J. von Warszewicz s.n.* (lectotype: W-R-47222, designated by Luer, 2000a).

= *Masdevallia peruviana* Rolfe, Bull. Misc. Inform. Kew 1906: 112. 1906.
TYPE: Peru, cultivated at Glasnevin, flowering in July 1898 (lectotype, designated here: K-000077850). Other specimens: cultivated at Glasnevin, flowering in June 1901 (K-000077852) and 10 Apr. 1902 (K-000077851).

= *Masdevallia herzogii* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 10: 42. 1922.
TYPE: Bolivia. Santa Cruz, mountain forest near Tres Cruces, 1500 m, Feb. 1911, *T. Herzog 1642* (holotype: B, destroyed; lectotype, designated here: L-0329676). Superseded neotype: Bolivia, northeast of Chuspipata, above Yolosa, 2100 m, 3 Apr. 1984, *J. C. Solomon & M. Uehling 12915* (MO-150014; designated by Luer, 2000a).

= *Masdevallia xanthura* Schltr., Repert. Spec. Nov. Regni Veg. 27: 39. 1929.
TYPE: Bolivia. La Paz, Larecaja, Hacienda Simaco, above Tipuani, 1400 m, [Feb.] 1920, *O. Buchtien 5022* (holotype: B, destroyed; lectotype: AMES-00101340, also cited as AMES-026530, designated by Luer, 2000a; isolectotypes: HBG-501780, US-00093533, US-00438801).

= *Masdevallia subumbellata* Kraenzl., Repert. Spec. Nov. Regni Veg. Beih. 34: 107. 1925.
TYPE: Colombia. Cauca, Popayán, *F. C. Lehmann 4129* (lectotype: W-R-0007980, designated by Karremans *et al.*, 2023; isolectotypes: AMES-00106808, G-00168767). Remaining syntype: Ecuador, Loja, *Hübsch s.n.* (W-R-0016017).

Notes: The type specimen of *M. bicolor*, *Poeppig 1662*, at W-0023683 agrees with the original collection, and Karremans *et al.* (2023) cite it as the holotype. Therefore, we retain that published interpretation without making a new typification. The presence of an author-associated name on a sheet is evidence of its historical association with the taxon, but does not alone establish that it was the only material used in preparing the protologue (Articles 9.1–9.2 of the Code).

Luer (2000a) designated the specimen *Warszewicz s.n.* at W-R-47222 as the lectotype of *M. auropurpurea*. Later, Karremans *et al*. (2023) cited the same specimen as the holotype, which requires reconciliation with the original wording of Luer's treatment. We therefore retain Luer's criteria and do not infer a holotype status for the specimen.

The material of *M. peruviana* reported at K comprises preparations from three flowering events, in July 1898, June 1901 and April 1902. The reference in the protologue to those flowering events supports the author examining all three preparations, but their origin from the same cultivated plant does not make them duplicates of a single gathering. Moreover, uncited material qualifies as original material only when its association with, and availability to, the author can be established (Article 9.4 of the Code). We designate the July 1898 preparation (K-000077850) as lectotype, restricting the choice to the specimen explicitly associated with the flowering event cited in the protologue. The designation does not depend on calling the 1901 and 1902 preparations syntypes. Luer (2000a) referred to preparations with two different dates as the holotype; that wording must be distinguished from selection of a single nomenclatural specimen. Article 9.17 applies to a first-step designation covering more than one specimen of a single gathering, not automatically to preparations made on different dates.

Luer (2000a) designated *Solomon & Uehling 12915* (MO-150014) as the neotype of *M. herzogii* after its holotype in Berlin was destroyed. The duplicate of *Herzog 1642* (L-0329676) is original material from the collection cited in the protologue. It is designated

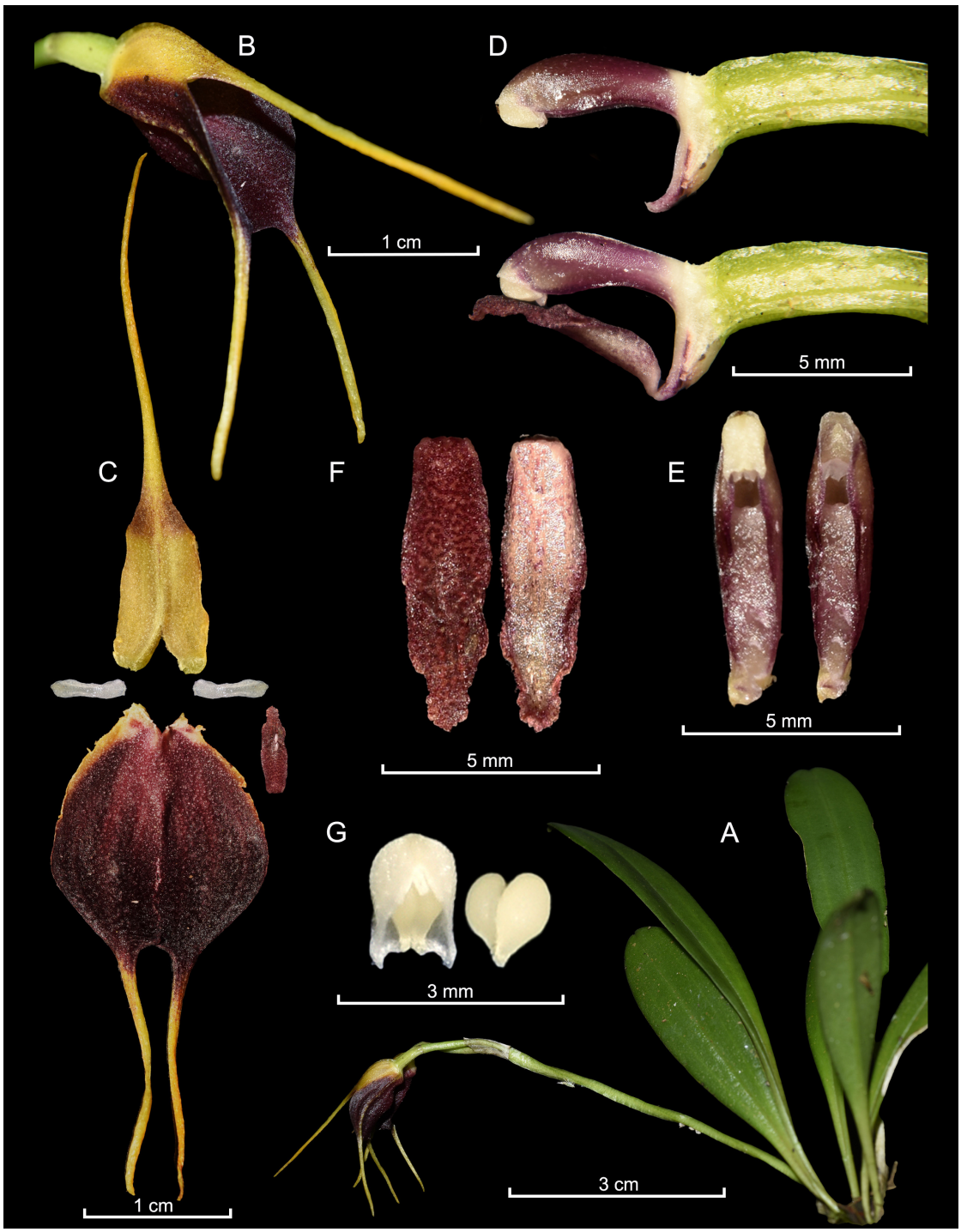

FIGURE 6. Lankester composite dissection plate of *Masdevallia bicolor*. **A**. Plant habit. **B**. Flower, three-quarter view. **C**. Dissected perianth. **D**. Column alone and with the lip, lateral views. **E**. Column, ventral views. **F**. Lip, two surface views. **G**. Anther cap and pollinarium. Prepared by D. Lozano-Cifuentes from *D. Lozano-Cifuentes 410* (JBB), Colombia, Antioquia, Urrao, vereda Guapantal, Reserva Natural Casa Towá, 2165 m, 11 Jul. 2024.

here as lectotype under Articles 9.11–9.12, superseding the neotype under Article 9.19(a).

The lectotype of *M. xanthura* selected by Luer (2000a) at AMES replaces the holotype destroyed in Berlin. The surviving duplicates of the selected specimen are consequently cited as isolectotypes.

We follow the lectotypification of *M. subumbellata* (W-R-0007980) made by Karremans *et al.* (2023). The duplicates at AMES and G are isolectotypes; the Ecuadorian specimen collected by Hübsch is retained as a remaining syntype.

Orthographic variant and names not validly published: *M. atropurpurea* Rchb.f., Ann. Bot. Syst. 6: 1216. 1865, is listed in POWO as an orthographic variant associated with *M. auropurpurea. M. biflora* É.Morren, Ann. Gén. Hort. 9: 128. 1873, and *M. aureorosea* Weberb., Pfl.-Welt Peruan. Anden: 288. 1911, are listed as nomina nuda (Royal Botanic Gardens, Kew, 2026). These names are mentioned for completeness, but the nomina nuda are not treated as validly published names.

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