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MASDEVALLIA LEONOR-BAEZIANA (PLEUROTHALLIDINAE): A NEW SPECIES FROM THE ANDEAN-AMAZONIAN FOOTHILLS OF CAQUETÁ, COLOMBIA

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Abstract. We describe and illustrate a new species of *Masdevallia* from the Andean-Amazonian foothills of Caquetá, Colombia. *Masdevallia leonor-baeziana* belongs to *Masdevallia* subsect. *Saltatrices*, within the *M. constricta* group. It is most similar to *M. constricta*, but it can be distinguished by the shorter sepals and sepaline tails that do not surpass the tube length, and the shorter, sigmoid-ovate lip. We proposed categorizing the species as Critically Endangered (CR) based on the B and D IUCN red list criteria.

Resumen. Describimos e ilustramos una nueva especie de *Masdevallia* del piedemonte Andino-Amazónico de Caquetá, Colombia. *Masdevallia leonor-baeziana* pertenece a *Masdevallia* subsecc. *Saltatrices*, dentro del grupo *M. constricta*. Es similar a *M. constricta*, pero puede diferenciarse por los sépalos y colas sepalinas más cortos que no sobrepasan el largo del tubo, y el labelo más corto, sigmoide-ovado. Proponemos la categorización de la especie como Críticamente Amenazada (CR) siguiendo los criterios B y D de la lista roja de la IUCN.

Keywords/Palabras clave: Amazonia, Andes, biodiversidad, biodiversity, foothills, neotrópicos, neotropics, piedemonte.

Introduction. The genus *Masdevallia* Ruiz & Pav. with about 640 species is one of the most diverse genera in the Pleurothallidinae subtribe (Karremans 2016, Karremans & Vieira-Uribe 2020), being outnumbered only by *Stelis* Sw. with nearly 1250 species (Karremans 2019) and *Lepanthes* Sw. with over 1150 species (Bogarín *et al.* 2019). *Masdevallia* is distributed from southern Mexico to Bolivia and Brazil, growing from 0 to 4000 m of elevation (Pridgeon *et al*. 2005). The center of diversity is in the Andes of Colombia, Ecuador, and Peru (Bogarín *et al*. 2017, Luer 2003). Despite the long-standing academic and horticultural interest in orchids, and the numerous species inventories, new species of *Masdevallia* are still frequently discovered and described across the neotropics (e.g. Collantes *et al.* 2021, Galindo-Tarazona *et al.* 2021, Gutiérrez del Pozo *et al.* 2022, Monteros *et al.* 2022, Pessoa & Karremans 2022). Currently, 154 species of *Masdevallia* are known to occur in Colombia, 131 of which are from the Andes, four from Amazonia, eight from the Biogeographic Chocó, four from the Magdalena River valley, two from the Sierra Nevada of Santa Marta, and three from the other natural regions of the country (Bernal *et al*. 2019).

The Andean-Amazonian foothills serve as a transition zone between the Andes and the Amazon biomes, and this region is threatened by agricultural expansion and deforestation. Such threats lead to the loss of the original cover and the consequent habitat fragmentation, soil degradation, and biodiversity loss (Armenteras *et al*. 2006, Hoffman *et al*. 2018). The Caraño river watershed, located in the Andean-Amazonian foothills

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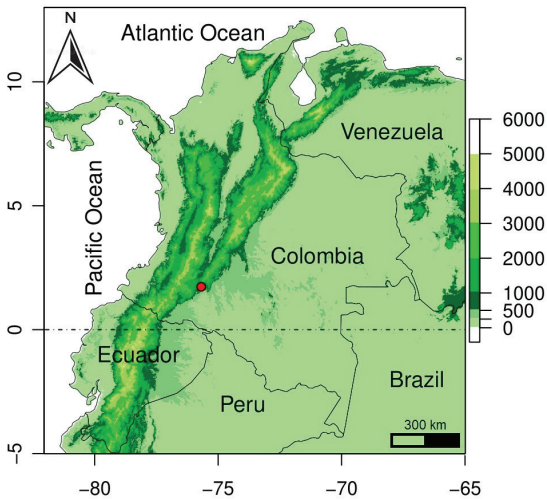

FIGURE 1. Type locality (red point) of *Masdevallia leonor-baeziana* in the Andean-Amazonian foothills of Caquetá, Colombia. Map by O. Perdomo.

of Caquetá, Colombia, covers an area of 69.9 km^2 and spans elevations from 860 to 2680 m. This area is home to a great diversity of orchids, with more than 120 species registered (O. Perdomo pers. obs.). Therefore, efforts to study and conserve these species and implement policies for the protection and sustainable use of the remaining forests in this area are necessary.

Expeditions in the Caraño River watershed were carried out as part of the research project "*Strategy for knowledge, study, and conservation of the orchid flora of the Andean-Amazonian foothills of Caquetá department*." A *Masdevallia* specimen bearing a flower with white sepals and yellow tails was found during the fieldwork. The specimen, which is morphologically similar to *M. constricta* Poepp. & Endl., proved to be different from the other species of *Masdevallia*. After an exhaustive comparison of the plant and flowers with previously described taxa (Luer 2002, 2003, Guitérrez del Pozo *et al.* 2022, Monteros *et al.* 2022, Pessoa & Karremans 2022), we determined it is a new species. Here we name the taxon, provide detailed images in the form of a Lankester Composite Digital Plate (LCDP), and compare it with morphologically similar species of the *M. constricta* group.

Materials and methods. The species described here was collected in a botanical expedition carried out in November 2021, in a cloud forest of the Caraño river basin, in Caquetá, Colombia (Fig. 1). *In situ* notes on the habitat, phenology, distribution, and detailed photographs of the specimens were recorded. The botanical exsiccatae were pressed, dried, and deposited at CUVC and HUAZ. Subsequent expeditions were carried out to search for more individuals in the forest around the type locality and nearby forests, but we didn't find any more individuals. For the conservation status assessment, we used the geographic range (B criterion) and the number of mature individuals (D criterion) of the International Union for Conservation of Nature categories and criteria (IUCN 2022).

Taxonomic treatment

Masdevallia leonor-baeziana Os.Perd., Edwin Trujillo & Karremans, ***sp. nov.*** Fig. 2, 3F.

TYPE: Colombia. Caquetá: cuenca hidrográfica del río Caraño, Vereda El Caraño, camino real hacia la finca Las Brisas, 926 m, agosto de 2022, *O. Perdomo et al. OP465* (holotype, CUVC; isotype, HUAZ).

Diagnosis: *Masdevallia leonor-baeziana* is similar to *M. constricta* (Fig. 3A–B), but easily distinguished by the much shorter size of the sepals (dorsal sepal 5.5 *vs.* 7.0–8.2 cm long), gradually narrowing (*vs.* abruptly contracted) into notoriously shorter tails (2.0–2.3 *vs.* 4.0–4.5 cm long), which do not exceed the sepaline tube length (*vs.* tails significantly longer than the sepaline tube), the petals smaller (5.8–6.1 × 1.9–2.0 *vs.* 7–8 × 3 mm), the lip sigmoid-ovate, triangular above the middle, gradually narrowing towards apex (*vs.* sigmoid-ligulate, with a claw above the middle, broadened towards a truncate apex), and shorter (4.9–5.2 *vs.* 6 mm long).

Plant epiphytic, caespitose, erect, up to 11 cm tall. *Roots* flexuous, to 1.2 mm in diameter. *Ramicauls* erect, up to 1.2 cm long, enclosed by 2–3 tubular sheaths 1.0–1.4 cm long. *Leaf* blade bright green, petiole dark purple, erect to suberect, coriaceous, elliptic, obtuse, emarginate, with a short apiculus, 4.0–12.0 cm long including the 1.3–3.0 cm long petiole, 0.7–2.1 cm wide, the base gradually narrowed. *Inflorescence* single flowered. *Peduncle* light green, suberect, to 4 cm long, enclosed by tubular bracts. *Floral bract* tubular, 1 × 8 mm. Pedicel light green, cylindric, 14 mm

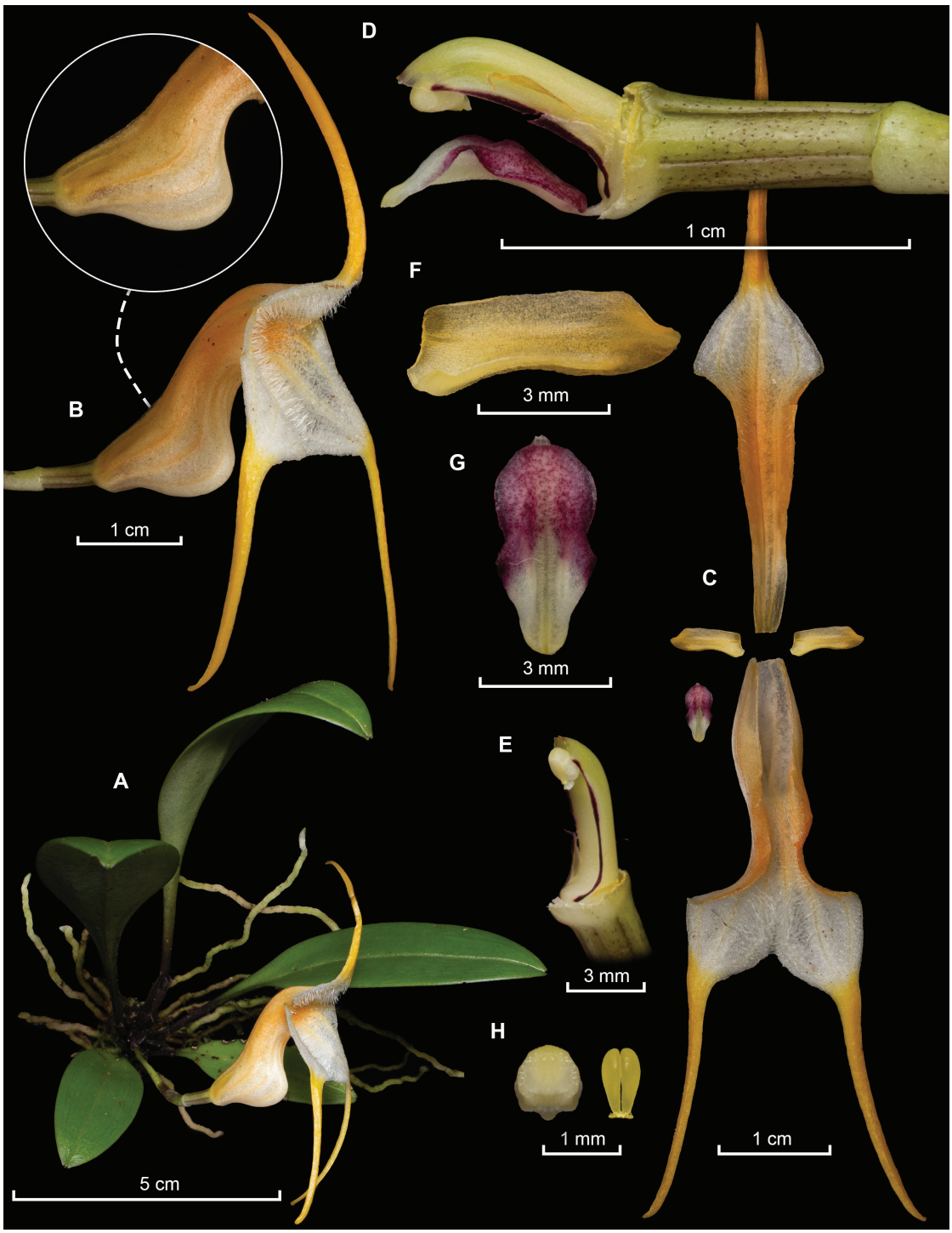

FIGURE 2. Lankester Composite Digital Plate (LCDP) of *Masdevallia leonor-baeziana*. **A**. Habit. **B**. Flower. **C**. Dissected perianth. **D**. Ovary, column and lip, lateral view. **E**. Column, ventral view. **F**. Petal. **G**. Lip, dorsal view. Photographs and plate by E. Restrepo based on the type (*Perdomo et al*. *OP465*, CUVC).

FIGURE 3. Diverse members of the *Masdevallia constricta* group. **A**. *M. constricta* fo. *constricta*, from close to the type locality in Peru. **B**. *M. constricta* fo. *glabra*. **C**. *M. rex*. **D**. *M. fuchsii*. **E**. *M. ampullacea*. **F**. *M. leonor-baeziana*. Photographs by L. Ocupa (A), R. Parsons (B–E), and O. Perdomo (F). Plate by A.P. Karremans.

long. *Ovary* cylindric, purplish-green 6 × 2 mm, with 6 straight ribs. *Flowers* fleshy, white suffused with light orange, the sepaline tails yellow, the petals yellowish-orange, the lip white conspicuously spotted fuchsia below the middle, the column greenish with a purple margin. *Sepals* long-pubescent from the middle of the tube to above the middle of the loose blades. *Dorsal sepal* oblanceolate, 5.5 cm long contracted into a tail of 2.3 cm long, 1.1–1.2 cm wide in the middle, connate for 2.1–2.2 cm to the lateral sepals to form a cylindri-

cal, ventricose sepaline tube, the free portion ovate. *Lateral sepals* oblanceolate, oblique, 5 cm long including the 2 cm long tails, connate for 2 cm to form a lamina 1.5–1.6 cm wide when expanded. *Petals* asymmetrically quadrate, oblique, unguiculate, 5.8–6.1 × 1.9–2.0 mm, the apex acute, the laminar margin with a low, longitudinal callus. *Lip* sigmoid-ovate, base subtruncate, hinged beneath, margin forming a pair of lobes above the middle, centrally convex, lightly channeled, 4.9–5.2 × 2.2–2.5 mm, apex rounded. *Column* semiterete, 5.5–6.0 × 1.5 mm, provided with a foot 1.0 mm long, with a short, incurved extension. *Anther cap* white, cucullate, 1.0 × 0.9 mm; *pollinarium* composed of two yellow obovate pollinia, 1.0 × 0.3 mm, united by minute, granular caudicles.

Etymology: The name honors Carmen Leonor Báez de Perdomo, mother of the first author, who inspired his love for nature and led him to study plants and their interactions.

Distribution and habitat: *Masdevallia leonor-baeziana* is currently known only from a single population with less than 30 individuals growing as an epiphyte in a primary Andean forest at around 1000 m of elevation. This population is located on the watershed of the Caraño river in the Caquetá department of Colombia.

Phenology: The plants were observed flowering from August to December in 2022, and April to May 2023.

Morphological affinities: The new species is a member of *Masdevallia* subsect. *Saltatrices* (Rchb.f.) Luer, all of which share having deeply connate sepals that form a long sepaline tube, which is often ventricose. *Masdevallia leonor-baeziana* belongs to the *M. constricta* group, which, besides *M. constricta* (Fig. 3A–B), includes *M. aurea* Luer, *M. tubata* Schltr., *M. rex* Luer & Hirtz (Fig. 3C), *M. fuchsii* Luer (Fig. 3D), and *M. ampullacea* Luer & Andreetta (Fig. 3E); none previously known to occur in Colombia. Morphologically, the most similar species are *M. constricta* and *M. fuchsii*. From the former, the new species is easily distinguished by the much shorter size of the sepals (dorsal sepal 5.5 *vs.* 7.0–8.2 cm long), gradually narrowing (*vs.* abruptly contracted) into notoriously shorter tails (2.0–2.3 *vs.* 4.0–4.5 cm long), which do not exceed the sepaline tube length (*vs.* tails significantly longer than the sepaline tube), the petals smaller (5.8–6.1 × 1.9–2.0 *vs.* 7–8 × 3 mm), the lip sigmoid-ovate, triangular above the middle, gradually narrowing towards apex (*vs.* sigmoid-ligulate, with a claw above the middle, broadened towards a truncate apex), and shorter (4.9–5.2 *vs.* 6 mm long). *Masdevallia leonor-baeziana* can be distinguished from the Peruvian *M. fuchsii* by longer sepals (dorsal sepal 5.5 *vs.* 3.3–3.5 cm long), gradually narrowing (*vs.* abruptly contracted) into longer tails (2.0–2.3 *vs.* 1.0–1.2 cm long), that are subequal to the length of the tube (*vs.* tails half the length of the tube), and the sigmoid-ovate lip (*vs.* oblong-ligulate).

Conservation status: *Masdevallia leonor-baeziana* is endemic to Colombia, currently known from a single population growing in a secondary forest beside a rural road. The surrounding area, composed of secondary forest patches, farmlands, and pastures, is in a continuous deforestation process for new cultivation areas and wood extraction. Therefore, the sole population of *M. leonor-baeziana* comprises 17 individuals growing on the trunk of a big tree (Lauraceae), and its distribution is restricted to the type locality. This implies that the AOO is 4km^2, and the EOO is considered as the 70 km^2 of the watershed of the Caraño river, meeting the B1 and B2 criteria for CR category, plus the qualifiers "a" because of the unique population known, and "b" because of the continuing decline observed in the Extent of Occurrence - EOO (*i*), the Area of Occupancy - AOO (*ii*), and the quality of the habitat (*iii*). Furthermore, the number of individuals found indicates a very small population that accomplishes the same category in the D criterion. Therefore, we categorize this species as Critically Endangered (CR) following the B and D red list criteria of the IUCN, under the code B1+2a,b(*i,ii,iii*)+D1.

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