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**THREE NEW SPECIES OF *MASDEVALLIA*
(ORCHIDACEAE: PLEUROTHALLIDINAE) FROM THE AYACUCHO
AND PUNO REGIONS IN PERU**

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ABSTRACT. Three new species of *Masdevallia*, subgenus *Masdevallia* are described, illustrated with line drawings and color photographs, one dwarf species in section *Coriaceae* and two attractive and rather large species in section *Masdevallia*. The former section is also treated as the genus *Byrsella* by Luer (2006). All three new species are distinguished by unique combinations of features that separate them from all other species in the large genus *Masdevallia*.

KEY WORDS: New *Masdevallia*, Pleurothallidinae, Epidendreae, Epidendroideae, Peru

In 2006 the popular genus *Masdevallia* Ruiz & Pav. had become expansive with over 500 species, classed into numerous subdivisions (Luer, 2000a, 2000b, 2001, 2002, 2003). This vast number of species, in combination with molecular investigations by various authors (Abele *et al.*, 2005; Pridgeon & Chase, 2001), encouraged Luer to split the genus into 16 new genera, in addition to the 4 already existing, which included *Masdevallia* (Luer, 2006). Although splitting large genera into smaller units may sometimes be helpful in order to make them more easily surveyed from a taxonomic point of view, the authors do not recognize the advantages of the 2006 division of *Masdevallia*. We find it more difficult to identify which genus many of the morphologically similar species really belong to, and believe it to be more user-friendly and practical to maintain the previous and more conservative taxonomic treatment of the genus, as circumscribed by Luer (2000a, 2000b, 2001, 2002, 2003).

TAXONOMIC TREATMENT

Masdevallia goettfertiana Dalström & Ruiz-Pérez, *sp. nov.*

TYPE: Peru. Puno, Cerro Marrón, 2000 m, S 14° 12.351'; W 69° 13.408', flowered in cultivation by Perúflora in December 2013, *S. Dalström et al.* 3743 (holotype: USM). Figs. 1-3.

Diagnosis. *Masdevallia goettfertiana* belongs to the subgenus *Masdevallia*, section *Coriaceae* which is mainly characterized by the thick leaf, the fleshy sepals, petals without any descending process, and a fleshy and verrucose lip. The dwarf plant habit with fleshy, pale glaucous leaves in combination with the fleshy flower with apically very narrow petals readily separate this species from all others in the genus.

Epiphytic *herb.* Plant dwarf for the subgenus, caespitose. *Ramicauls* erect, slender, to *ca.* 7 mm long, enclosed basally by 3 to 4 tubular sheaths. *Leaf* glaucous on both sides, erect to arching, coriaceous and fleshy, petiolate, blade basally conduplicate and cuneate, elliptic, obtuse, 35–55 × 7–8 mm, including the 5–15 mm long petiole. *Inflorescence* purple mottled, erect, terete, uniflowered, with a to *ca.* 15 mm long peduncle; *peduncular bract* 1, basal, tubular, *ca.* 4.5 mm long; *floral bract* appressed, tubular, *ca.* 6 mm long; *pedicel* to *ca.* 6 mm long; *ovary* deeply sulcate, indistinctly rugose, *ca.* 2.5 mm long. *Flower* shallowly cupulate and fleshy; *dorsal sepal* pale yellow, carinate externally, glabrous, connate to the lateral sepals for *ca.* 3–4 mm, then broadly acuminate and turning into an indistinct fleshy cauda, *ca.* 15 × 5 mm, including the tail; *lateral sepals* similar in texture, dark brown, except for the pale translucent base covered by dark purple

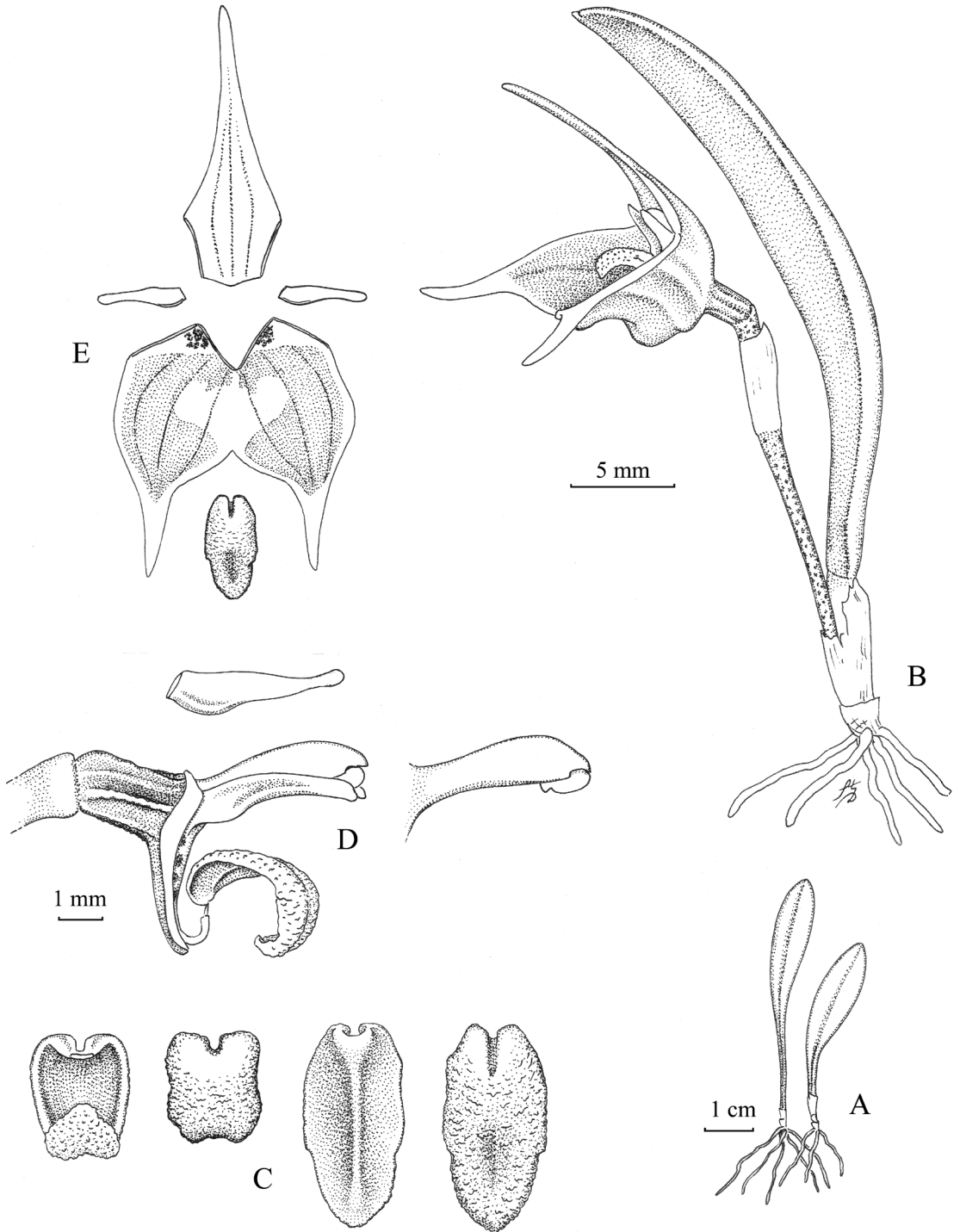


FIGURE 1. *Masdevallia goettfertiana*. A. Leaves. B. Plant habit with flower. C. Lip dorsal and ventral views in natural state and flattened. D. Column, lip and petals, lateral views. E. Dissected flower. Drawn from the holotype by Stig Dalström.



FIGURE 2. *Masdevallia goettfertiana*, flower in cultivation, front view. Photo of the plant that provided the holotype by S. Dalström.



FIGURE 3. *Masdevallia goettfertiana*, flower in cultivation, lateral view. Photo of the plant that provided the holotype by S. Dalström.



FIGURE 4. Former habitat of *Masdevallia goettfertiana* and many other species. Photo by S. Dalström.

spots, and the yellow indistinct and short tails, indistinctly carinate externally, *ca.* 12–13 × 12–13 mm combined, including the *ca.* 2–3 mm long tails, connate to each other for *ca.* 4–5 mm; *petals* whitish, cartilaginous, obliquely and narrowly ovate and with a short fleshy, ventral keel, then with a narrow and elongate midsection with a rounded apex, *ca.* 4 × 1 mm; *lip* dorsally dark purple, ventrally white, fleshy and minutely erose, hinged on the column foot by a minute strap-like tissue, lamina ovate, obtuse, with indistinct angles above the middle, carinose and sub-verrucose, basally distinctly channeled, which turns into a shallow, longitudinal groove above the middle, and with a recurved apex, *ca.* 4 × 2 mm when flattened; *column* pale yellowish green with purple

lateral stripes, almost straight, *ca.* 4.5 mm long, with an equally long, curved foot with a hook-shaped apex; *anther cap* whitish and campanulate; *pollinia* not seen.

The first plant of *Masdevallia goettfertiana* was found growing epiphytically at eye level on a dead branch along an old and well frequented trail. The habitat is characterized by secondary and very dense brush vegetation. The original plant was without any flower at the time of collection, but flowered the following year in cultivation. The dwarf plant with fleshy and glaucous leaves immediately gave rise to the notion that it probably represented something different and probably a new species. It came as a surprise, however, to realize that this small but charming orchid belongs to the section *Coriaceae* Rchb.f. a group of usually much larger species.

ADDITIONAL MATERIAL SEEN: Peru. Only a small population of plants has been observed in the same location as the holotype. No other collections known.

DISTRIBUTION AND HABITAT: *Masdevallia goettfertiana* has only been found in a single location in scrubby and dense cloud forest on Cerro Marrón, between San Juan del Oro and Pilcopata, where the habitat is severely threatened by deforestation. Fig. 4.

Eponymy: This species is named in honor of Peter Göttfert, of Västerås, Sweden, an avid orchid enthusiast and well known Swedish nursery man, who is also a great supporter of orchid research.

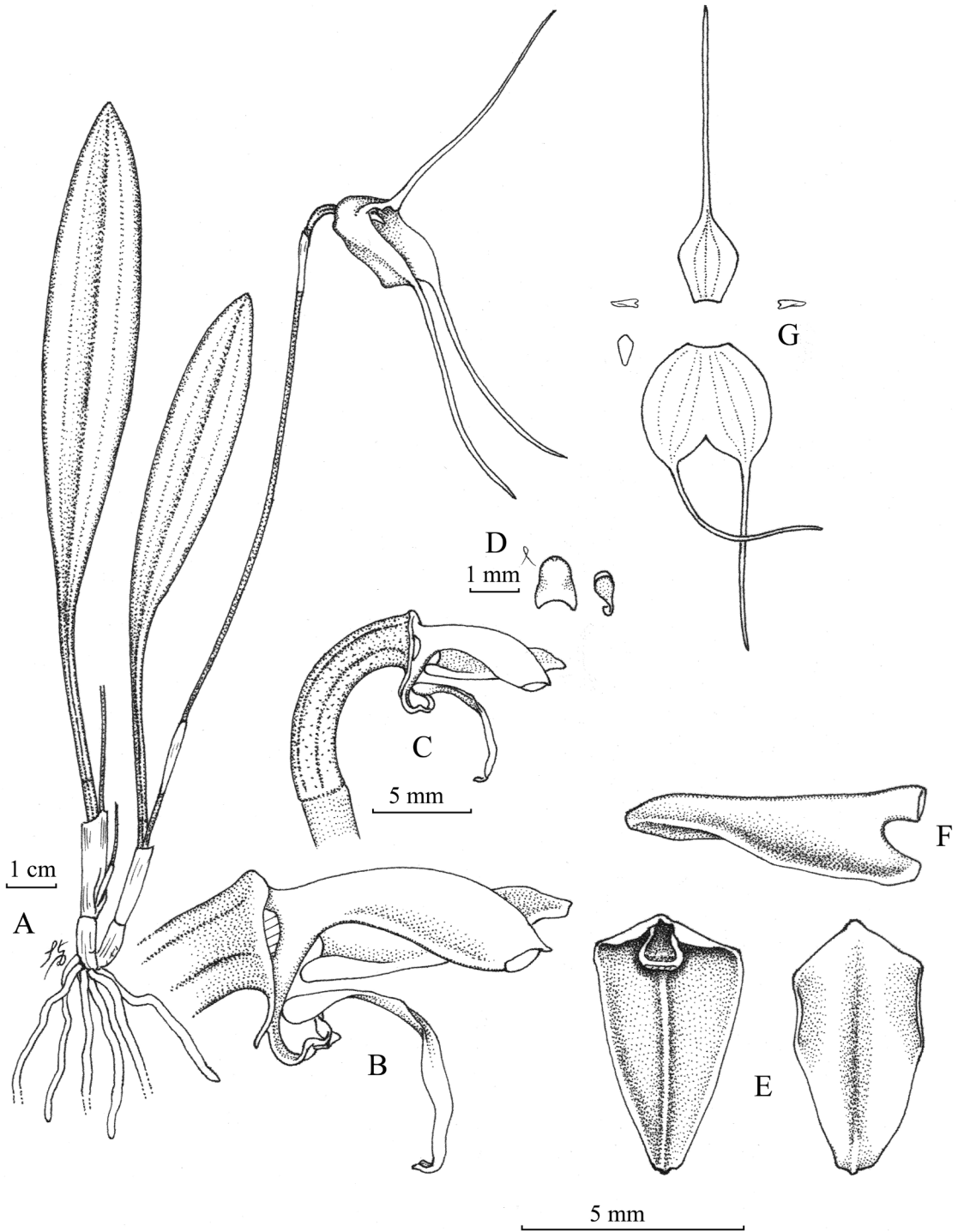


FIGURE 5. *Masdevallia robineae*. A. Plant habit. B. Column, lip and petal, lateral view. C. Ovary, column, lip and petal view. D. Anther cap and pollinia. E. Lip dorsal and ventral views. F. Petal internal lateral view. G. Flower dissected. Drawn from the holotype by Stig Dalström.

Masdevallia robineae Dalström & Ruíz-Pérez, *sp. nov.*

TYPE: Peru. Puno, east of Ollachea, Camatani, La Villa, epiphytic in mossy cloud forest at 2115 – 2200 m elevation, flowered in cultivation Nov. 2014, *S. Dalström* 3774 (holotype: USM). Fig. 5.

Diagnosis. *Masdevallia robineae* belongs to the subgenus *Masdevallia*, section *Masdevallia*, subsection *Masdevallia*, and is distinguished by the white and basally pale yellow flower, with a triangular and rather flat lip with a truncate apex with an indistinct apiculum.

Lithophytic or epiphytic *herb*. *Plant* medium sized to large for the genus, caespitose. *Ramicauls* erect, slender, to ca. 4 cm long, enclosed basally by 2 or 3 tubular sheaths. *Leaf* erect to arching, coriaceous, petiolate, blade basally conduplicate and cuneate, elliptic, obtuse, to ca. 14 × 2 cm, including the ca. 4 cm long petiole. *Inflorescence* erect, terete and slender, single flowered, with a to ca. 13 cm long peduncle; *peduncular bracts* 2 (one hidden inside basal bract), tubular, below the middle of the peduncle, to ca. 16 mm long; *floral bract* appressed, tubular, to ca. 12 mm long; *pedicel* to ca. 13 mm long; *ovary* smooth, indistinctly sulcate, with scattered minute ‘fungal-pits’ (tiny pits where some fungi appear to establish in the wild), ca. 11 mm long. *Flower* attractive, cupulate; *dorsal sepal* basally pale lemon yellow and apically whitish, indistinctly carinate externally, glabrous, basally cuneate and connate to the lateral sepals for ca. 10 mm, then obtuse and acuminate into a narrow, suberect to arching yellow tail, ca. 60 × 12 mm, including the ca. 45 mm long tail; *lateral sepals* similar in coloration but with pale orange basally, indistinctly carinate externally, glabrous, connate to each other for ca. 20 mm, broadly and slightly obliquely elliptic, obtuse, acuminate with pale greenish yellow tails, ca. 65 × 27 mm combined, including the ca. 40 mm long tails; *petals* white, cartilaginous and slightly oblique, unguiculate, with a distinct ventral lobe, extending longitudinally and ending in a fleshy ridge near the bluntly obtuse apex, ca. 7 × 2.5 mm; *lip* white, hinged on the apex of the hook-shaped column foot via a canaliculated, strap-like structure, cuneate with involute basal margins in a fresh state (cordate basally when flattened), lamina almost triangular with a bluntly truncate and minutely apiculate apex, almost flat but

with a shallow longitudinal groove and indistinctly erect lateral lobes, ca. 5.5–6.0 × 3 mm when flattened; *column* white with a purple base, curved downwards, ca. 6 mm long, with a slightly shorter, apically hook-shaped foot; *anther cap* white and campanulate; *pollinia* 2, minute and pyriform.

Masdevallia robineae (Figs. 5-7) is an attractive species and is sympatric with the equally attractive and rare *M. leonii* (Fig. 8) of subsection *Caudatae*.



FIGURE 6. *Masdevallia robineae*. Flowering plant in natural habitat. Photo by Stig Dalström.

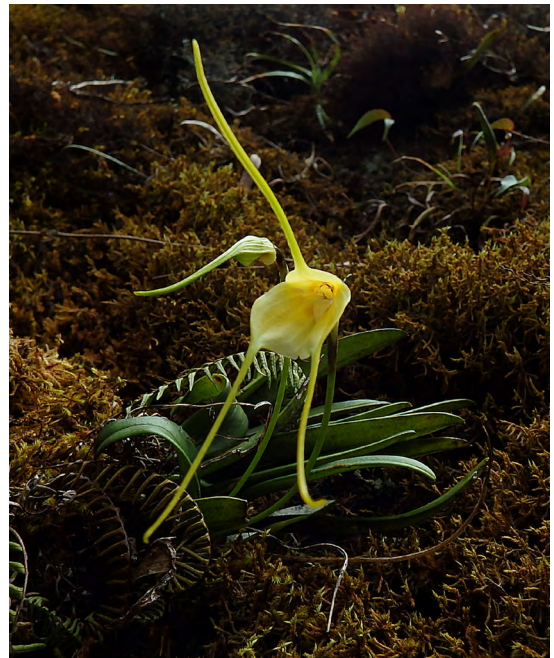


FIGURE 7. *Masdevallia robineae* in situ. Photo by S. Dalström.

Generally, the former species has a much longer leaf of a more slender shape, versus the much shorter, broadly ovate and paddle-shaped leaf of the latter species. The flowers are also quite different in shape. However, a plant with longer and slender leaves was found without flowers previous to the discovery of the type plant of *M. robineae*. It was believed to be something ‘different’ from *M. leonii*, which had previously been observed in flower. When the ‘long-leaved’ plant later flowered, however, it turned out to be a perfect *M. leonii*. Whether this was the result of natural hybridization or just some freak anomaly is unknown.

ADDITIONAL MATERIAL SEEN: Peru. Puno, east of Ollachea, Camatani, La Villa, lithophytic in shade on mossy boulder along the road, at 2200 m elevation, S



FIGURE 8. *Masdevallia leonii* in situ. Photo by S. Dalström.



FIGURE 9. *Masdevallia robineae* habitat along the Ollachea – San Gaban road. Photo by S. Dalström.

013° 43.832'; W 70° 27.602. Digital photo (Dalström archives). Only a few plants have been observed in the type area, growing epiphytically or lithophytically on mossy boulders. No other material seen.

DISTRIBUTION AND HABITAT: *Masdevallia robineae* is only known from the steep and locally densely forested valley between Ollachea and San Gaban, Puno, at the altitude of ca. 2100–2200 m. Fig. 9.

EPONYMY: This species is named in honor of Robine Coppens by the request of her grandfather, Guido Deburghgraeve of Liedekerke, Belgium, who discovered the type plant.

Masdevallia roseogena Dalström & Ruiz-Pérez, *sp. nov.*

TYPE: Peru. Ayacucho, Calicanto, collected by a team lead by Saúl Ruiz on the ridge above the village, in wet scrubby cloud forest at ca. 2500 – 2600 m elevation, 5 Dec. 2010, flowered in cultivation by Perúflora in December 2013, S. Dalström *et al* 3722 (holotype: USM). Figs. 10, 11.

Diagnosis. *Masdevallia roseogena* belongs to subgenus *Masdevallia*, section *Masdevallia*, subsection *Masdevallia*, and is distinguished by the attractive snowy white flowers covered by rosy magenta spots and flush on the petals and lip, and internally and externally on the lateral sepals, and with a broadly ovate, minutely apiculate lip without any visible dorsal callus.

Epiphytic or terrestrial *herb*. *Plant* medium to large for the genus, caespitose. *Ramicauls* erect, slender, ca. 3–4 cm long, enclosed basally by 3 to 4 tubular sheaths. *Leaf* erect to arching, coriaceous, petiolate, blade basally conduplicate and cuneate, more or less elliptic, obtuse, ca. 12.5 × 2.5 cm, including the ca. 4 cm long petiole. *Inflorescence* erect, terete and slender, single-flowered, with a to ca. 10 cm long peduncle; *peduncular bracts* 2, tubular, below the middle of the peduncle, to ca. 1 cm long; *floral bracts* appressed, tubular, to ca. 1.2 cm long; *pedicel* to ca. 2.5 cm long; *ovary* smooth and indistinctly sulcate, with scattered minute ‘fungal-pits’, ca. 6 mm long. *Flower* attractive, cupulate; *dorsal sepal* snowy white with rose-magenta flush externally and richly spotted internally, glabrous and carinate externally,

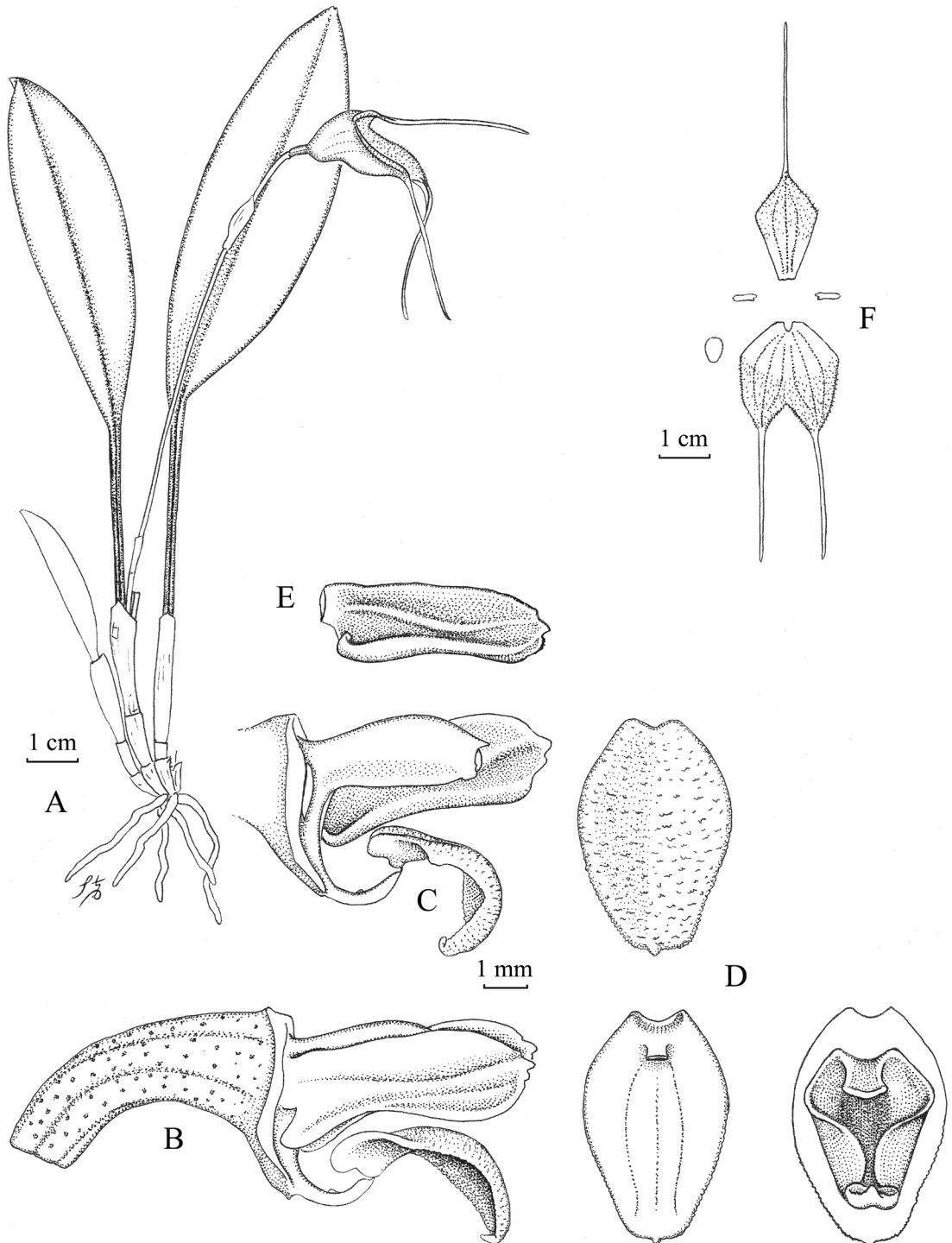


FIGURE 10. *Masdevallia roseogena*. A. Plant habit. B. Ovary, column, lip and petals, lateral view. C. Column, lip and petal lateral view. D. Lip dorsal and ventral views (flattened and in natural state). E. Petal internal lateral view. F. Flower dissected. Drawn from the holotype by Stig Dalström.



FIGURE 11. *Masdevallia roseogena*, flowered in cultivation by Perúflora. Photo by S. Dalström.

densely microscopically glandular internally, connate to the lateral sepals for ca. 13–15 mm, then acute and apically extended into an elongate and narrow tail, ca. 13 × 50 mm, including the 30 mm long, basally white, then purple, gradually turning olive green tail; *lateral sepals* similar in texture and coloration, glabrous and carinate externally, microscopically glandular internally, connate for ca. 15 mm, then slightly and obliquely obtuse, extending in a slender tail, ca. 50 × 20 mm combined, including the ca. 25 mm long tails; *petals* white with rose-magenta markings, cartilaginous and slightly oblique, indistinctly unguiculate with a distinct, curved lateral lobe, forming a fleshy, longitudinal ridge ending near the truncate and apiculate apex, ca. 5.5 × 2 mm; *lip* white suffused with rose-magenta and a pale yellow apex, hinged on the hook-shaped column foot via a minute strap-like structure, lamina ovate, minutely subverrucose dorsally, obtuse and apiculate when flattened, but revolute and ventrally concave in the natural state, with a shallow notch at the base, ca. 4.5–5.0 × 3.2–3.5 mm when flattened; *column* white with purple edges, straight, ca. 4 mm long, with an equally long, curved, apically hook-shaped foot; *anther cap* white and campanulate; *pollinia* not seen.



FIGURE 12. *Masdevallia roseogena* habitat in the Ayacucho region. Photo by S. Dalström.



FIGURE 13. *Masdevallia roseogena* habitat in the Ayacucho region. Photo by S. Ruíz.

ADDITIONAL MATERIAL SEEN: Peru. Only a few scattered plants have been discovered in the same area as the holotype. No other collections known. This region is subject to intense deforestation and habitat destruction, particularly at higher elevations.

DISTRIBUTION AND HABITAT: *Masdevallia roseogena* has only been found in a single location along the densely forested ridge above the village of Calicanto, Ayacucho. Figs. 12, 13.

ETYMOLOGY: This species is named in reference to the white flowers with a rosy ‘blush’ on the lateral sides of the sepals (the ‘cheeks’); Latin for rosy-red producing, and ‘gena’ referring to the cheeks.

Masdevallia roseogena was originally discovered by a team lead by Saúl Ruíz in extremely wet and dense, scrubby cloud forest along the ridge above

the small town of Calicanto in the Ayacucho region. This is a dangerous area, teeming with military presence and subject to occasional violence by the Shining Path movement. This in turn renders the local population extremely suspicious of foreigners and their whereabouts.

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