



Five new species of *Pleurothallis* (Orchidaceae: Pleurothallidinae) in subsection *Macrophyllae-Fasciculatae* from Southeastern Ecuador

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Abstract

Five new species of *Pleurothallis* subsect. *Macrophyllae-Fasciculatae* from Ecuador are described and illustrated: *P. kashimenkakarai*, *P. lapoi*, *P. marioandresavilae*, *P. sabanillae* and *P. tinajillensis*. The taxonomic similarities of the new entities are discussed and information about their distribution, habitat, and conservation status is provided. Additionally, the first known and confirmed locality for *Pleurothallis saueri* is provided, a previously described species without collection data, as well as a lectotype is designated for this name.

Keywords: Amazon, new species, rainforest, Taxonomy

Introduction

The genus *Pleurothallis* Brown (1813: 211) is the fourth largest genus in the Pleurothallidinae, after *Lepanthes* Swartz (1799a: 85), *Stelis* Swartz (1799b: 239) and *Masdevallia* Ruiz & Pavón (1794: 122) (Karremans 2016). The species currently attributed to *Pleurothallis* are distributed from sea level to more than 3000 m in elevation (Pridgeon 2005), from Central America and the Caribbean Islands to South America (Luer 1986).

Pridgeon (2005) indicated that members of *Pleurothallis* are recognized for the mostly epiphytic, caespitose to repent plants, the stems are erect to rarely pendent, sometimes laterally or apically compressed, enclosed by tubular sheaths, with or without a conspicuous annulus, the leaves are coriaceous, linear to ovate (rarely semi-terete). The inflorescences are racemose, fasciculate or solitary-flowered. The flowers are resupinate or non-resupinate. The dorsal sepal is generally free. The lateral sepals are connate to form a concave synsepal. The petals are linear to obovate, acuminate to obtuse. The lip is simple or lobed, ligulate to obovate (rarely orbicular), often with a rounded callus ('glenion') at the base and the column is terete or semiterete with the apical anther and two pollinia.

Ecuador is considered one of the most orchid diverse countries in the world, with 4032 species registered of which 1707 are endemic (Endara 2012). After the publication between 2000 and 2004 of the Native Ecuadorian Orchids series, the most important and comprehensive treatment of the orchid family by Calaway Dodson (Endara 2012), the number of new species discovered to date has increased the national inventory. Despite extensive taxonomic and collection

work in recent decades, Ecuador remains under-researched and only within the last 18 months, several species of orchids were described as new, most of them described in Pleurothallidinae (e.g. Baquero *et al.* 2022, Doucette *et al.* 2023a, 2023b, Gutiérrez del Pozo *et al.* 2022, Monteros *et al.* 2022a, 2022b, Vélez-Abarca *et al.* 2022).

When conducting botanical exploration, collection and identification in recent years, we recognize the following five new species of *Pleurothallis* subsect. *Macrophyllae-Fasciculatae* (Lindley 1859: 9), as additions for the orchid flora of Ecuador which are illustrated and described here.

Materials and methods

All specimens were compared with original descriptions of similar species of *Pleurothallis* (Luer 1978, Luer 1998, Luer 2005). Digital images of specimens of *Pleurothallis fossulata* Luer & Escobar (1998: 91–93), *P. complanata* Luer & Hirtz (1996b:154–155), *P. ruberrima* Lindley (1846: 1) and *P. lilijae* Foldats (1968: 379) at MO and SEL were examined online through Tropicos (<https://tropicos.org/home>) and GBIF (<https://www.gbif.org>) and for one species, *Pleurothallis fossulata*, flowers in alcohol obtained from SEL (although Tropicos lists MO, Luer's flowers in spirits are currently housed at SEL).

The measurements of the vegetative and floral parts were made from living material. The fresh flowers were stored in 70% ethanol and glycerol. Digital images were taken with Panasonic® FZ300, Canon® EOS 1100D and Nikon D3100 cameras. The plants of the new species were collected under permits No. MAAE-ARSFC-2021-1619, and MAATE-DBI-CM-2022-0248 granted by the Ministerio del Ambiente y Transición Ecológica de Ecuador (MAATE).

Taxonomy

1. *Pleurothallis kashi-menkakarai* Mashendo-Jimbicti, Vélez-Abarca & M.M.Jiménez, *sp. nov.* (Figures 1–2).

Type:—ECUADOR. Zamora Chinchipe: El Pangui, Cordillera del Cóndor flank, 3°38'32" S, 78°30'37" W, 1302 m, 23 October 2021, *L. Vélez LV-0069* (holotype: HUTPL 14771!)

Similar to *Pleurothallis fossulata* Luer & Escobar from which it differs by its shorter, elliptic dorsal sepal (7.5–8 mm vs. 11 mm long, oblong), shorter, translucent green synsepal (6.5–7.0 mm vs. 10 mm long, red brown), crenulate, verrucose petals, equal in length to the lip (vs. entire, glabrous, shorter than the lip), and involute, thickened, verrucose, crenulate lip margins (vs. revolute, thin, smooth, entire).

Description:—*Plant* epiphytic, caespitose, to 30 cm tall. *Roots* slender, white, flexuous, 1 mm in diameter. *Ramicauls* erect, green, 8.9–20.1 long and 0.1 cm in diameter enclosed by two papyraceous sheaths at the base and one below the middle. *Leaves* 6.6–11.0 × 2.1–4.5 cm, sessile, coriaceous, erect to suberect, ovate, long acuminate, shiny, cordate at the base, with faintly raised lateral nerves, margin revolute, purplish. *Inflorescence* single-flowered, resupinate, produced in a successive fascicle from a reclining spathaceous bract to 1.4 cm long; peduncle abbreviate ca. 1 mm long, concealed within a spathaceous bract, floral bract tubular ca. 4 mm long, pedicel cylindrical, verrucose, straight, 3.9–5.0 mm long. *Sepals* glandulous-cellular, translucent yellow to reddish brown with red-brown and yellow veins, rarely in almost purely translucent yellow; dorsal sepal 7.5–8 × 4.5–5.0 mm, broadly elliptic, obtuse, concave, 3-veined; lateral sepals connate into a broadly ovate, subacute, synsepal, 6.5–7.0 × 4.5–5.0 mm, 4-veined, slightly concave at the base; *Petals* 4.5–5.0 × 0.9–1.0 mm, narrowly oblong, slightly falcate at the base, acute, inconspicuously 1-veined, papillose-verrucose, reddish brown to red purple, rarely tan yellow, margins yellow and crenulate-erose. *Lip* 5 × 2.5–2.7 mm, shortly unguiculate, oblong-ovate, obtuse and incurved at the apex, slightly convex above the middle, 3-veined abaxially, papillose-verrucose, reddish brown to red-purple, rarely tan yellow, margins crenulate, thickened, purple; the base concave, hinged to the column-foot; a small, narrowly elliptic glenion in the middle. *Column* purple, stout, complanate, papillose, 2.0 mm long, 1.5–1.8 mm wide, 2-channeled dorsally, widening to the base, column-foot glandulous, paler. *Anther* narrowly obovate, purplish with a touch of yellow, papillose, stigma apical, bilobed, 0.7 mm long. *Pollinia* 2, clavate, 0.6 mm long. *Ovary* cylindrical, subverrucose, brownish purple, slightly curved at the joint with the pedicel, 3.5–4.6 mm long, 0.8 mm wide.

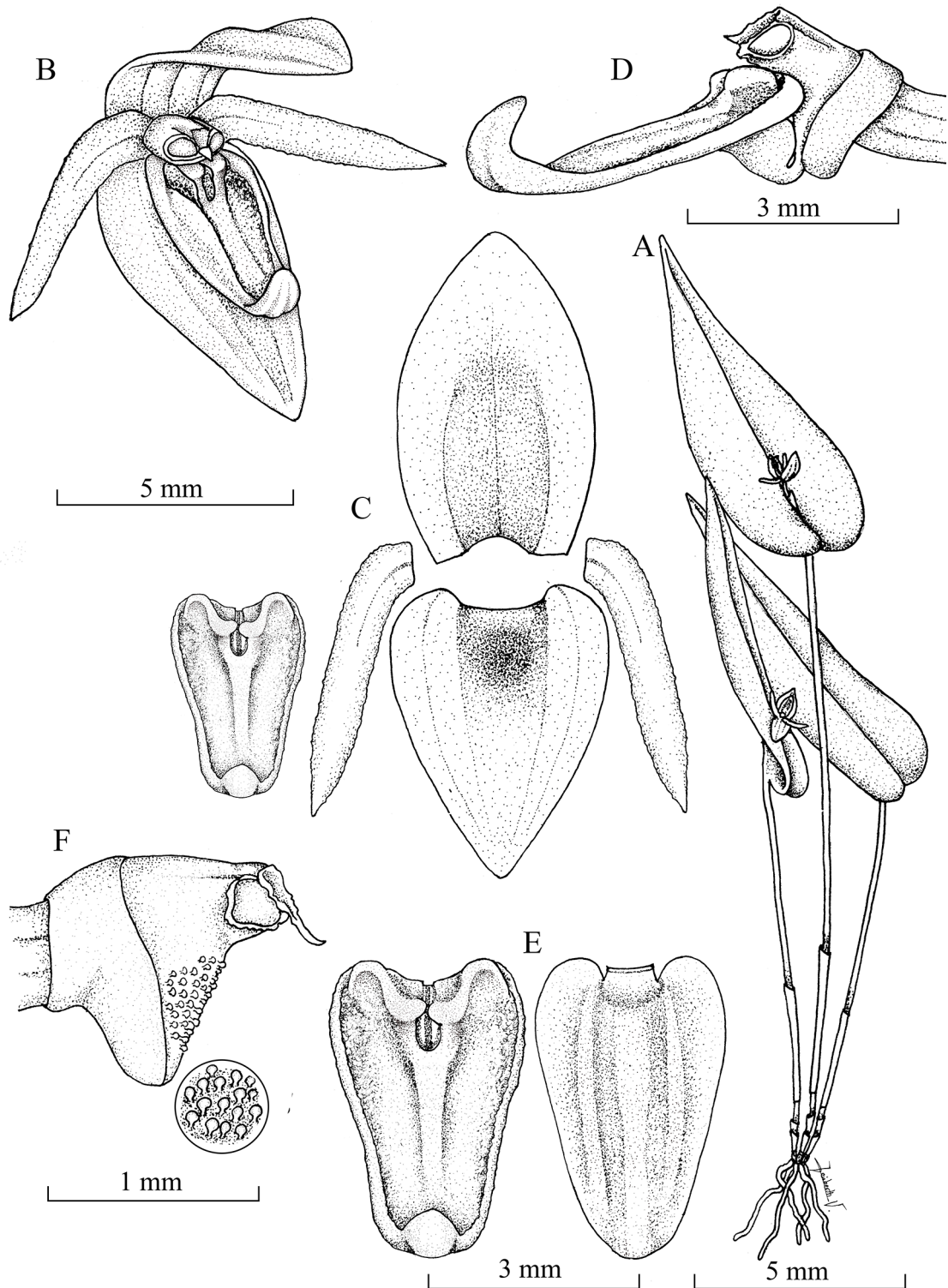


FIGURE 1. *Pleurothallis kashi-menkakarai* A. Habit. B. Flower. C. Dissected perianth. D. Ovary, column and lip in lateral view. E. Lip adaxial and abaxial views. F. Column in lateral view. Illustration by Vélez-Abarca based on the type.

Distribution and ecology:—*Pleurothallis kashi-menkakarai* is known from two locations within the Cordillera del Cóndor in south-eastern Ecuador (Figure 3). The species is found around 1400 m in elevation in lower montane forests near watercourses of sandstone plateaus. The holotype of this species was found growing sympatrically with *Maxillaria grayi* Dodson (1994a: 69), *P. cordata* (Ruiz & Pavón 1798: 234) Lindley (1830: 5) and *P. adeleae* Luer (1981: 200), between the lower and middle strata of the forest. This forest is characterized by a mixture of Andean and lowland trees of the Amazon, where the canopy can grow up to 30 m in height and the understory is dense. It was also found growing together with *Dichaea histrio* Reichenbach (1859: 330), *Epilyna embreei* Dodson (1994b: 146) and

Maxillaria bicallosa (Reichenbach 1878: 9) Garay (1962: 527), over the roots of *Socratea exorrhiza* (Martius 1824: 36) Wendland (1860: 103) palms, in a nearby location. This species has been only recorded in the province of Zamora Chinchipe and is considered as endemic.

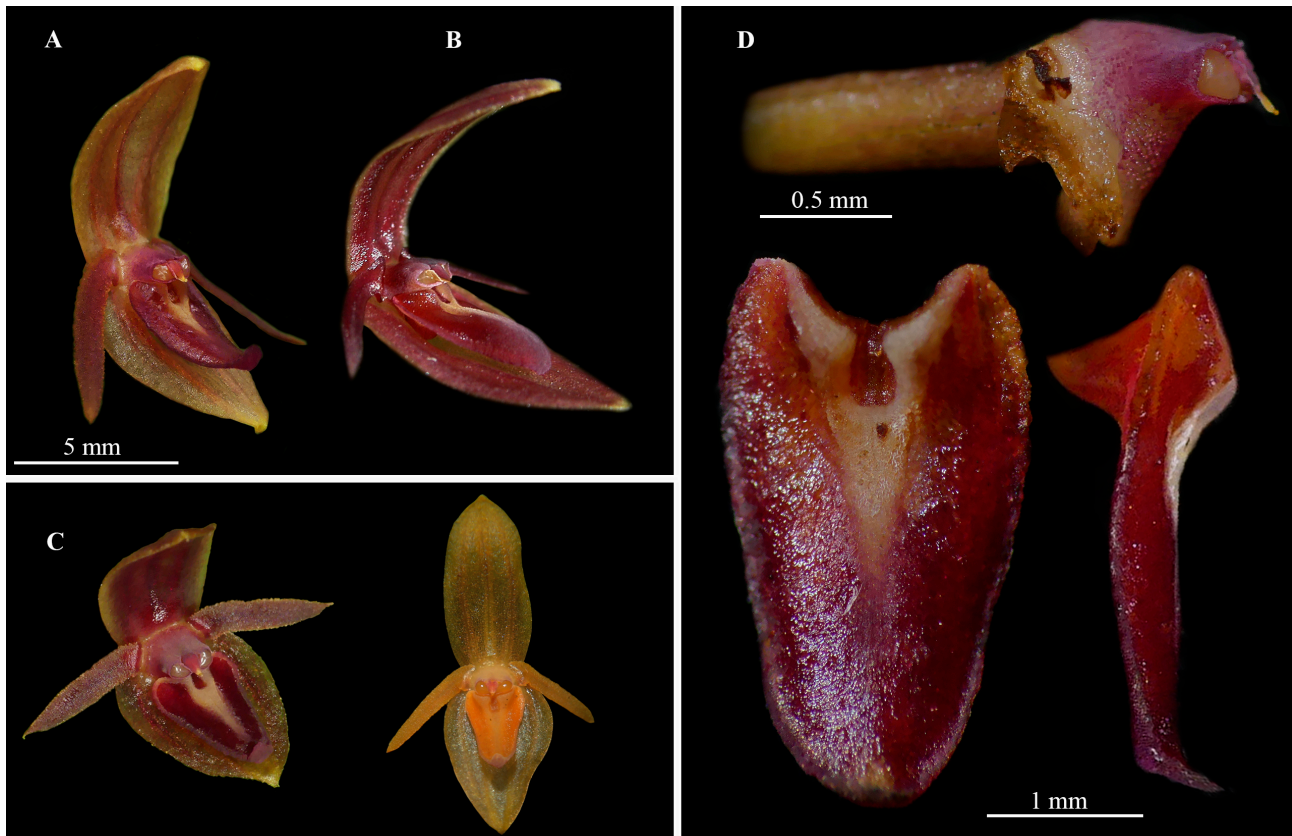


FIGURE 2. Floral comparison of **A.** *Pleurothallis kashi-menkararai* and **B.** *P. fossulata* **C.** Different color forms of *Pleurothallis kashi-menkararai* **D.** Column with ovary in lateral view (uppermost), lip in adaxial view (left) and lateral view (right) of *Pleurothallis kashi-menkararai*. Elaborated by L. Vélez-Abarca from photos: A, C (left) and D by M.M. Jiménez based on the type and M. Jiménez 1190B by Mark Wilson based on a cultivated plant, C (right) by L. Vélez-Abarca based on M. Jiménez 1191.

Etymology:—From the words *kashi* (night), and *menkararai* (lost), meaning “lost at night” in the Shuar language, because the new species was discovered at night when researchers were lost in the forest of a Shuar community.

Taxonomic discussion:—*Pleurothallis kashi-menkararai* is similar to *Pleurothallis angusta* Ames & C. Schweinfurth (1925: 23–24) from Costa Rica and *P. fossulata* from Colombia with which it shares flowers with a maroon-burgundy colored lip, a triangular, cream-colored area between the apex and edges of the lip and glenion and two calli flanking the deep glenion. The new species is distinguished from *Pleurothallis fossulata* (Figure 2) by its smaller plants (30 cm vs. 42 cm tall), the narrower (3.0–4.5 cm vs. 5–7 cm wide), cordate, attenuate leaves (vs. deeply cordate, acuminate), the shorter pedicel (3.9–5.0 mm vs. 10 mm long), the shorter ovary (3.5–4.6 vs. 6 mm long), the one flower produced per fascicle (vs. to 2–3 often simultaneous), the non-dilated petals (vs. dilated at the base), the subacute synsepal (vs. obtuse) and the strongly incurved apex of the lip (vs. convex).

It is also similar to *Pleurothallis angusta* but is distinguished by the smaller plants (30 cm vs. 50 cm tall), the shorter (6.6–11.0 cm vs. 8.0–16.5 cm wide), ovate, long-acuminate leaves (vs. lanceolate, acute), the shorter pedicel (3.9–5.0 mm vs. 14 mm long), the shorter ovary (3.5–4.6 mm vs. 5.0–7.0 mm long), the translucent yellow or reddish brown flowers (vs. dark purple), the shorter (8 mm vs. 11 mm long), broadly elliptic, obtuse dorsal sepal (vs. ovate, acute), the 4-veined synsepal (vs. 5-veined), the smaller (4.5–5.0 × 0.9–1.0 mm vs. 6.3–7.0 × 1.5–2.0 mm), narrowly oblong, acute petals (vs. falcate, obtuse), the lip with crenulate margins (vs. minutely ciliate) and the narrowly obovate anther cap (vs. obtriangular) (Pupulin 2021).

Conservation status:—*Pleurothallis kashi-menkararai* has not been reported within the Ecuadorian National System of Protected Areas. The species is known from two abundant populations, where a population density of 3 to 4 plants per phorophyte can be found. However, the range in which the species occurs is under threat by gold mining and grazing since *P. kashi-menkararai* has only been observed within an area of 9 km² (Figure 3).

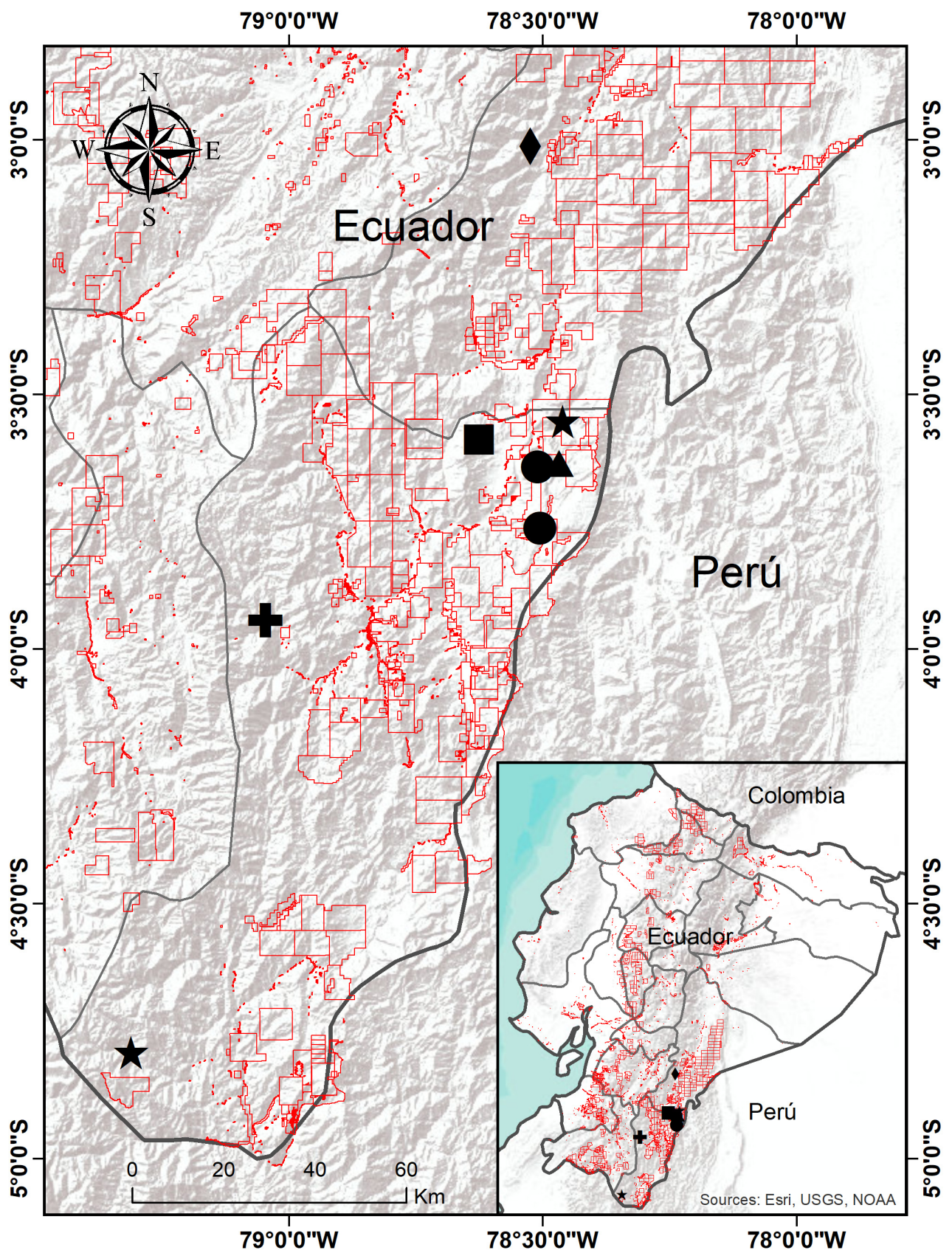


FIGURE 3. Distribution map of *Pleurothallis kashi-menkakarai* (black circle), *P. lapoi* (black square), *P. marioandresavilae* (black star), *P. sabanillae* (black cross), *P. saueri* (also black square), *P. tinajillensis* (black diamond) in Ecuador and mining threats (red squares). Map by Henry X. Garzón.

2. *Pleurothallis lapoi* M.M.Jiménez & Vélez-Abarca, *sp. nov.* (Figures. 4–5)

Type:—ECUADOR. Zamora Chinchipe: Near El Pangui, 781253.08 E, 9597652.43 S, 1560 m, *M. Jiménez 1424* (holotype: HUTPL 14640!)

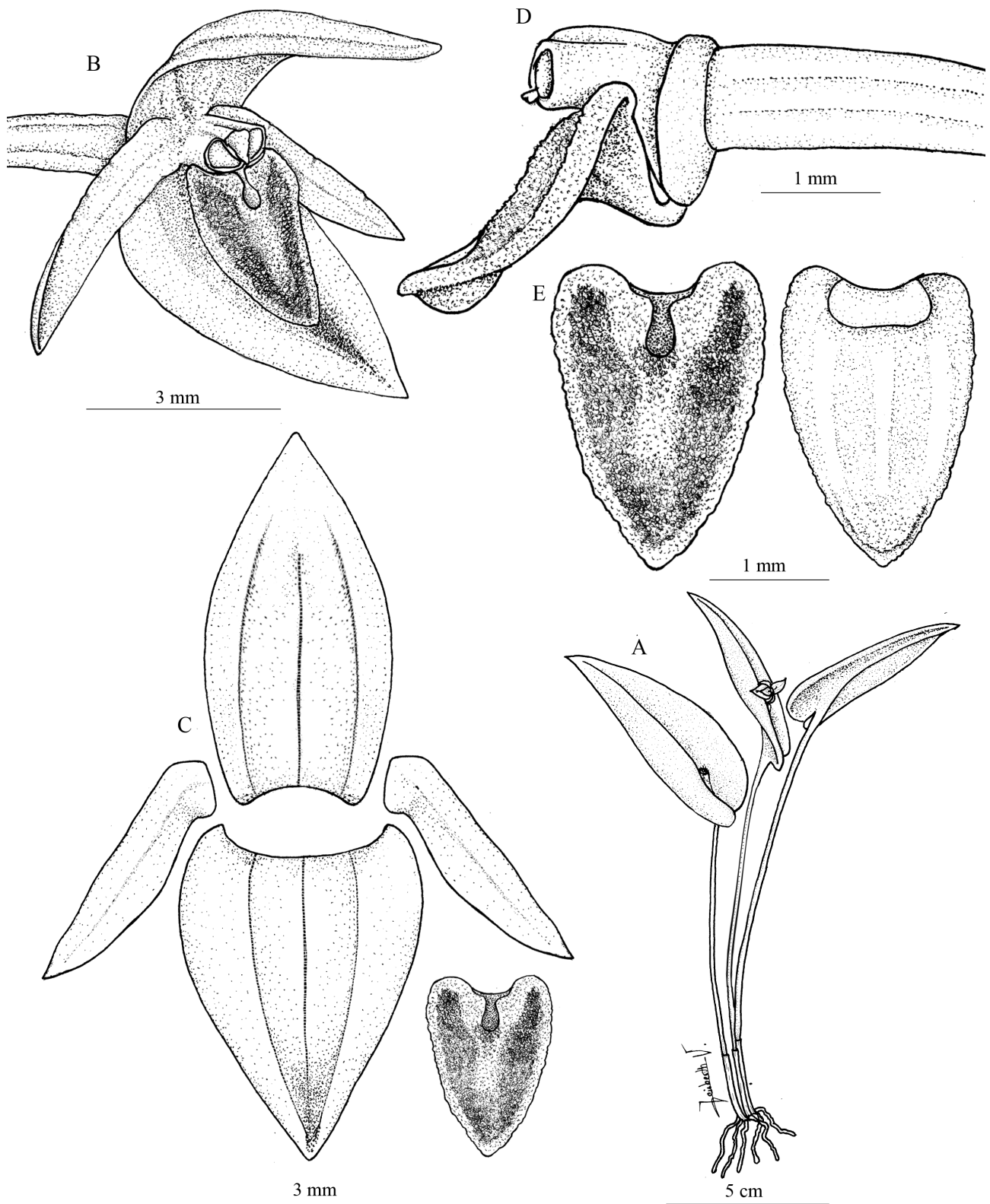


FIGURE 4. *Pleurothallis lapoi*. **A.** Habit. **B.** Flower. **C.** Dissected perianth. **D.** Ovary, column and lip in lateral view. **E.** Lip adaxial and abaxial views. Illustration by L. Vélez-Abarca based on the type.

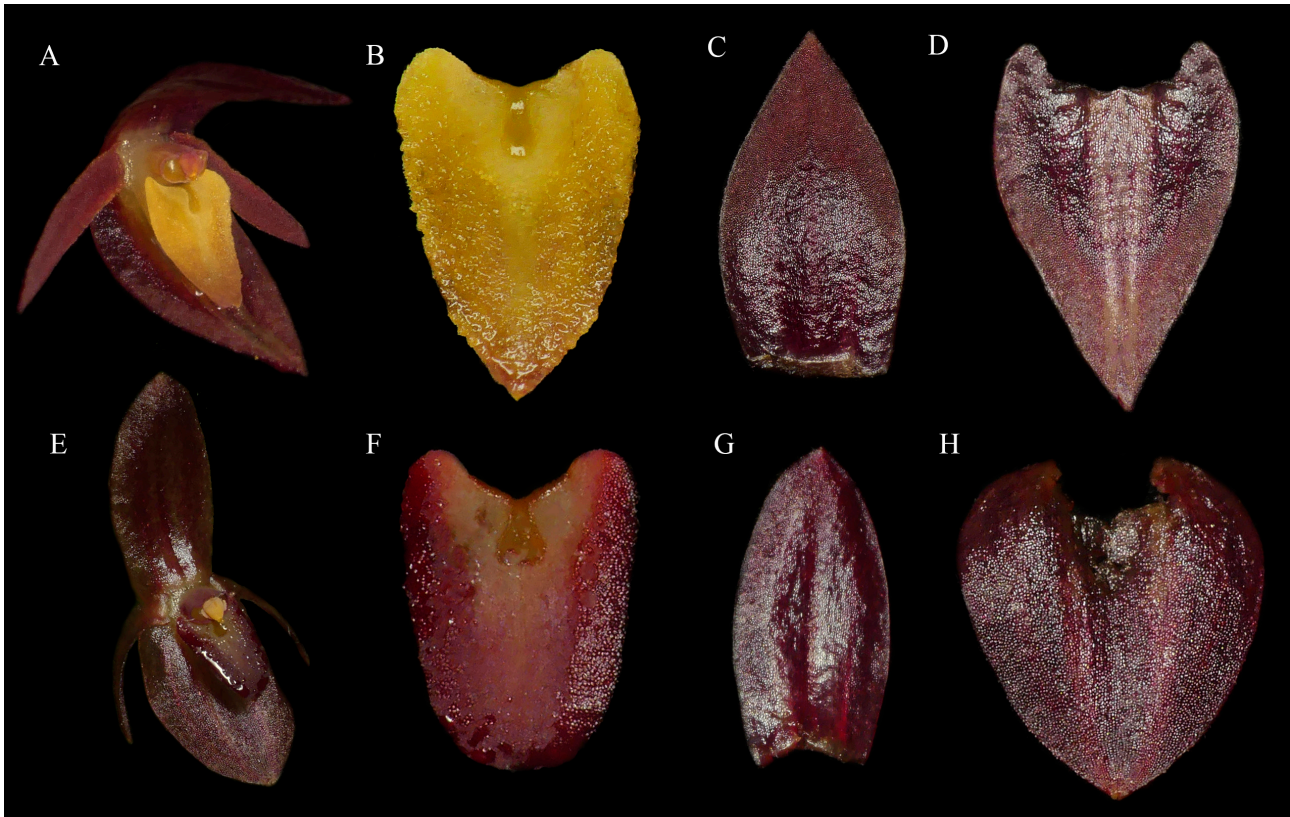


FIGURE 5. Floral structure comparison of *Pleurothallis lapoi* (above) and *P. erythrium* (down). **A–D.** Flower, lip and sepals of *P. lapoi* based on the type. **E–G.** Flower, lip and sepals of *P. erythrium* based on M. Jiménez 318. Elaborated by L. Vélez-Abarca from photos by Marco M. Jiménez.

Similar to *Pleurothallis erythrium* Luer (1978: 386) from which differs by its ovate-triangular dorsal sepal (*vs.* oblong-ovate), the oblong-triangular petals (*vs.* narrowly linear-oblong) and the yellow, triangular-ovate and shallow lip (*vs.* red-purple, oblong-ovate, rounded at the apex and convex) with two calli (*vs.* concave at the end).

Description:—*Plant* epiphytic, up to 19 cm tall, roots slender, white, flexuous, 0.6–1.0 mm in diameter. *Ramicauls* slender, suberect, terete, 14.0–16.6 long and 0.1 cm in diameter, enclosed by papyraceous, tubular sheaths, upper sheath 24.6–31.0 mm long, basal sheath 12.6–15.7 mm long. *Leaves* green, slightly falcate to falcate, ovate, shortly attenuate, glossy, centrally channeled, 5.1–6.3 × 2.1–2.6 cm, base cordate, margins revolute. *Inflorescence* a fascicle of successive flowers produced from a reclined, papyraceous, spathaceous bract, 6.6–8.0 mm long; peduncle 6.3–6.8 mm long, *floral bract* infundibuliform, 3.6–4.0 mm long; *pedicel* verrucose, dilated at the junction with the ovary, 6.2 mm long. *Flowers* glossy, sepals papillose, subverrucose below the apical third. *Dorsal sepal* purple, ovate-triangular, 3-veined, 6.1–6.6 × 3.2 mm, acute, shallow, margins slightly involute, callose at the base. *Lateral sepals* united into an ovate, purple infused with yellow to the apex and veins, 4-veined, shallow, acute, 5.5–5.7 × 3.7 mm synsepal, apex minutely incurved. *Petals* purple with yellow borders, oblong-triangular, deflexed, lanceolate, 1-veined, microscopically papillose-verruculose, acute, carinate abaxially at the midvein, 3.8–3.9 × 0.7–0.8 mm, margin minutely erose. *Lip* dark yellow, tan and purple to the apex, triangular-ovate, 3-veined, shallow, verrucose-papillose, 2.6–2.9 × 2.0 mm, with a Y-shaped cream-colored depression and two triangular calli around the glenion that reaches up to the apical third, margins minutely erose, incurved, base cordate with a small, ovate glenion, apex acute, center of the base of the lip with two calli. *Column* stout, pale green suffused with purple dorsally and to the stigmatic margin, complanate, papillose, 1.2–1.6 × 1.1 mm, stigma reniform, rostellar flap minute, 0.1 mm long, column foot 0.6 mm long, with longer papillae. *Anther* broadly ovate, microscopically papillose, orange-purple, 0.5 mm long. *Pollinarium* with 2, ovoid, yellow pollinia, 0.4 mm long. *Ovary* green-purple, lightly verrucose, subterete, slightly arcuate, 3.8–4.0 × 0.9 mm.

Distribution and ecology:—*Pleurothallis lapoi* was found in southeastern Ecuador growing in an evergreen lower montane forest of the eastern Andes of southern Ecuador, Zamora Chinchipe province, El Pangui canton (Figure 3). Populations have been observed within the Cayamatza micro-basin at 1560 m elevation. This area is characterized

by very steep slopes with rapidly accelerating deforestation due to expansion of the agricultural frontier. These forests are dominated by *Erythrina amazonica* Krukoff (1939: 270) (Fabaceae), *Cedrelinga cateniformis* (Ducke 1915: 17) Ducke (1922: 70) (Fabaceae), *Jacaranda copaia* (Aublet 1775: 650) Don (1823: 267) (Bignoniaceae) and *Inga* sp. (Fabaceae) trees. In this forest it is found on tree trunks and branches of the lower canopy stratum, together with other orchid species such as *Masdevallia don-quijote* Luer & Andreetta (1985: 63), *Myoxanthus exasperatus* (Lindley 1859: 15) Luer (1982: 36), *Pleurothallis saueri* (Luer 2012: 355) Shaw (2016: 39) and *Stelis* spp.

Etymology:—Named after Lester Lapo, outstanding orchid grower from El Pangui, Zamora Chinchipe Province, who discovered the species.

Taxonomic discussion:—The new species is distinguished from other species of *Pleurothallis* subsect. *Macrophyllae-Fasciculatae* by its small purple flowers, acute sepals, and verrucose-papillose, triangular-ovate, yellow lip. It is most similar to *Pleurothallis erythrium*. *Pleurothallis lapoi* can be distinguished from *P. erythrium* by its larger plants (up to 19 vs. 12 cm tall), convex leaves with revolute margins (vs. concave with flat margins) and the flowers with acute, verrucose sepals and lip (vs. papillose, subacute).

Conservation status:—*Pleurothallis lapoi* has not been found in any formally protected area in Ecuador. So far, no more than five individuals have been sighted within the Cayamatza micro-basin. Deforestation is ongoing in the area for the establishment of cattle pastures and subsistence crops by local residents.

3. *Pleurothallis marioandresavilae* Vélez-Abarca & M.M.Jiménez *sp. nov.* (Figures 6–8).

Type:—ECUADOR. Zamora Chinchipe: Next to the El Quimi reserve, 820 m, 19 December 2021, *L. Vélez LV-0072* (holotype: ECUAMZ 08648!)

Similar to *Pleurothallis complanata* Luer & Hirtz from differs by its yellowish-brown, verrucose, acute dorsal sepal (vs. light yellow green, glabrous, obtuse to rounded at the apex), 4-veined, elliptical-oblong, obtuse lateral sepals (vs. faintly 6-veined, ovate, acute) and smaller lip (2.1–2.3 × 1.6–1.8 mm vs. 4.0 × 2.5 mm), elliptical, obtuse, verrucose-striated (vs. oblong-ovate, obtuse, verrucose), and a glenion bilobed (vs. obovoid).

Description:—*Plant* epiphytic, up to 26 cm tall, erect; *roots* slender, flexuous, 0.5–0.7 mm in diameter. *Ramicauls* very slender, suberect, terete, 12.5–23.3 long and 0.1 cm in diameter, enclosed by papyraceous, tubular sheaths, upper sheath 2.8 mm long, basal sheath 1.25 mm long. *Leaves* erect, green suffused with purple at the margins and the underside, slightly convex, coriaceous, microscopically papillate, ovate, channeled in the middle, 5.5–7.4 × 1.5–1.8 cm, acuminate, slightly falcate at the apex, the base sessile, cordate. *Inflorescence* a fascicle of successive flowers produced from a suberect, spatheaceous bract, *ca.* 0.9 mm long; *floral bract* infundibuliform, 3 mm long; *pedicel* tubular, 2.5 mm long. Flowers glossy, *dorsal sepal* yellowish-brown, slightly suffused with purple at the base, edges and veins, elliptical-obovate, 7.0–8.5 × 3.8–4.0 mm, 3-veined, subverrucose, convex in the apical third; *lateral sepals* connate into a 4-veined, elliptical-oblong, obtuse, minutely bifid pale purple with yellowish green base, 4.6–5.0 × 3.7–4.0 mm. *Petals* pale purple apex and base yellowish green, narrowly oblong, slightly constricted in the first apical third, acute, 3.8–4.0 × 0.6–0.8 mm, 1-veined, papillose, margins entire. *Lip* red purple combined with orange in the base and margins, elliptical, obtuse, verrucose-striated, convex, 2.1–2.3 × 1.6–1.8 mm, 3-veined, margin irregular; the base truncate, centrally channeled towards the apex of the lip, hinged to the column foot. *Column* yellowish green, transversely subrectangular, dorsally complanate, 1.3–1.5 × 1.0–1.2 mm, glabrous, stout, 3-ribbed dorsally, stigma transversely bilobed with entire margins, rostellar flap 0.8 mm long. *Anther* cordiform, yellowish green, 0.3 mm long. *Pollinarium* with 2 obovoid, yellow pollinia, 0.2 mm long. *Ovary* subverrucose, curved in the middle, 2.0–2.3 × 1.0 mm.

Distribution and ecology:—The new species has been recorded in Zamora Chinchipe, Ecuador. It apparently also occurs in Piura department, northern Peru, where it was previously recorded photographically by Benavente *et al.* (2020) without any herbarium voucher, as *Pleurothallis compressa* Luer (1996a: 75), a Costa Rican species with different habit and flower morphology. The species has been found growing as an epiphyte on *Pouteria caimito* (Ruiz & Pavón 1802: 18) Radlkofer (1882: 333) (Sapotaceae) (Figure 9) and *Andesanthus lepidotus* (Bonpland 1808: 38) Guimarães & Michelangeli (2019: 948) (Melastomataceae). The population of *Pleurothallis marioandresavilae* occurs in unprotected areas where selective timber extraction is common. The specimens were found growing together with other small orchids such as *Brachionidium* sp., *Macroclinium* sp., *Pleurothallis ariana-dayanae* Vélez-Abarca, Jiménez & Gutiérrez del Pozo (2022: 109), *Maxillaria splendens* Poeppig & Endlicher (1836: 66) and *Stelis* spp.

Additional specimens examined:—ECUADOR. Zamora Chinchipe: San Andrés, close to a river, 2075 m, 29 November 2022, *M. Jiménez & G. Iturralde 1619* (HUTPL 14756!).

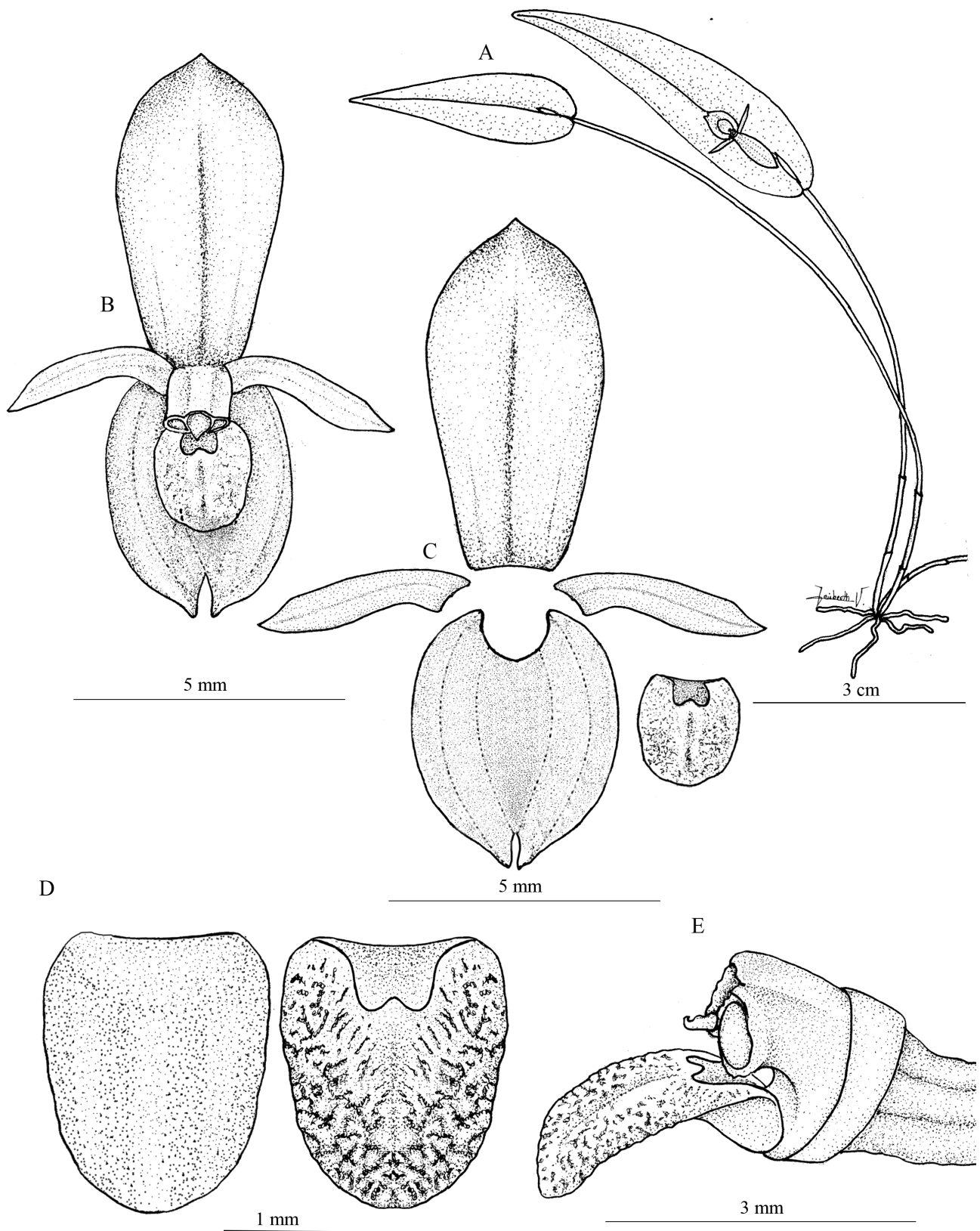


FIGURE 6. *Pleurothallis marioandresavilae*. **A.** Habit. **B.** Flower. **C.** Dissected perianth. **D.** Ovary, column and lip in lateral view. **E.** Lip adaxial and abaxial views. Illustration by L. Vélez-Abarca based on the type.

Etymology:—Named after Mario Andrés Ávila, professor at the Universidad Estatal Amazónica, in Ecuador, in gratitude for his unconditional help and educational support.



FIGURE 7. A. *Pleurothallis marioandresavilae* in situ attached to a *Pouteria caimito* tree. B. Leisberth Vélez-Abarca, taking in situ photograph. Elaborated by L. Vélez-Abarca from photos of the type by A. by L. Vélez-Abarca and B. by Jimmy Zari.

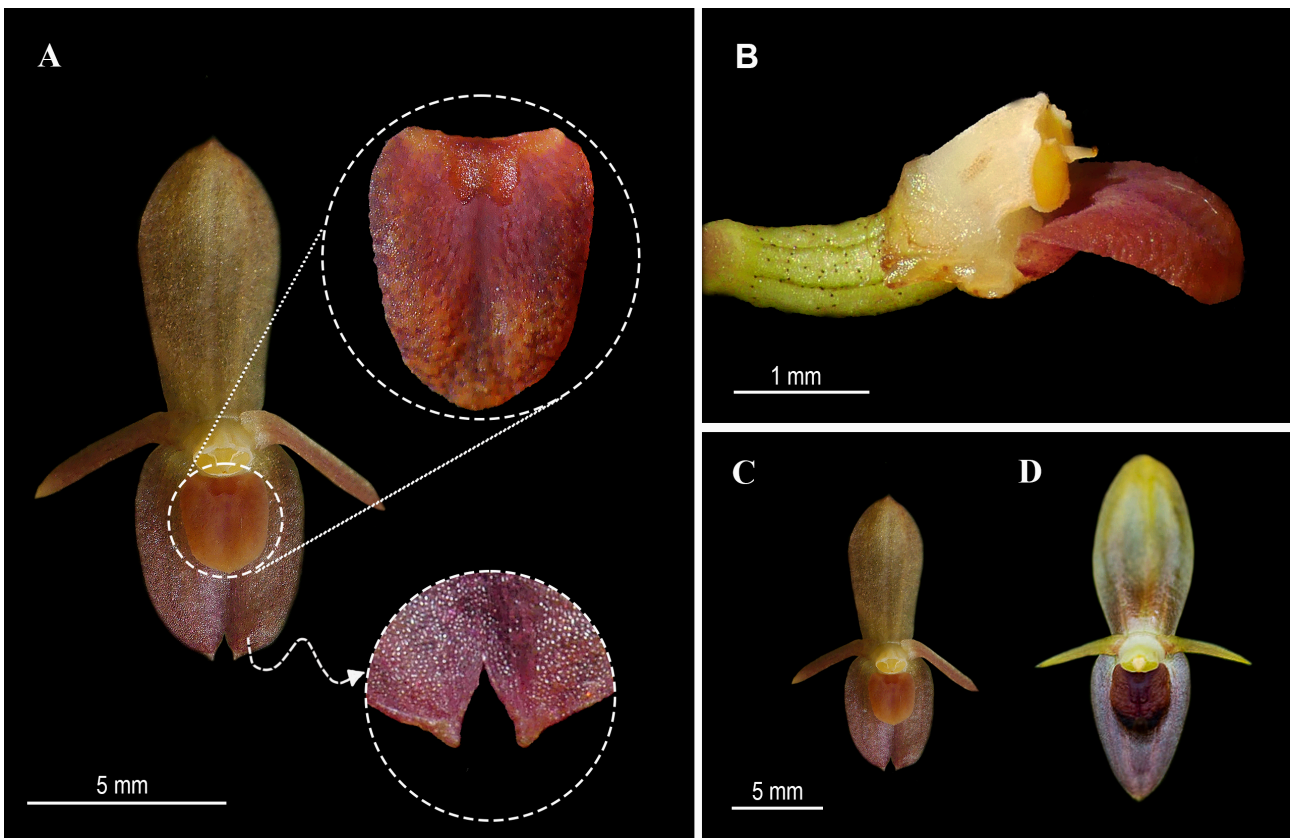


FIGURE 8. *Pleurothallis marioandresavilae*. A. Close-up of the lip and apex of the synsepal. B. Lateral view of the ovary, column, and lip. C. Floral comparison of *P. marioandresavilae*. D. Flower of *P. complanata*. Elaborated by L. Vélez-Abarca from photos by A, B, C (left) by Marco M. Jiménez based on the type D. (right) by Ulli Lorimer based on a cultivated plant.

Taxonomic discussion:—*Pleurothallis marioandresavilae* (Figure 10C) has been confused in cultivated specimens with *P. complanata*, (Figure 10D) which is the most similar species. But the new species differs by shorter leaves ($5.5\text{--}7.4 \times 1.5\text{--}1.8$ cm vs. $8.5\text{--}10.5 \times 2.5\text{--}3$), shorter pedicel (2.5 vs. 6.0–7.0 mm long), acute, yellowish-brown, verrucose dorsal sepal (vs. obtuse to rounded, yellow-green, glabrous), 4-veined, elliptical-oblong, obtuse lateral sepals (vs. 6-veined, ovate, acute), narrowly oblong petals (vs. narrowly linear-triangular), elliptical, verrucose-striated lip (vs. oblong-ovate, minutely verrucose), and bilobed glenion (vs. obovoid) (Figure 10).

Conservation status:—*Pleurothallis marioandresavilae* is known from only two localities, one near the protected forests of the El Quimi Biological Reserve, the other near the border with Peru, both in the Province of Zamora Chinchipe, in the southeast of Ecuador (Fig. 3), and apparently it also occurs in northern Peru. Both localities have

been influenced by the strong anthropogenic activities (mining, logging and cattle grazing); however, it is not ruled out that the species may be present within the aforementioned reserve.

4. *Pleurothallis sabanillae* M.M.Jiménez & Vélez-Abarca, *sp. nov.* (Figures 9–10).

Type:—ECUADOR. Zamora Chinchipe: Loja-Zamora road, near El Tambo, 3°56'40.08" S, 79°02'45.00" W, 2102 m, 4 August 2022, *M. Jiménez & L. Vélez-Abarca 1253* (holotype: HUTPL 14636!).

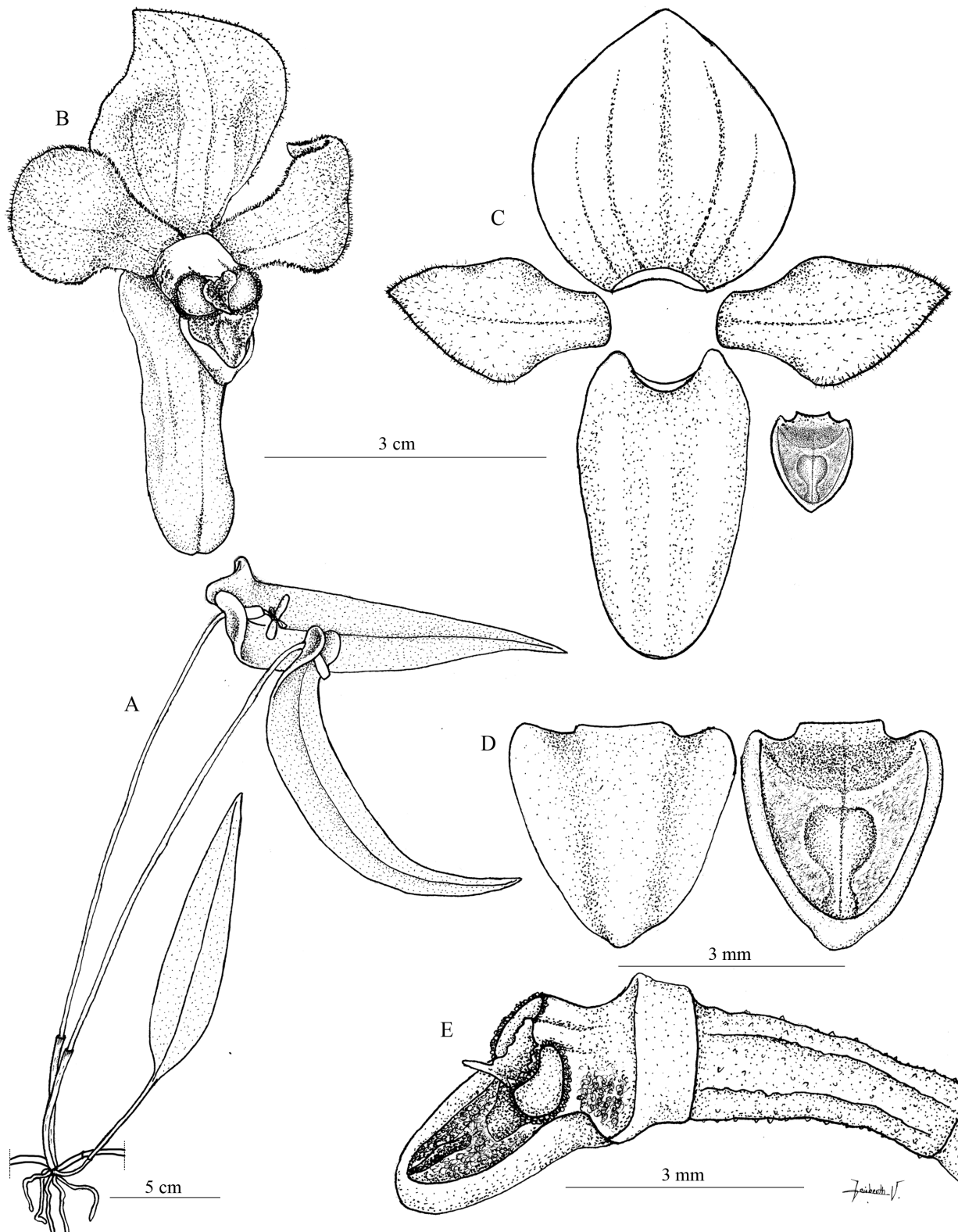


FIGURE 9. *Pleurothallis sabanillae*. A. Habit. B. Flower. C. Dissected perianth. D. Ovary, column and lip in lateral view. E. Lip adaxial and abaxial views. Illustration by L. Vélez-Abarca based on the type.

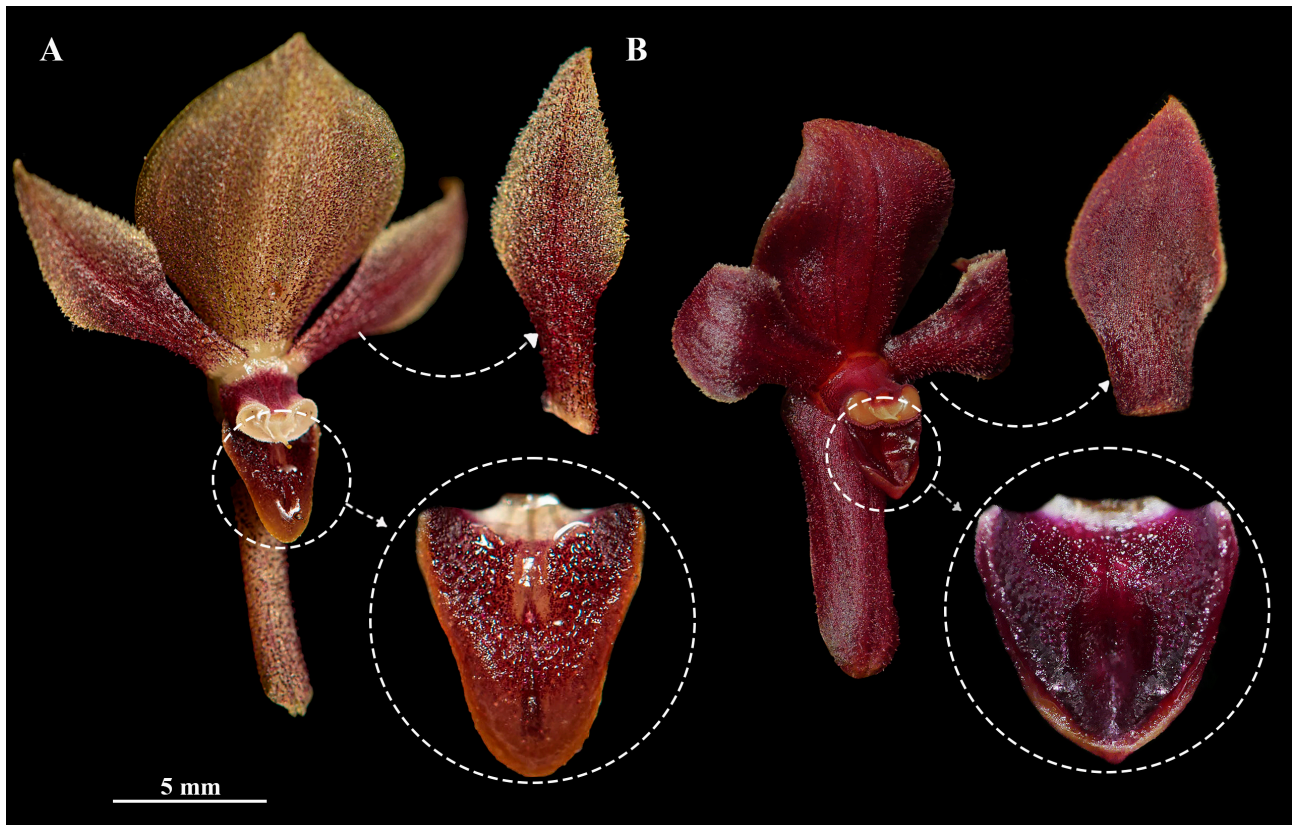


FIGURE 10. Photographs of *Pleurothallis lilijae* **A.** and **B.** *P. sabanillae*. Elaborated by L. Vélez-Abarca from photos by A. Sebastián Moreno and B. Marco M. Jiménez based on the type.

Similar to *Pleurothallis lilijae* Foldats (1968: 379), from which it differs by its broadly ovate, 7-veined dorsal sepal (vs. broadly elliptic, 5-veined), ovate, 3-veined petals (vs. triangular ovate, 1-veined), the obtuse, convex lip (vs. triangular, concave) with a deep, broad glenion and an apical sulcus (vs. shallowly concave, small and no sulcus).

Description:—*Plant* epiphytic, up to 36 cm tall, descendent to pendent; *roots* slender, flexuous, 0.6–1.3 mm in diameter. *Ramicauls* slender, suberect, terete, 11.1–19.4 cm long and 0.1 cm in diameter, enclosed by papyraceous, tubular sheaths, upper sheath 12.9–18.9 mm long, basal sheath 6.2–7.7 mm long. *Leaves* deflexed, coriaceous, microscopically papillate, lanceolate to narrowly ovate, channeled in the middle, 2.4–3.7 × 12.0–14.5 cm, acuminate at the apex, the base sessile, deeply cordate with the lobes unequal up to 1.6 cm long. *Inflorescence* a fascicle of successive flowers produced from a suberect, scabrous spathaceous bract, 1.1–1.3 mm long; *floral bract* infundibuliform, 4.4–4.6 mm long; *pedicel* subflexuous, 2.4–3.5 mm long. Flowers resupinate or not, glossy, *dorsal sepal* purple with yellow borders to pale yellow suffused with purple at the base and veins, broadly ovate, subacute to obtuse, strongly deflexed at the apex, 9.8–11.5 × 8.9–9.4 mm, 7-veined, subverrucose-papillose, minutely pubescent, convex below the middle; *lateral sepals* connate into a 6-veined, elliptical-oblong, subverrucose-papillose, strongly revolute margins, purple with yellow borders synsepal, 6.1–6.5 × 2.9–4.6 mm. *Petals* purple with yellow borders, ovate above the third quarter, oblique, narrowed below the middle, shortly attenuate, strongly deflexed near the apex, acute, 8.1–10.1 × 4.1–5.0 mm, 3-veined, pubescent-verruculose, margins ciliate-denticulate, revolute. *Lip* dark purple with paler or whitish border, broadly ovate, obtuse, diffusely glandulous-verrucose, concave, 2.7–2.9 × 3.3–3.5, 3-veined, margins thickened, involute apically; the base subtruncate, hinged to the column foot, with very short obtuse angles and a large, deep, obovoid glenion, occupying the middle third of the lip, concave and deeply sulcate towards the apex of the lip. *Column* dark purple, transversely subrectangular, dorsally complanate, 2.8 × 3.0–3.2 mm, papillose, glandulous on the edges, stout, 3-ribbed dorsally, stigma transversely bilobed with minutely ciliate margins, rostellar flap 0.4 mm long. *Anther* narrowly triangular-obovate, white to pale yellow, papillose, 1.1 mm long, bilobed at the base. *Pollinarium* with 2 obovoid, yellow pollinia, 0.9 mm long, brought together by a drop-like viscidium. *Capsules* 1.6 × 0.3 cm. *Ovary* subverrucose-glandulous, straight, 2.6–3.0 × 1.0 mm.

Distribution and ecology:—Up to now *Pleurothallis sabanillae* is only known from the steep hillsides near the village of Sabanilla in the Zamora Chinchipe province of Ecuador (Figure 3). The species is found growing as an

epiphyte on understory lianas and tree trunks, together with other orchid species such as *Elleanthus vernicosus* Garay (1978: 105), *Octomeria colombiana* Schlechter (1920: 121), *O. hirtzii* Luer (2002: 29), *Pleurothallis adonis* Luer (1976: 40) and *P. omoglossa* Luer (1976: 152). The upper montane forests of this region are dominated by *Purdiaea nutans* Planchon (1846: 251), *Myrica pubescens* Humboldt & Bonpland ex Willdenow (1806: 746), *Myrsine andina* (Mez 1902: 378) Pipoly (1992: 7) and pioneer species such as *Andesanthus lepidotus* and *Graffenrieda harlingii* Wurdack (1976: 7) (Bussman 2005).

Etymology:—Named after Sabanilla, known also as El Tambo, an eminent farming village in the Zamora Chinchipe Province of Ecuador close to the type locality.

Taxonomic discussion:—*Pleurothallis sabanillae* belongs to the *Pleurothallis cardiostola-lilijae* complex, a group within the subsection *Macrophyllae-Fasciculatae* according to Luer (2005) and Wilson *et al.* (2022). The new species is most similar to *Pleurothallis lilijae*, but is distinguished by the shorter plants (up to 36 cm *vs.* 45 cm tall) and flowers (1.1 × 1.6 *vs.* 1.6 × 2.2 cm), the purple flowers (*vs.* pale yellowish brown), the strongly deflexed dorsal sepal (*vs.* erect), strongly recurved petals (*vs.* slightly deflexed), the broadly ovate lip (*vs.* ovate-triangular) and the purple column (*vs.* purple and white).

Conservation status:—To date this species is known from one locality with a few dozens of individuals we recommend to consider it as a restricted endemic. *Pleurothallis sabanillae* is present near forests threatened by human activities (frequent forest fires, works close to high voltage electrical lines, livestock breeding and deforestation). Fortunately, this species is expected to be found within the Podocarpus National Park, where its conservation would be assured.

5. *Pleurothallis tinajillensis* M.M.Jiménez, H. Garzón & Vélez-Abarca, *sp. nov.* (Figures 11–12)

Type:—ECUADOR. Morona Santiago: Municipal Conservation Ecological Area Tinajillas–Río Gualaceño, between Limón and Gualaceo, 3°00'45.10" S, 78°31'29.06" W, 26 May 2022, 2336 m, *M. Jiménez & H. Garzón 1410* (holotype: HUTPL 14634!).

Similar to *Pleurothallis ruberrima*, from which it differs by its lanceolate, attenuate leaves (*vs.* narrowly ovate, acute), flowers lying on the leaf surface (*vs.* dangling over the sides of the leaf), elliptic-ovate dorsal sepal (*vs.* narrowly ovate), the base of the petals unlobed, separated from each other (*vs.* with an obtuse lobe, very close to each other), the lip triangular-ovate, sulcate without a callus (*vs.* broadly ovate, convex with a rounded callus).

Description:—*Plant* epiphytic, up to 23 cm tall, roots slender, flexuous, 0.6–0.9 mm in diameter. *Ramicauls* slender, suberect, terete, 13.5–21.6 long and 1.3–1.6 mm in diameter, enclosed by papyraceous, tubular sheaths, upper sheath 33.4–37.2 mm long, basal sheath 22.6–24.8 mm long. *Leaves* green adaxially, suffused with purple abaxially, lanceolate, attenuate, dull, centrally channeled, 9.0–13.0 × 2.5–3.2 cm, concave with slightly raised lateral nerves, base cordate, margins purple. *Inflorescence* a fascicle of successive flowers produced from a reclined, papyraceous, spatheaceous bract, 14.0–17.7 mm long; peduncle short, 3.6 mm long, *floral bract* infundibuliform, 8.4 mm long; *pedicel* very long, verrucose, dilated at the junction with the ovary, 12.1 mm long. *Flowers* glossy, delicate, lying against the leaf, sepals and petals pale garnet green toward the ends, with purple minute pubescence. *Dorsal sepal* elliptic-ovate, 7-veined, 8.0 × 11.7 mm, convex, margins revolute. *Lateral sepals* united into an ovate, 6-veined, slightly concave, obtuse, 14.0 × 8.2 mm synsepal. *Petals* narrowly oblong, slightly falcate, lanceolate, 3-veined, ribbed at the midvein, 10.1–10.4 × 1.9–2.0 mm, base thickened, whitish, verrucose, recurved, separated at the upper margin from the other petal, apex acute, minutely incurved. *Lip* greenish white, tan and purple to the apex, triangular-ovate, 3-veined, verrucose-papillose, 4.3 × 3.4 mm, adaxially sulcate in the middle with two lateral depressions at each side, margins minutely erose, base truncate with a small glenion, apex apiculate, center of the base of the lip without a callus. *Column* stout, white, complanate, papillose, 3.0 mm long including the rostellar flap, 1.7 × 1.2 mm, apex flared, thickened. *Anther* narrowly obovate, whitish brown, papillose, 1.1 mm long, bilobed at the base, pollinia 2, yellow, clavate, 1.1 mm long. *Ovary* subverrucose, subclavate, almost straight, 5.1 × 1.3 mm.

Distribution and ecology:—Up to now *Pleurothallis tinajillensis* is only known from the type locality on the steep slopes into the AECMTRG in the Morona Santiago Province (Figure 3). The species grows at the foot of the hills in the montane rainforest at around 2300 m in elevation, on the Eastern slope of the Cordillera Oriental of the Andes. It grows on tree trunks, together with other orchid species such as *Elleanthus vernicosus* Garay (1978: 105), *Maxillaria meridensis* Lindley (1846: 19), *Oncidium cruentoides* Chase & Williams (2008: 24), *Pleurothallis eccentrica* Luer & Hirtz (1988: 140) and *Pleurothallis amplexens* Luer (1980: 73). The local vegetation is characterized by *Cecropia andina* (Cuatrecasas 1945: 286), *Oreopanax andreanus* Marchal (1880: 90), *Andesanthus lepidotus* and *Weinmannia fagaroides* Kunth (1823: 54–55).

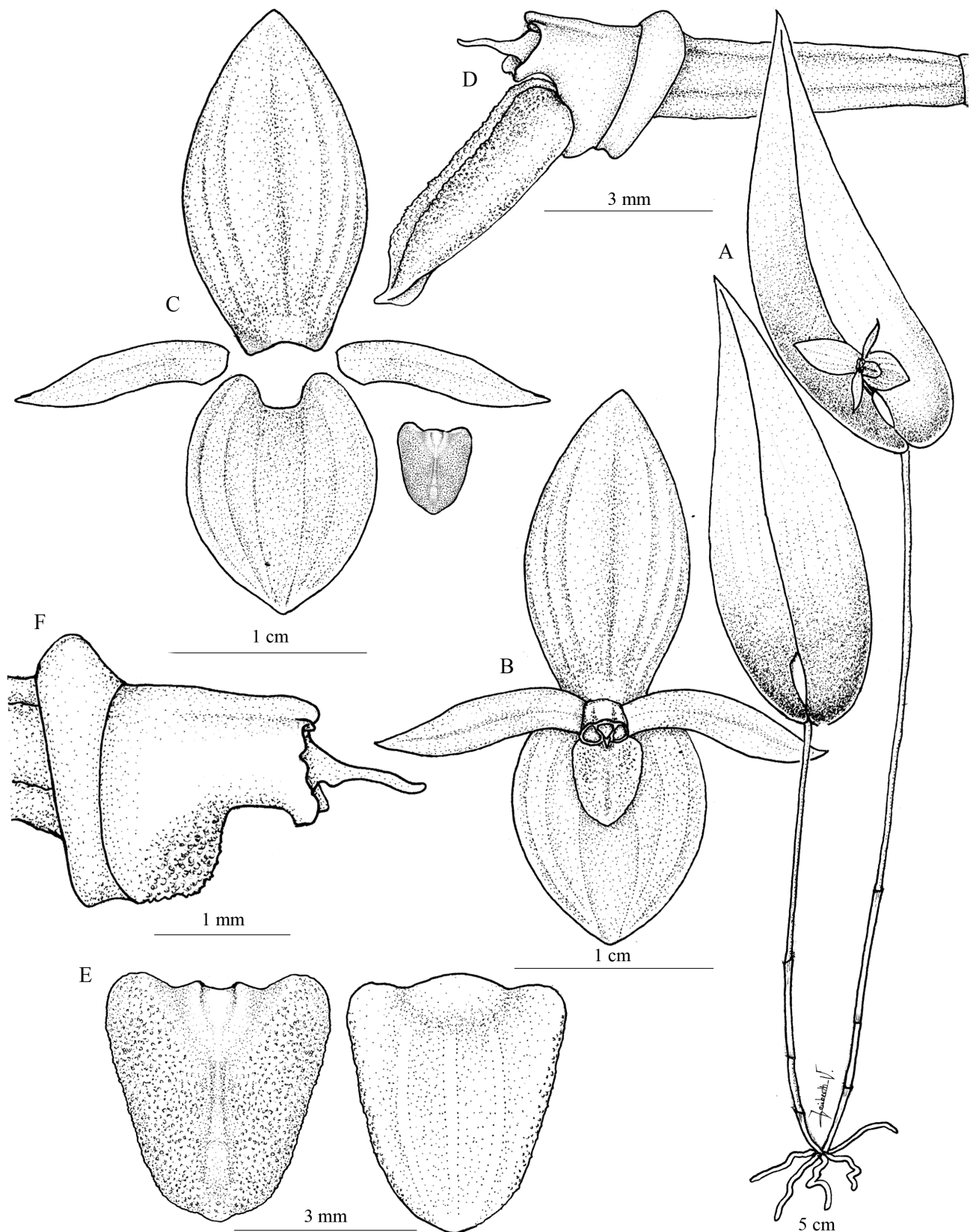


FIGURE 11. *Pleurothallis tinajillensis*. **A.** Habit. **B.** Flower. **C.** Dissected perianth. **D.** Ovary, column and lip in lateral view. **E.** Lip adaxial and abaxial views. Illustration by L. Vélez-Abarca based on the type.

Etymology:—Named after Tinajillas, which is the Municipal Conservation Ecological Area Tinajillas–Río Gualaceño (AECMTRG), where the type locality is found. It is an important local protected area in southeastern Ecuador, home to a considerable area of natural vegetation that includes montane and premontane forest ecosystems.

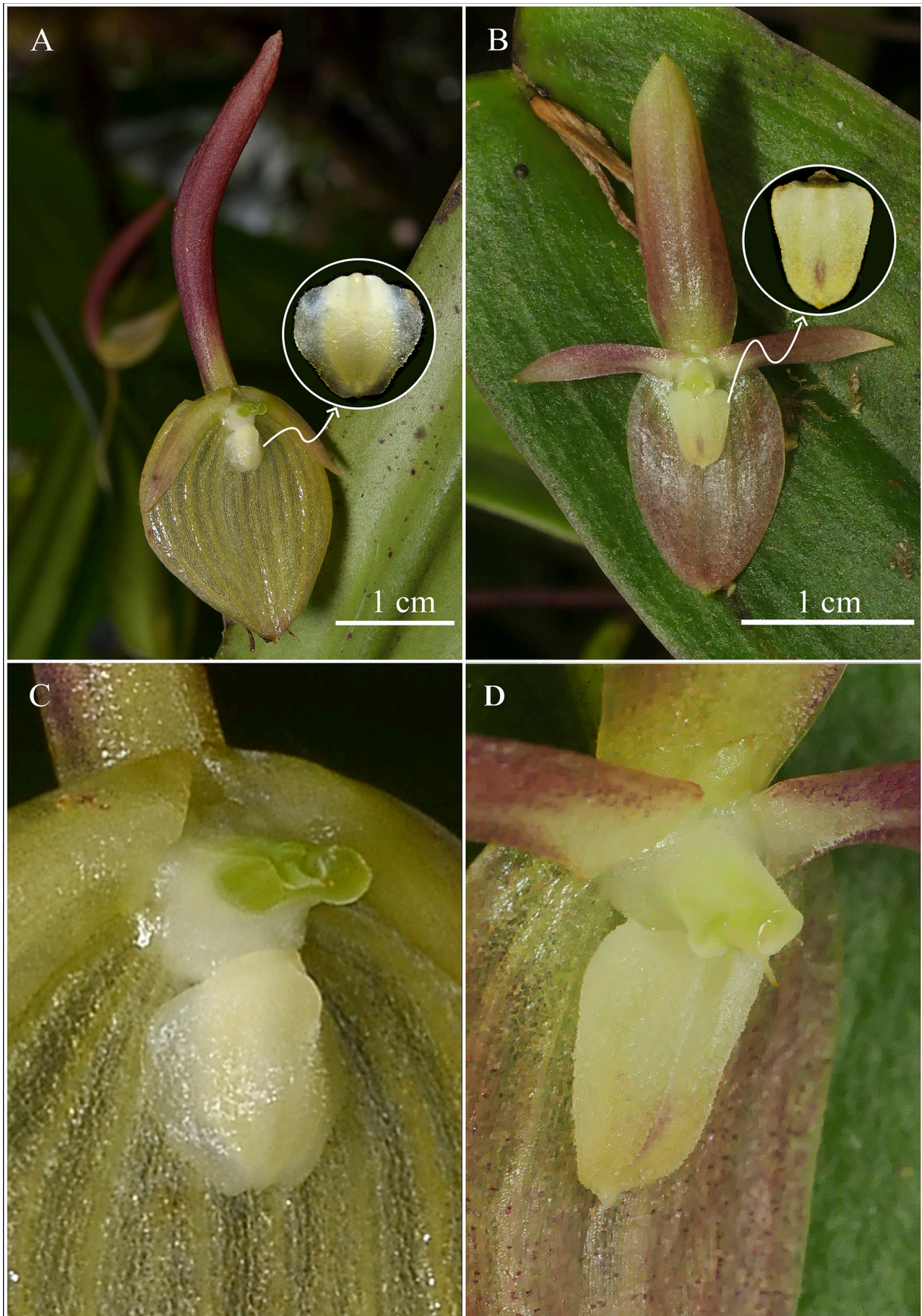


FIGURE 12. Flower and frontal view of the lip. **A.** *Pleurothallis ruberrima* **B.** *P. tinajillensis*. Close-up of the lips and columns. **C.** *Pleurothallis ruberrima*. **D.** *P. tinajillensis*. Elaborated by Henry Garzón from photos by **A.** Henry X. Garzón based on a in situ specimen and **B.** Marco M. Jiménez based on the type.

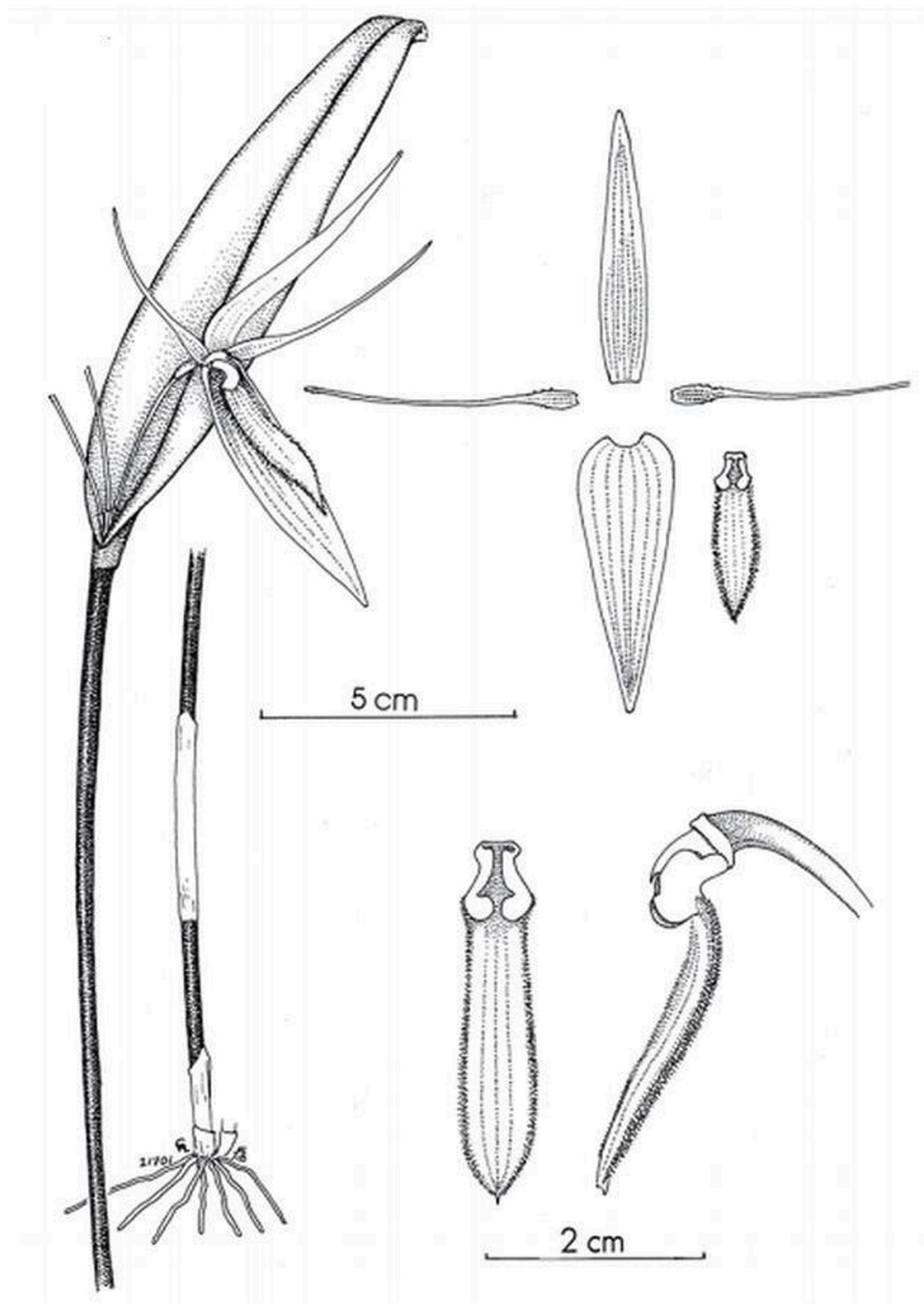


FIGURE 13. Lectotype of *Lindleyalis saueri* Luer. Reproduced in Harvard Papers in Botany 17:333–368. 2012. C. Luer illustr. 21701. Fig. 27.

Taxonomic discussion:—*Pleurothallis tinajillensis* is most similar to *P. ruberrima* but it is distinguished by its smaller plants, up to 23 cm tall (vs. 35 cm), concave, centrally channeled, suffused with purple at the abaxial surface of the leaf (vs. convex, sulcate, green at the abaxial surface of the leaf), shorter pedicel (12 mm vs. 20–60 mm

long), minutely pubescent sepals and petals (*vs.* glabrous), shorter dorsal sepal (11.7 *vs.* 15–23 mm long), extended horizontally petals (*vs.* reflexed), pulvinate, apiculate, basally truncate lip (*vs.* convex, broadly obtuse to rounded, basally subcordate), and whitish, complanate column (*vs.* green and white or purple, ancipitous) with a longer rostellum (1.2 mm long *vs.* 0.4 mm).

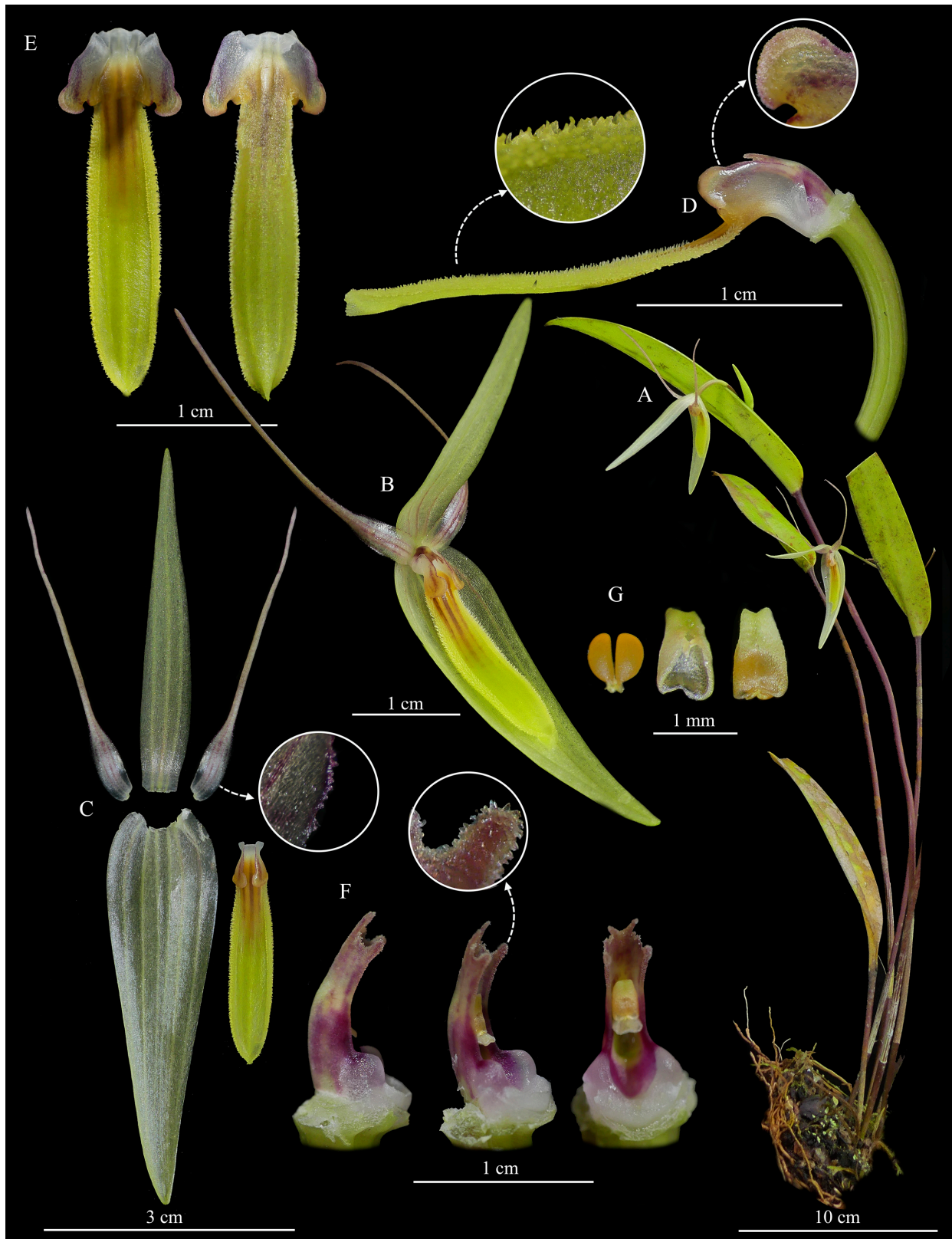


FIGURE 14. *Pleurothallis saueri*. **A.** Habit. **B.** Flower. **C.** Perianth dissected and close-up to margin of the petal. **D.** Ovary, column, and lip, lateral view and close-up of the margin of the lateral lobe and the midlobe. **E.** Lip adaxial and abaxial views with the basal lobes expanded. **F.** Column in lateral, $\frac{3}{4}$, and frontal views, with a close-up to the papillae of the clinandrium. **G.** Anther cap adaxial and abaxial views and pollinia. LCDP by L. Vélez-Abarca elaborated with photographs by Marco M. Jiménez from L. Vélez 0073.

Conservation status:—This species has not been reported within the Ecuadorian National System of Protected Areas but the type locality is located within the AECMTRG, an area of ~32,928 hectares protected since 2002. *Pleurothallis tinajillensis* appears to have a very restricted distribution and may be endemic to the province of Morona Santiago. Additional data is required about distribution and abundance of this species before a valid conservation assessment can be made.

Taxonomic notes on *Pleurothallis saueri* (Luer) J.M.S. Shaw

Pleurothallis saueri was originally described as *Lindleyalis saueri* Luer in Luer & Thorerle (2012: 355) from a wild specimen from Ecuador but without a known locality, which was imported by Tropical Orchid Farm and grown by E. Sauer in the United States (Luer & Thorerle (2012)). It is now confirmed that this species grows in Zamora Chinchipe Province, southeast Ecuador, in the same location of *P. lapoi* (Figure 3). A specimen of *P. saueri* was found, photographed, and collected without flowers in the confirmed locality in November 2020, it was grown at the Orquideario La Paphinia, where it bloomed 18 months later (Figure 14).

6. *Pleurothallis saueri* (Luer) J.M.S. Shaw (2016: 39).

Basionym: *Lindleyalis saueri* Luer (2012: 355).

Type:—ECUADOR. Without collection data, obtained from Tropical Orchid Farm in Hawaii, flowered in cultivation in Centerville, OH, December 2011, *E. Sauer s.n.* (holotype: MO, not found, lectotype here designated), C. Luer illustr. 21701, in Harvard Papers in Botany 17: 333–368. 2012. (Fig. 13). Epitype (designated here):—ECUADOR. Zamora Chinchipe: cerca de El Pangui, 1560 m, 17 January 2022, L. Vélez-Abarca, LV 0073 (ECUAMZ!) (Figure 14).

While searching for the original material of the species, the type material was sought at Missouri Botanical Garden (MO) to verify if the specimen is deposited there. It was known that the holotype of *Pleurothallis saueri* is not found at the herbarium, therefore, based on the original illustration a lectotype is selected here.

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