



## *Platystele peruviana* sp. nov. (Orchidaceae), the smallest orchid from Peru

FEDERICO L. RIZO PATRÓN<sup>1, 2\*</sup>

<sup>1</sup>Centro Neotropical de Entrenamiento en Humedales - Perú, Carretera San Alberto km 5.5, Oxapampa 15302, Perú.

<sup>2</sup> [feluse30@gmail.com](mailto:feluse30@gmail.com); <https://orcid.org/0000-0002-2261-1078>

\*Author for correspondence: [feluse30@gmail.com](mailto:feluse30@gmail.com)

### Abstract

A new orchid species is described, *Platystele peruviana*, from Oxapampa, Pasco, Peru, and can be considered, at this moment, the smallest orchid in the country. This species differs from other related species by the morphology of the ovate lip with circular glenion and the lateral sepals parallel, subfalcate and connate. A brief history of *Platystele* is provided along with the botanical description and illustrations of the new species. Finally, a key to the Peruvian *Platystele* species is provided, in English and Spanish.

**Keywords:** BIOAY, cloud forest, Oxapampa, Pleurothallidinae

### Resumen

Se describe e ilustra una nueva especie de orquídea, *Platystele peruviana*, de Oxapampa, Pasco, Perú. Esta especie puede ser considerada en este momento como la especie de orquídea más pequeña del país. Esta especie se diferencia de otras relacionadas por su labelo ovado con glenion circular y los sépalos laterales paralelos subfalcados y conados. Se presenta una clave de identificación para las especies del género en Perú, tanto en inglés como en español.

### Introduction

*Platystele* Schlechter (1910: 565) is known for being among the smallest orchids in the Orchidaceae family. In fact, *P. jungermannioides* (Schlechter 1912: 42) Garay (1974: 120), is considered the smallest orchid in the world (Bogarín & Karremans 2010), with a flower size of 2.5 mm and a complete plant size up to 2.5 cm long (Schlechter 1912).

The first *Platystele* ever described was *P. stenostachya* Reichenbach (1944: 399) (Garay 1962: 520) by Reichenbach in 1844, under the genus *Pleurothallis* Aiton. (1813: 211). By 1969, collections from this group had grown and E. Endress recognized that this was a new genus of orchids different enough from *Pleurothallis*, proposing at the time the creation of *Stelidiatrum*, basing his proposal on a specimen that would eventually be described in 1923, by Schlechter, as *Pleurothallis minimiflora* (Schlechter 1923: 288) (Bogarín & Karremans 2010, Luer 1990). However, *Stelidiatrum* was never validly published. Later, in 1910, Schlechter created the genus *Platystele* based on *P. bulbinella* (Schlechter 1910: 565), with bases in the very short column, wide in the upper part and without a basal foot (Luer 1990, Pridgeon 2005, Schlechter 1910).

*Platystele* exists exclusively in the Neotropics, distributed from Southern Mexico to Bolivia, including the Antilles (Pridgeon 2005). To date, there are 140 species reported for this genus, without including the species from the subgenus *Teagueia* (Luer 1991: 140) (Tropicos 2022). There are 10 species registered to Peru, with their respective herbaria or publications (*P. aculeata* Luer (1981: 197), *P. examen-culicum* Luer (1977: 28), *P. misera* Garay (1967: 251), *P. lancilabris* Schlechter (1923: 102), *P. oxyglossa* (Garay 1974: 120), *P. pisifera* Luer (1977: 232), *P. psix* Luer & Hirtz (Luer 1992: 117), *P. rauhii* Luer (1987: 61), *P. schmidtchenii* Schlechter (1924: 166), and *P. stenostachya* Reichenbach (1944: 399). In this report, we document the eleventh species for the country.

The type specimen of the new species described here was observed during a field trip through a creek at the Gramazú area in Oxapampa, Pasco, Peru. The ecosystem where it was found is Montane forest. The plant was located on a small branch with a diameter of 3 cm; fully covered by moss, about 1 m from the ground. The area had low light

due to the very close proximity to the forest floor. The area was very humid due to the nearby presence of a creek. Temperature range varies between 4 and 28 degrees Celsius. Other orchids from the Pleurothallinidae group were observed in this location, as well (Personal observation).

**Conservation.** In Peru, all orchids are considered threatened because of commercial issues and are included in the CITES convention in addendum I and II (CITES 2022, MINAM 2015). Every aspect of orchid conservation is managed by the central office of the Peruvian Forestry Service in Lima, not by regional or local offices. Unfortunately, in Peru, there is no data about population status and that makes it very difficult at the moment to make accurate assumptions about their conservation status (SERFOR 2020).

## Material and methods

Pictures were taken on a Nikon D90 camera with a 35-70mm Nikkor lens equipped with a 48mm generic Nikon extension tube (Nikon Corporation, Japan). Measurements were taken from the dry specimen under a stereoscope (model JTL-02-V7). Descriptions and icons from different Peruvian *Platystele* were obtained from the publications cited in this manuscript. To analyze and compare the different species already described, specialized literature was used. The main text was the *Platystele* treatment and its related addenda, by Carlyle Luer (Goicochea *et al.* 2019, Luer 1990, 1991, 1992). Also, the original descriptions for every *Platystele* species from Peru were used (Bogarín & Karremans 2010, Garay 1962, 1974, Reichenbach 1944, Schlechter 1910, 1912 & 1923).

The species of *Platystele* included in the identification key are only those with verified specimens deposited in herbaria or published from the Peruvian territory. It is based on the key to the entire genus by Luer (1990). The key is also provided in Spanish as many botanists interested in these orchids are Spanish-speakers.

## Taxonomy

*Platystele peruviana* Rizo-Patron, *sp. nov.* (Figures 1–3)

**Type:**—PERU. Oxapampa: Gramazú, 1934 m, 01 September 2020, *FRV 52* (holotype HOXA!).

*Platystele peruviana* is similar to *P. psix* Luer & Hirtz, but differs from the lateral parallel falcate sepals (*vs.* oblique not falcate), ovate elliptic lip (*vs.* ovate lanceolate), and a large circular glenion (*vs.* medium semi square glenion).

**Description:**—Plant epiphyte, caespitose, erect up to 14 mm tall: Roots basal, slender, up to 1 mm diameter, with compressions every 2 to 3 mm; Ramicauls slender, suberect, 1 mm long, covered by 2 thin tubular sheaths; Leaves thickly coriaceous, conduplicate, elliptic, erect, apex subacute, tridenticulate, 8–9 × 3.5–4 mm, abscission layer visible, short conduplicate petiole, 2 mm long; Inflorescence an erect raceme, with successive flowers, up to 12 mm long, peduncle 9 mm long; Flowers flat, sepals and petals pale yellow to transparent towards the margins and darker towards the midvein, covered with glandular hairs, Dorsal sepal lanceolate, apex acute, 3.0 × 0.75 mm; Lateral sepals more or less parallel, subfalcate, 3 mm × 1 mm, connated a quarter of the length of the sepals; Petals, lanceolate, with the upper margin curved towards the top in the central third, the lower margin straight, 2 × 0.5 mm; Lip red with an orange tip, with whitish-yellow glandular hairs, ovate - elliptic, with the apex acute, 1.0 × 0.75 mm, with a circular glenion in the base; Column pale yellow, short, 0.3 mm tall; 0.4 mm long, 0.75 mm wide; Anther with more intense yellow in comparison to the column, 0.25 × 0.25 mm; Pollinia yellow, ovoid from the side.

**Distribution and ecology:**—*Platystele peruviana* is found only in Oxapampa, Pasco, Peru (Figure 1) and could be considered, at this moment, the smallest orchid in Peru. Oxapampa is part of the Oxapampa Ashaninka Yanasha Biosphere Reserve – BIOAY.

**Etymology:**—The specific epithet has been chosen to honor Peru, the country where the type specimen of this species was found.

**Taxonomic Discussion:**—*Platystele peruviana* is similar to *Platystele psix* Luer & Hirtz with the exception of the lateral sepals, which are more parallel than oblique and with a subfalcate shape (Figures 2A and 3A). Also, the lip in *P. psix* is ovate-lanceolate with an acute apex, while the lip of *P. peruviana* is ovate-obtuse, resembling that of *P. napintzae* Luer & Hirtz (Luer 1992: 114) (Figures 2E and 3C). The glenion is circular and approximately half as wide as the lip base, which is semi square in *P. psix* (Figures 2E, 3C 3D, 4A, 4C and Table 1). A comparison between *P. peruviana*, *P. psix*, *P. lancilabris* (Schlechter 1923: 102), *P. oxyglossa* (Garay 1974: 120) and *P. pisifera*

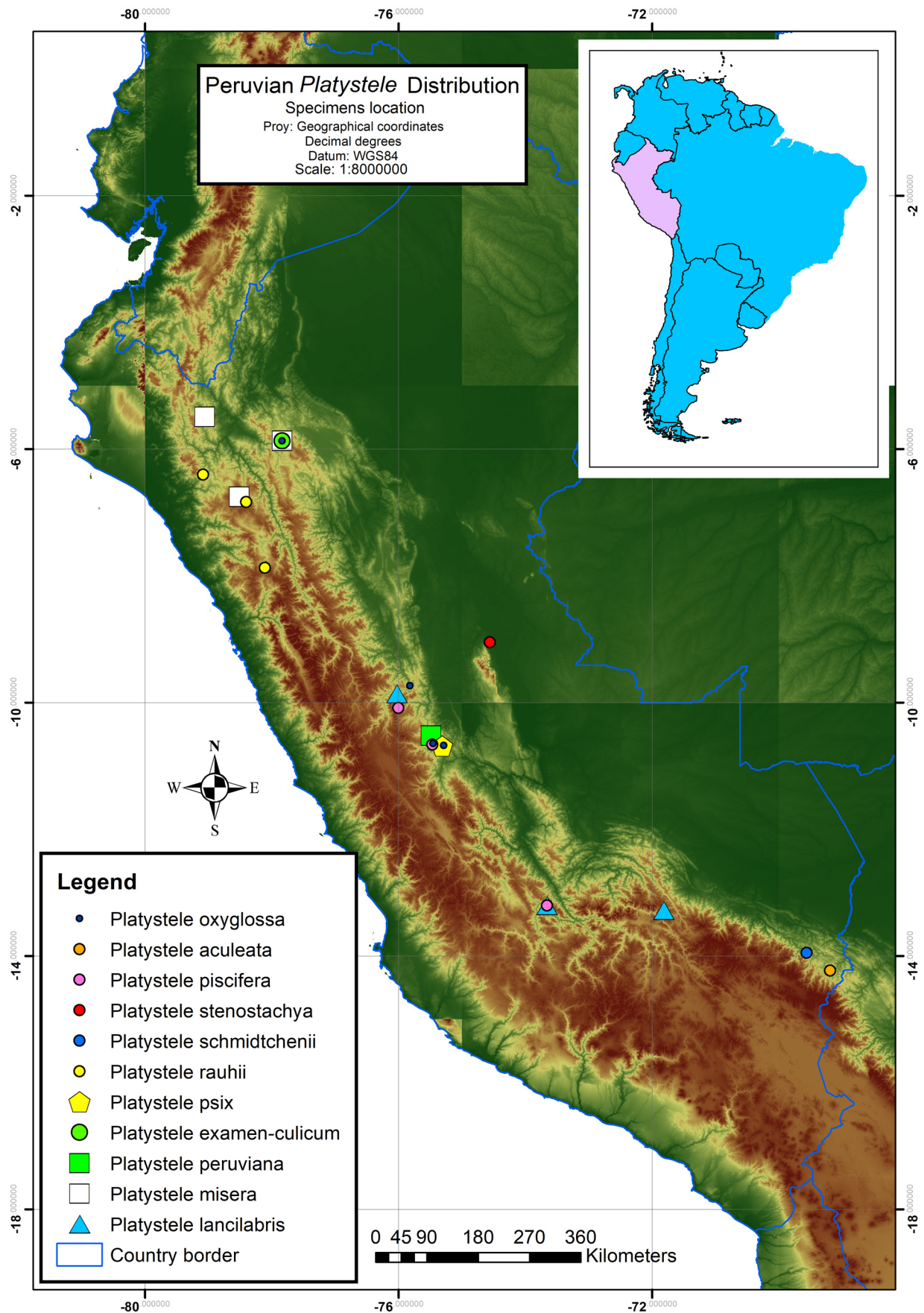
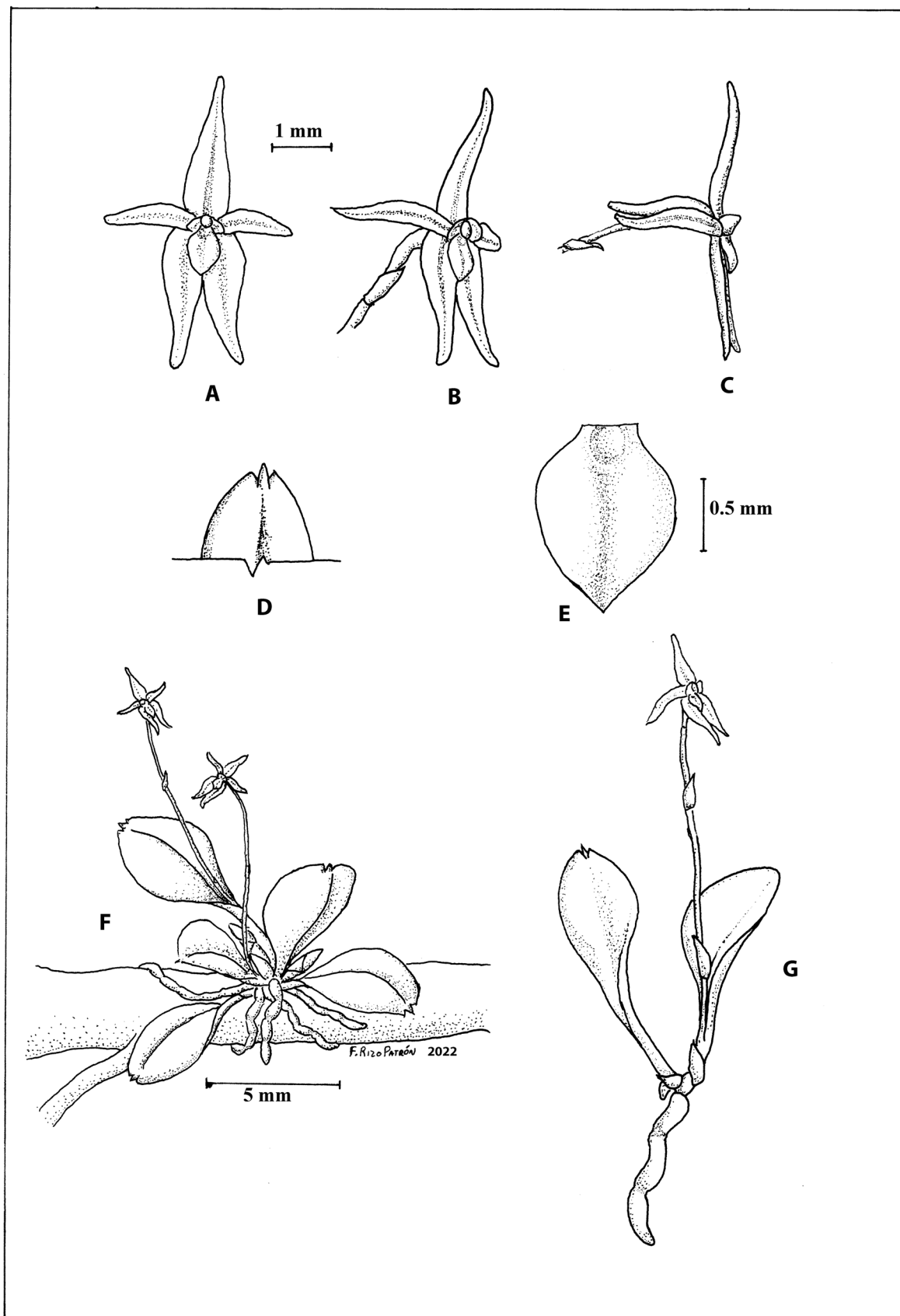
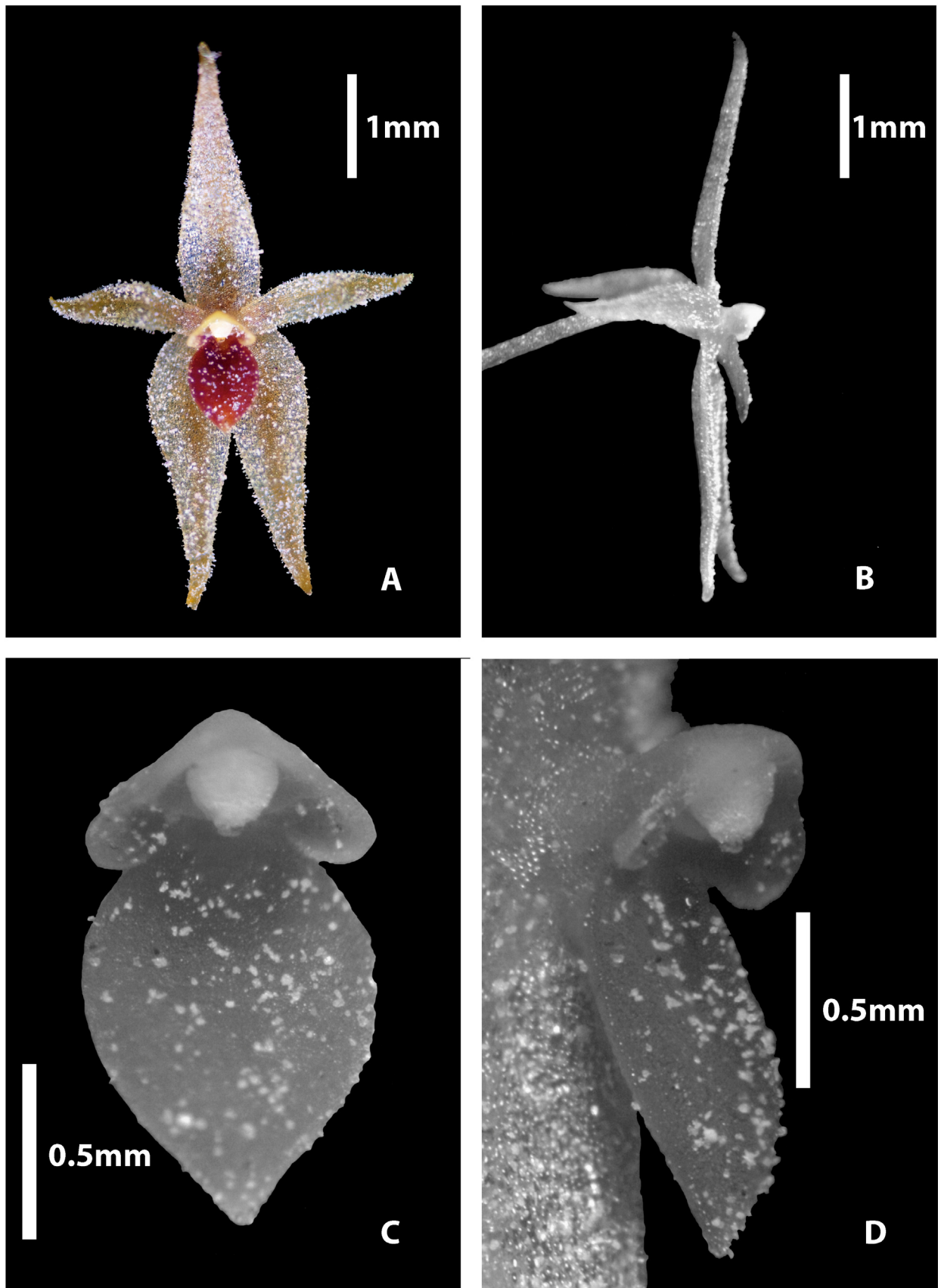


FIGURE 1. Map of the distribution of the different *Platystele* species in Peru.



**FIGURE 2.** *Platystele peruviana* Rizo Patrón. Drawn from the plant that served as Type. Illustration by F. Rizo Patrón.





**FIGURE 3.** *Platysteles peruviana*. A. Frontal view and natural color. B. Lateral view. C. Front detail of the column and the lip. D. Lateral detail of the column and the lip. by F. Rizo Patrón (FRV52, HOXA).

(Luer 1977: 232), which can be found in nearby locations, is presented in Table 1. The descriptions of the different *Platystele* species mention that roots are coarse, slender and fleshy (Luer 1990, 1991, 1992, Jost & Iturralde 2017). No description mentions if any species have little constant compressions along the roots as are shown in Figure 2F, 2G and 4D. Connation of lateral sepals is also different from other species. This is shown in Figure. 4B and Table 1.

In the treatment for *Platystele* (Luer 1990) and its addenda (Luer 1991, 1992), nine Peruvian species are bigger than 5 cm from the base. Only *Platystele psix* has a plant bigger than 2 cm from the base, and *P. peruviana* is only 1.4 cm. from the base.

**TABLE 1.** Differences of *P. peruviana* in relation with other four *Platystele* species.

	<i>P. lancilabris</i>	<i>P. oxyglossa</i>	<i>P. pisifera</i>	<i>P. psix</i>	<i>P. peruviana</i>
Lip shape	Ovate	Ovate - Lanceolate	Ovate	Ovate - Lanceolate	ovate - obtuse
Lip apex	Acute	Acute	Acute	Acute	Sub acute - Obtuse
Glenion shape	Circular	Semi circular	Circular	semi square shape	circular
Glenion Size	Very big	Medium	Very small	Medium	Big
Dorsal sepal shape	Ovate	Ovate	Ovate	Ovate	Elliptic subfalcate
Dorsal sepal position	Oblique	Oblique	Oblique	Oblique	Parallel
Dorsal sepal connation	One quarter of sepal length	No	No	One seventh of sepal length	One quarter of sepal length

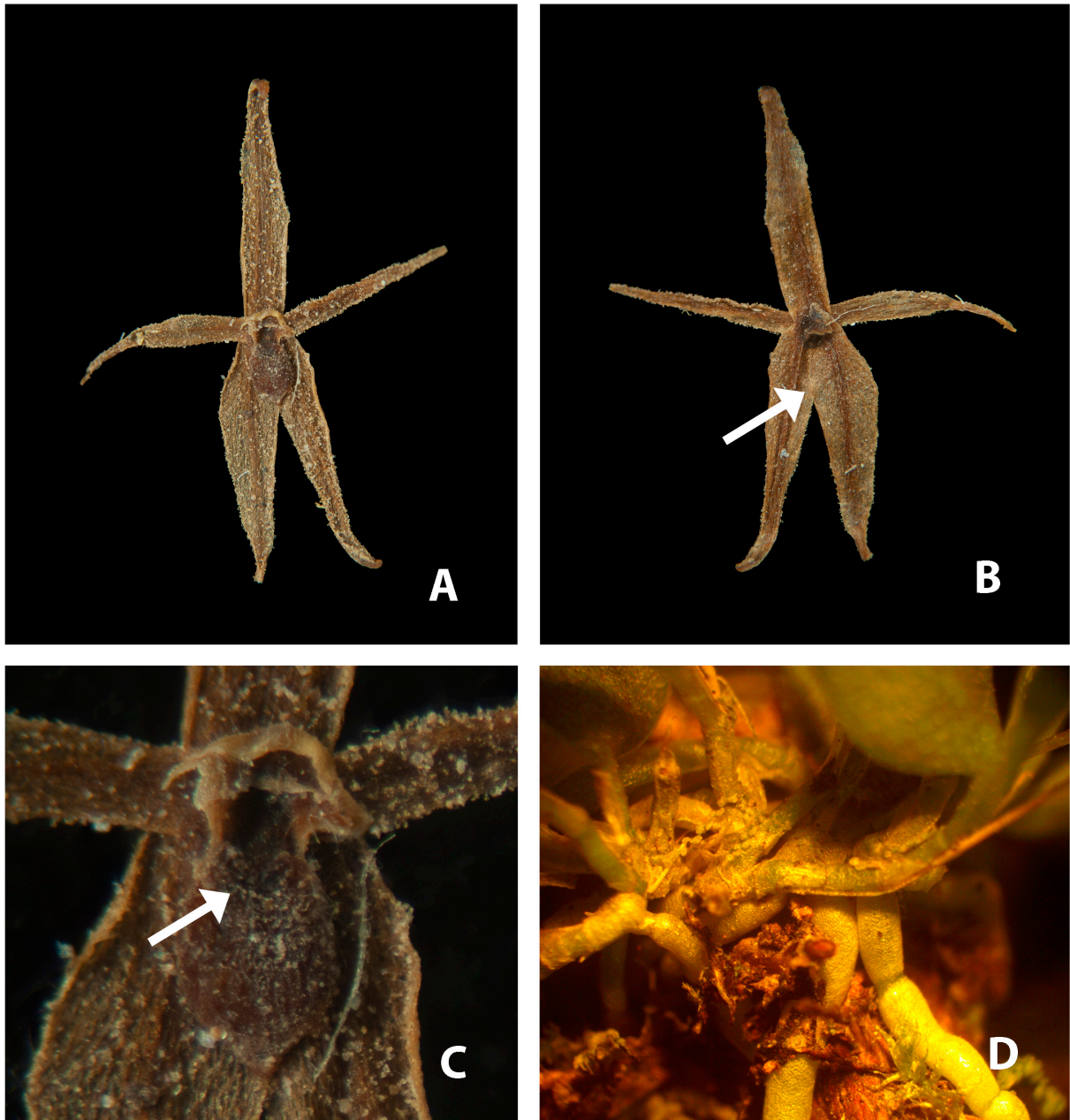
### Identification key for Peruvian species of *Platystele*.

1	Inflorescence simultaneously flowered, 3 or more flowers open simultaneously.....	2
1'	Inflorescence successively flowered, 1 or sometimes 2, rarely 3 flowers open simultaneously.....	6
2	Inflorescence shorter than the leaf.....	<i>P. stenostachya</i>
2'	Inflorescence as long as or longer than leaf.....	3
3	Inflorescence more or less simultaneously flowered.....	4
3'	Inflorescence successively flowered.....	5
4	Lip acute or acuminate.....	<i>P. lancilabris</i>
4'	Lip subacute to obtuse.....	<i>P. Schmidchenii</i>
5	Leaves ovoid, semiterete; lip acuminate.....	<i>P. rauhii</i>
5'	Leaves neither ovoid or semiterete; lip narrowly rounded.....	<i>P. misera</i>
6	Inflorescence considerably longer than the leaf.....	7
6'	Inflorescence shorter to a little longer than the leaf.....	9
7	Lip ovate with the apex acute and acuminate.....	8
7'	Lip ovate with the apex acute, not acuminate.....	<i>P. oxyglossa</i>
8	Lip ovate, contracted near the middle into a sublate apex.....	<i>P. examen-culicum</i>
8'	Lip narrowly ovate, acuminate, acute.....	<i>P. aculeata</i>
9	Lateral sepals subfalcate, parallel.....	<i>P. peruviana</i>
9'	Lateral sepals strait, oblique.....	10
10	Sepals and petals minute ciliate; lip glabrous.....	<i>P. pisifera</i>
10'	Sepals, petals and lip cellular-ciliate and cellular-pubescent.....	<i>P. psix</i>

### Clave de identificación para especies peruanas de *Platystele*.

1	Inflorescencia con flores simultaneas, 3 o más flores simultaneas.....	2
1'	Inflorescencia con flores sucesivas, 1 o a veces.....	2
	raramente 3 flores abiertas al mismo tiempo.....	6
2	Inflorescencia más corta que la hoja.....	<i>P. stenostachya</i>
2'	Inflorescencia tan o más larga que la hoja.....	3
3	Inflorescencia con flores más o menos simultáneas.....	4
3'	Inflorescencia con flores sucesivas.....	5
4	Labelo agudo.....	<i>P. lancilabris</i>
4'	Labelo subagudo a obtuso.....	<i>P. Schmidchenii</i>
5	Hojas ovoides, semiterete; labelo acuminado.....	<i>P. rauhii</i>
5'	Hojas nunca ovoides o semiterete; labelo con ápice redondeado.....	<i>P. misera</i>
6	Inflorescencia considerablemente más larga que las hojas.....	7
6'	Inflorescencia más corta o un poco más larga que las hojas.....	9
7	Labelo ovado con el ápice agudo acuminado.....	8
7'	Labelo ovado con el ápice agudo no acuminado.....	<i>P. oxyglossa</i>
8	Labelo ovado, adelgazado cerca del centro hacia un ápice delgado.....	<i>P. examen-culicum</i>
8'	Labelo delgadamente ovado, acuminado, agudo.....	<i>P. aculeata</i>
9	Sépalos laterales falcados, paralelos.....	<i>P. peruviana</i>
9'	Sépalos laterales rectos, oblicuos.....	10

- 10 Sépalos y pétalos con cilios diminutos; labelo glabro.....*P. pisifera*  
 10' Sépalos, pétalos y labelo con Pubescencia celular..... *P. psix*



**FIGURE 4.** Specific characteristics from *P. peruviana*. Photos taken from the type (dry specimen) A. Front view of the complete flower showing the lip and the glenion. B. back view of the complete flower showing the connate portion of lateral sepals. C. View of the lip and the glenion. D. Photo of the roots from the type (fresh specimen).

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