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A new species of *Phragmipedium* (Orchidaceae: Cypridioideae) from Peru

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Abstract

A new species of *Phragmipedium* section *Lorifolia*, *P. cabrejosii*, is described and illustrated from Peru, and its affinities are discussed. It is mainly compared with *P. caricinum*, from which it is distinguished by the simple inflorescence, the elliptic dorsal sepal, that is apically white, the shorter, apically twisted pale yellow petals tinged with rose, and the ovate-subrhombic staminodial shield (vs. reniform).

Keywords: Junin selva central, Peru, *Phragmipedium* sect. *Lorifolia*

The horticultural interest for the species of the genus *Phragmipedium* Rolfe (1896: 330) (Orchidaceae) spread out during the époque of the “orchid fever” in the second half of XIX century, when the tropical taxa belonging to the subfamily Cypridioideae Lindl. in Endlicher (1837: 220) were mostly treated as members of *Cypripedium* Linnaeus (1753: 951) and *Selenipedium* Reichenbach (1854: 116). Before 1900, 14 out of the 21 species of *Phragmipedium* currently recognized (Cribb & Purver 2017), and nine natural hybrids (mostly man made) were first described for science. As professional collectors were flooding the horticultural market with novelties coming from the tropical regions of America, both taxonomists and horticulturists were engaged in the naming of new species and varieties (I.e., Delchevalerie 1867, Reichenbach 1874, 1886, Linden 1874, 1888, Carrière 1884, Veitch 1890, among others) the origin of which was mostly hidden or distorted for commercial purposes. With the renewal of a worldwide appreciation for *Phragmipedium* species by orchid enthusiasts during the last two decades, the scenario has not changed. Since the year 2000, ten species and three nothospecies of *Phragmipedium* have been proposed as new to science, but a type locality has only been clearly stated for four of them (Campacci & Takase 2000, Braem *et al.* 2014, 2016, Szlachetko & Kolanowska 2017), the remaining taxa being ostensibly based on cultivated material. The new species proposed here from Peru is no exception to this rule.

Peru is home to eight species and one nothospecies of *Phragmipedium* (Schweinfurth 1958, Brako & Zarucchi 1993, Ulloa Ulloa *et al.* 2004, Villafuerte & Christenson 2007, Coz *et al.* 2007), including *P. caudatum* (Lindley 1840: 531) Rolfe (1896: 332), the first species of the genus to be discovered and illustrated by European botanists (Pupulin 2012), and *P. kovachii* Atwood, Dalström, & Fernández (2002: 1), probably the most controversial orchid species of all times in terms of legal procedures applied to botany (Pittman 2012). The other species recorded for the country are *P. besseae* Dodson & Kuhn (1981: 1308), *P. boissierianum* (Reichenbach 1854: 116) Rolfe (1896: 332), *P. caricinum* (Lindley & Paxton 1850: 39) Rolfe (1896: 332), *P. lindenii* (Lindley 1846: 28) Dressler & Williams (1975: 691), *P. longifolium* (Warsz. & Rchb.f. in Reichenbach 1852: 690) Rolfe (1896: 332), *P. pearcei* (Reichenbach 1865: 298) Rauh & Senghas (1975: 62), and *P. × richteri* Roeth & Gruss (1994: back cover). Species belonging to three out of the four sections of *Phragmipedium sensu* Cribb & Purver (2017) are known from Peru, the only section missing from the Peruvian flora being *Phragmipedium* sect. *Platypetalum* (Pfitzer in Engler 1903: 43) Garay (1979: 133), restricted to the extra-Andean regions ranging from Venezuela and the Guyanas to Brazil and lowland Bolivia (Cribb & Purver 2017).

The species proposed here is based on a single specimen grown in the living collections of Centro de Jardinería Manrique, where it was deposited by officers of the Servicio Nacional Forestal y de Fauna Silvestre (National Forestry

and Wildlife Service of Peru, or SERFOR by its Spanish acronym) after an intervention resulted in the confiscation of a number of illegally harvested orchid plants. The original habitat of the plant has been tracked to the Peruvian department of Junin, without any additional information. The floral features of this specimen are nonetheless so distinct from those of other species in the genus *Phragmipedium* that we consider the species deserves taxonomic recognition with the following name:

Phragmipedium cabrejosii Damian, M. Díaz & Pupulin, *sp. nov.*

Type: —PERU. Junin: probably along the Perene river, exact locality unknown. Flowered in cultivation at Centro de Jardinería Manrique, June, 2019, A. Damian, A. Manrique & J. Cabrejos 0510 (holotype: UFV). Figs. 1–3.

Species Phragmipedium sectioni Lorifolia pertinens, pro sectione perparvo, primo visu P. caricino (Lindl. & Paxton) Rolfe similis, sed inflorescentia simplici, sepalis dorsale elliptico apicaliter albo veniente, petalis longitudinis minoris ad apicem non tortis pallide luteis apicaliter rosaceis, labio lobuli antici labelli minuto, lobulis lateralibus involutis albis, disco staminodii ovato-subrhombico columnae distincte longiore plerumque recedit.

[Diagnosis]. Species belonging to *Phragmipedium* sect. *Lorifolia*, with very small habit for the section, superficially similar to *P. caricinum* (Lindl. & Paxton) Rolfe, but with the inflorescence simple (vs. branched), the dorsal sepal elliptic (vs. lanceolate), flushed white apically (vs. yellow, flushed maroon), the petals comparatively shorter, not twisted apically (vs. twisted), pale yellow slightly tinged with rose (vs. purple, striped with dark purple), the rim of the anterior margin of the lip reduced (vs. prominent), the lateral, infolded lobes white (vs. yellow, heavily blotched with red), the staminodial shield ovate-subrhombic (vs. reniform), distinctly longer than the column (vs. shorter).

A caespitose, small, presumably terrestrial or lithophytic, compact *herb*, up to 20 cm tall. *Roots* fibrous, brown, 0.3 cm in diameter. *Leaves* sedge-like, linear, arcuate, acute, smooth, 6–18 × 0.3–0.8 cm, strongly keeled, glabrous, pale green, lighter green below, the margins slightly revolute. *Inflorescence* a successively-flowered, simple, erect raceme, 7.0–7.5 cm tall, provided with sheathing, ovate bracts, ca. 2.8–3 cm; peduncle purple brown, sparsely puberulent. *Floral bracts* shorter than the ovary, conduplicate, ovate, acute, 2.5–5.0 × 1.2–1.8 cm, greenish yellow, 9-veined; 2 lower, sterile bracts lanceolate, acuminate, 2.6–5.5 × 0.3–0.5 mm, congested, green with reddish brown veins, 9-veined, the margins thin. *Ovary* and *pedicel* 3.5–4.5 cm long, brown-green, sparsely white-puberulent. *Flowers* yellow-green suffused with brownish orange, the veins reddish brown, the outer surface mostly glabrous, the inner surface mostly puberulent to tomentose; margins white. *Dorsal sepal* elliptic, obtuse, concave, minutely hooded at apex, 2.6–2.8 × 1.2–1.3 cm, mostly white, suffused with green on the base and along the veins, with ca. 14 green veins, the margins to 0.6 mm wide, slightly undulate. *Synsepal* ovate, obtuse, deeply concave, minutely hooded at apex, 2.4–2.5 × 1.6–1.7 cm, shorter than the lip, ca. 21-nerved, pale green with the margins white. *Petals* pale yellow abaxially, greenish yellow, rose to dark-red along the veins, the margins white, oblique, narrowly ovate-lanceolate, obtuse, 3.5–3.7 × 0.5–0.6 cm, inner surface shortly pubescent-papillose, hirsute at the base, the hairs purple, the apex densely papillose, the hairs purple, glandular, the margins white, slightly undulate, sparsely pubescent, the hairs purple. *Lip* saccate, 2.8–3.2 × 1.4–1.6 cm, brownish yellow in the outer surface, white with green spots in the folds inside the rim, greenish yellow with brown-red spots in the inner surface, the inner surface pilose, the main opening widely ovate; lip rim entire, reduced, glabrous, edged outside with a thin, dark red, dotted line. *Column* 8–10 mm long, green with dense, yellow hairs on the filaments of the fertile anthers; *staminode* ovate-subrhombic, swollen in the middle, acute, 7.0–7.2 × 4.9–5.0 mm, light yellow to green, dorsally glabrous, ventrally slightly pubescent at the base; *stigma* fleshy, obovoid, ca. 3.5 mm wide, densely papillose; *pollen masses* granulose, yellowish white. *Fruit* not seen.

Eponymy:—Named after Juan Martín Cabrejos Meza, a recognized grower of Peruvian *Phragmipedium* who first noticed that the species herein described could represent an undescribed taxon.

Distribution:—At this time, *P. cabrejosii* is only known from a specimen confiscated in central Peru, without any additional information about its origin. The department of Junin, where the plant was probably collected, belongs to the natural region of the *selva central* (central forest), which varies in elevation between 600 and 2300 meters above sea level. The region has a moderate dry season in the months of May–August, and a definite rainy season that concentrates precipitation in the months of December through March. According to Alfredo Manrique (*pers. comm.* 2019), who had the plant in cultivation under his care, because of the ease with which the plant grows in Lima, it is presumable it comes from the low foothills of the eastern Andes range, at elevations lower than 800–1000 meters.

Phenology:—Cultivated in Lima, *P. cabrejosii* flowers from June–August.

Phragmipedium cabrejosii belongs to *Phragmipedium* sect. *Lorifolia* (Kraenzlin 1901: 13) Garay (1979: 141), characterized by the flower scape partially covered with sweating bracts, the flowers opening successively, and the petals not more than three times longer than the sepals, which are fully developed at anthesis (Cribb & Purver 2017).

The species has the smallest habit in the section, where it can be described as a dwarf plant. Even though the floral size of *P. cabrejosii* is roughly comparable to that of other species of sect. *Lorifolia*, it has mature leaves up to 18 cm long, while they can reach a length of 55 cm in *P. caricinum*, 35–40 cm in *P. pearcei*, 80 cm in *P. longifolium*, and 55–80 cm in *P. vittatum* (Vell. 1831) Rolfe (1896) (measurements according to Gruss 2014 and Purver & Cribb 2017).

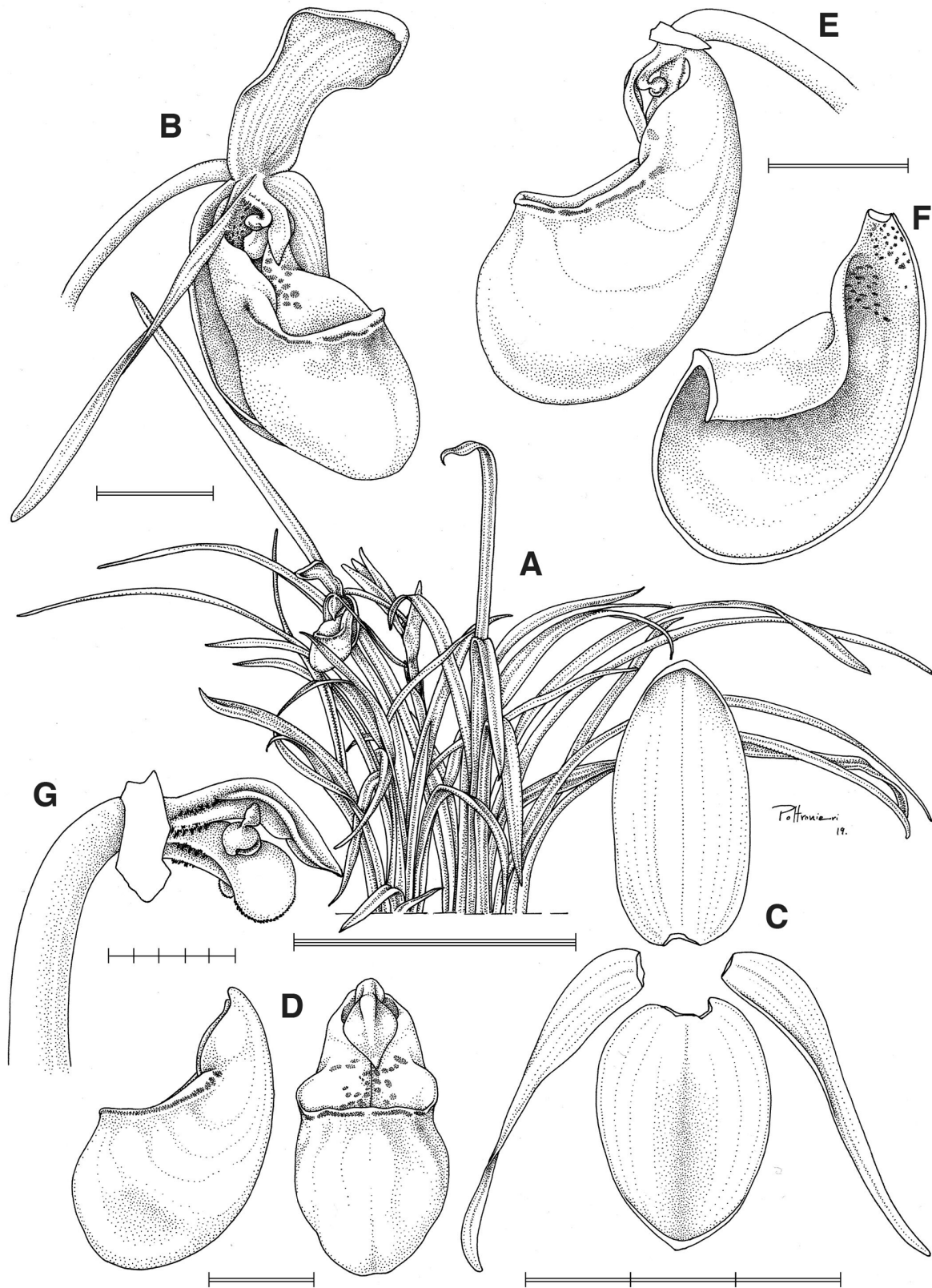


FIGURE 1. *Phragmipedium cabrejosii*. A: habit. B: flower. C: sepals and petals. D: lip, lateral and frontal views. E: column and lip, lateral view. F: longitudinal section of the lip, inner view. G: column, lateral view. Drawing by Sara Poltronieri from the holotype. Single bar = mm; Double bar = cm; Triple bar = dm.



FIGURE 2. *Phragmipedium cabrejosii*. Lankester Composite Digital Plate (LCDP) prepared from the holotype. Single bar = mm; Double bar = cm; Triple bar = dm.

Among the species of sect. *Lorifolia*, *P. cabrejosii* mostly resembles *P. caricinum* from southern Peru and Bolivia, but it has a simple inflorescence (vs. branched), an elliptic dorsal sepal (vs. lanceolate) that is apically white (vs. flushed maroon), shorter, pale yellow petals tinged with rose at the non-twisted apex (vs. purple, striped with dark

purple, twisted), a reduced rim of the anterior margin of the lip (vs. prominent), white lateral lobes of the lip (vs. yellow, heavily blotched with red), and the ovate-subrhombic staminode (vs. reniform).



FIGURE 3. *Phragmipedium cabrejosi*, the flower. Frontal, $\frac{3}{4}$, and lateral views.

It may also be compared with *P. pearcei*, from which it is easily distinguish by the cespitose habit (shortly stoloniferous in *P. pearcei*), the unbranched, sparsely pubescent inflorescence (vs. branched, densely hairy), the flower color, the densely pubescent apex of the petals (vs. sparsely pubescent), the glabrous rim of the lip (vs. minutely pubescent) and the shape of the staminode (ovate-subrhombic vs. broadly cordate).

It is important to note that in DNA analyses carried out by Cox *et al.* (1997), Damián Loaiza *et al.* (2005) and Rodríguez Salas *et al.* (2007), based in nuclear ribosomal ITS nucleotide and Amplified Fragment Length Polymorphism data, *P. caricinum* does not cluster on the same clade with the other species of section *Lorifolia* [+*Himantopetalum* (Hallier 1897: 44) Garay (1979: 140)]. A genetic analysis of the new species based on the same DNA regions could easily confirm the phylogenetic affinity we are suggesting on a morphological ground.

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