

## A new species of *Ponthieva* (Cranichidinae, Orchidaceae) from Bolivia

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### Abstract

A new species of *Ponthieva*, *P. boliviensis*, is described and illustrated based on Bolivian material. The novelty resembles *P. pilosissima* and *P. hermiliae* characterized by pilose leaves and free lateral sepals. From *P. pilosissima* the new species differs in the shallowly concave lip, ovate-triangular basal lip auricles which are more or less parallel to the claw and ovate lip disc. Unlike in *P. boliviensis*, the lip of *P. hermiliae* is yellowish-green to greenish-white, lanceolate-triangular, lacking basal lobes, concave on the proximal half, with a 6-toothed callus placed horizontally in front of the basal cavity.

**Keywords:** Morphology, new species, Neotropics, Orchidaceae, taxonomy

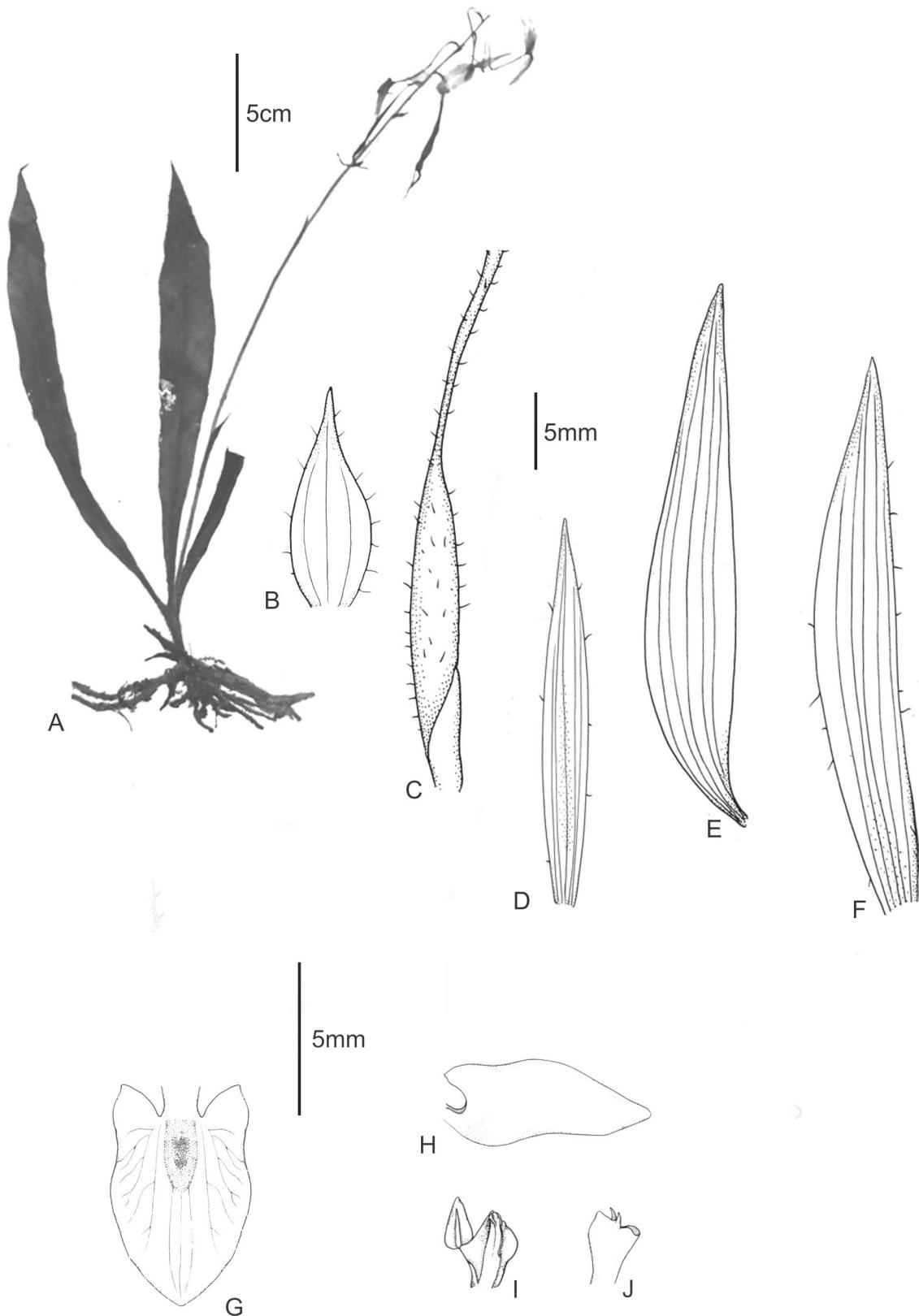
### Introduction

Bolivia is one of the least studied countries in the tropics in terms of its biodiversity. In 1922, the number of known species of Orchidaceae for this country was 323 and they represented 78 genera (Schlechter 1922). The majority of national orchid flora (218) were endemics (Schlechter 1922). By 1958, when a first floristic checklist for Bolivia was published, 450 orchid representatives were found in the country. Currently, about 1500 species are known to occur in Bolivia, but according to recent estimations there may be about 2000–3000 species of orchids in the country. Noteworthy, about 33% of the taxa are endemic to Bolivia (Vásquez & Ibisch 2000, Vásquez *et al.* 2003), which makes this country an area deserving further attention from taxonomists, especially considering the currently observed increasing rate of species extinction.

Our recent study on the diversity of Bolivian orchids has revealed a discovery that is presented in this paper. Among the specimens of *Ponthieva* Brown (1813: 199) we found a collection which differs from all known species of the genus. Later we discuss its distinctness and propose to give a rank of a separate species for the plant.

The genus *Ponthieva* was described based on *Neottia glandulosa* Sims (1805: 842) by Robert Brown (1813) and named in honour of Henri de Ponthiev, a French merchant in the Antilles. Plants classified in this taxon have usually basal, sessile or petiolate leaves which are glabrous, pilose or pubescent. The peduncle is usually elongate, pubescent, terminated by laxly few- to many-flowered raceme. Flowers of *Ponthieva* are non-resupinate, with lateral sepals being often basally connate and petals being connate with the column sides. The lip is relatively small, fleshy, fused to the lower part of the gynostemium. The footless gynostemium is most often short and massive, erect, sessile or stalked. The anther is erect, oblong-ovate, motile. Four oblong-ovate, compact pollinia are produced. The staminodes are wing-like, fused with the filament or its part, and with the stigma margins forming a prominent dorsal clinandrium (Szlachetko & Rutkowski 2000).

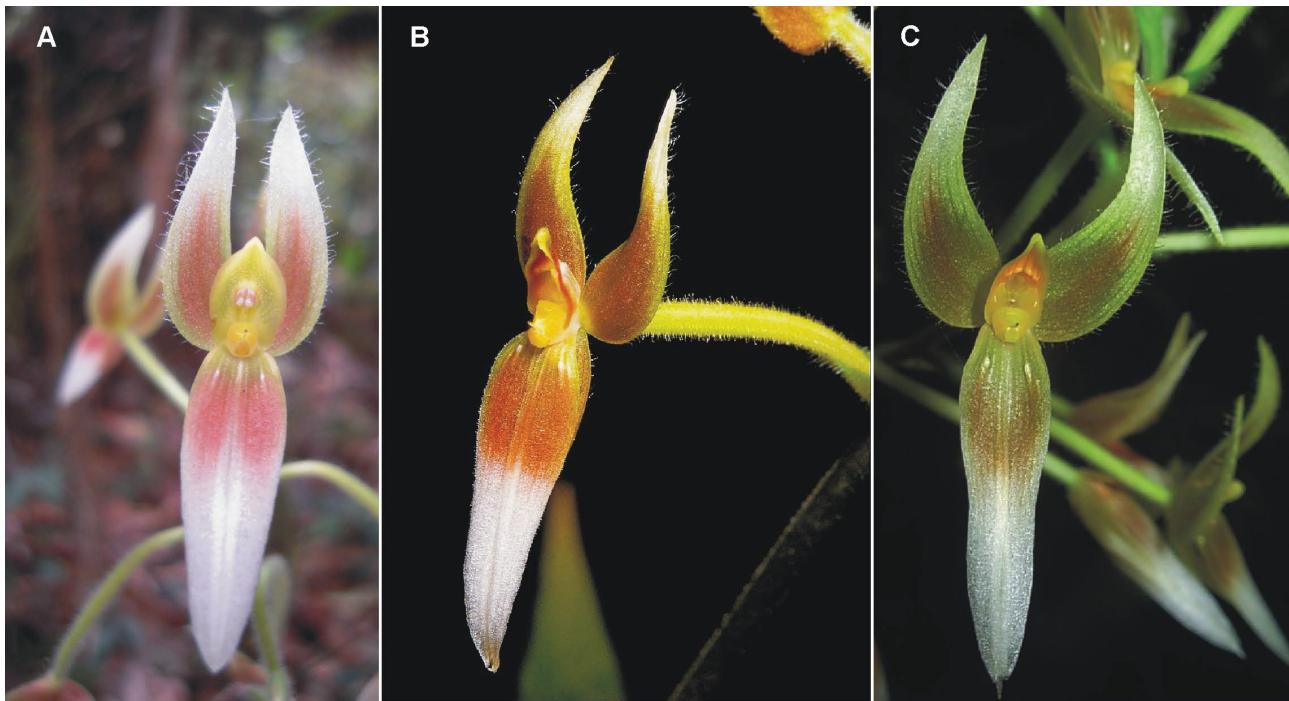
*Ponthieva* is placed within Cranichidinae Lindley ex Meissner (1842: 384) based on morphological and molecular data (Pfitzer 1887, Dressler 1993, Szlachetko 1995, Salazar *et al.* 2009, Chase *et al.* 2015). Within this subtribe petals adnate to the column part are observed also in *Baskervilla* Lindley (1840: 505) and *Pseudocentrum* Lindley (1858: 63). The latter genus differs from *Ponthieva* by the form of lateral sepals which are connate into a tube or a sac entirely enclosing the lip. On the other hand, the gynostemium of *Baskervilla* is elongated and slender.



**FIGURE 1.** *Ponthieva boliviensis*—A—habit, B—floral bract, C—bract, pedicel and ovary, D—dorsal sepal, E—petal, F—lateral sepal, G—lip, front view, H—lip, side view, I—J—gynostemium, various views (A—photograph of the holotype, B—J—drawn from the holotype).

*Ponthieva* includes about 70 species distributed in the American tropics and subtropics, from Florida to northern Argentina, with the greatest diversity observed in the Andes. Populations are found growing epiphytically in mossy trunks, terrestrially in forest floor and lithophytically along humid banks. The altitudinal range extends from near the sea level up to over 3000 m.

Vásquez *et al.* (2003) reported occurrence of 10 *Ponthieva* species in Bolivia as well as of two undescribed representatives of the genus. The taxonomic status of several species currently recognized as synonyms of *P. inaudita* Reichenbach (1877: 17) (*P. koehleri* Mansfeld (1930: 93), *P. microglossa* Schlechter (1921: 56)) requires further studies.



**FIGURE 2.** Flowers of *Ponthieva boliviensis* (A; photo by A. Fuentes), *Ponthieva pilosissima* (B; photo by A. Hirtz), and *Ponthieva hermiliae* (C; photo by L. Valenzuela Gamarra)

### Taxonomic treatment

#### *Ponthieva boliviensis* Kolan., Baranow & A. Fuentes, *sp. nov.* (Figs. 1, 2A)

Species similar to *P. pilosissima* and *P. hermiliae* but with long ovary neck, ovate basal lip lobes, ovate lip disc with apical part lacking distinct constriction, and different callus.

Type:—BOLIVIA. Dpto. La Paz. Prov. Franz Tamayo. Región Madidi, Sano Domingo, sector Lechemayu, en la Parcela Permanente 49. 14°46'09"S 68°37'11"W. Alt. 1475 m. 19 Aug 2010. A. Fuentes *et al.* 17045 (holotype LPB!; isotypes: LPB).

Epiphytic plants about 37 cm tall. Leaves 2–3, basal, rosulate, petiolate; petiole up to 4 cm long; blade up to 25 cm long, 4.5 cm wide, narrowly elliptic, acute to acuminate, pilose. Peduncle densely pilose, 2–3-sheathed, terminated by a subdensely many-flowered raceme up to 12 cm long. Flowers large, sepals and petals basally suffused with brownish-pink, otherwise whitish, lip yellowish-green, gynostemium yellow. Floral bract about 7.3 mm long, ovate, acute, ciliate. Ovary with distinct neck, 38 mm long, densely pilose. Dorsal sepal 14.2 mm long, 3 mm wide, oblong-elliptic, acute, 5-veined, sparsely ciliate. Lateral sepals free to the base, 18 mm long, 4.3 mm wide, obliquely oblong-elliptic, acute, 5-veined, sparsely ciliate. Petals shortly unguiculate; lamina 18.7 mm long, 4 mm wide, narrowly lanceolate, somewhat falcate, obtuse, 5-veined, glabrous. Lip clawed, ca. 7.2 mm long, 4.2 mm wide, more or less ovate-sagittate in general outline, basally with two ovate-triangular, somewhat spread lateral lobes, apex elongate, subobtuse; disc with two, oblong, parallel, close to each other basal calli (the structures are visible on the fresh material only, on the dried flower look like a single thickening), primarily 5-veined, lateral veins branching. Gynostemium 2.5–3 mm long, subsessile, erect, short, somewhat swollen apically.

**Etymology:**—In reference to the country of origin of the type specimens.

**TABLE 1.** Morphological comparison of *Ponthieva boliviensis* with the two most similar species, *P. hermiliae* and *P. pilosissima*.

		<i>P. boliviensis</i>	<i>P. hermiliae</i>	<i>P. pilosissima</i>
	maximum size of plant (cm)	37	46	30
	size (cm)	25 × 4.5	24–26 × 2–2.5	up to 17 × 4
leaves	shape	narrowly elliptic, acute, acuminate	spatulate-elliptic	narrowly lanceolate
	surface	pilose	covered with clavate, glandular hairs 1 mm long	pilose
floral bract	size (mm)	7.3	15	up to 10
	shape	ovate, acute	narrowly triangular, acute	oblong-lanceolate to lanceolate, acute
	surface	ciliate	hairy	sparsely glandular
	length (mm)	38	30	up to 33
ovary	surface	densely pilose	covered with trichomes	covered with club-like trichomes
	size (mm)	14.2 × 3	10–20 × 4–5	up to 20 × 4
dorsal sepal	shape	oblong-elliptic, obtuse	lanceolate	narrowly lanceolate to linear-lanceolate
	surface	sparsely ciliate	externally covered with glandular hairs	externally covered with glandular hairs
	size (mm)	18 × 4.3	10–20 × 4–5	up to 16 × 4.5
	shape	obliquely oblong-elliptic, obtuse	falcate-lanceolate, acute	ovate-lanceolate to linear-ligulate, acute to acuminate
lateral sepal	surface cover	glabrous	glabrous	externally sparsely glandular
	surface	sparsely ciliate	externally covered with glandular hairs	glabrous
	fusion	free	free	free
	size (mm)	18.7 × 4	19–20 × 2.5–3	up to 20 × 3.5
petals	shape	narrowly lanceolate	oblong-lanceolate	linear-ligulate to narrowly lanceolate

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**TABLE 1** (Continued)

	<i>P. boliviensis</i>	<i>P. hermiliae</i>	<i>P. pilosissima</i>
size (mm)	7.2 × 4.2	6 × 3	up to 7 × 3.5
shape	more or less ovate in general outline, basally with two ovate, spread lateral lobes, apex elongate, subobtuse	lanceolate-triangular	ovate, acute with elongate, rounded, spread lateral lobes
lip			
surface	slightly concave, without of thickenings	slightly concave in proximal half and at the rear, with 6-toothed rounded callus arranged horizontally in front of the basal cavity	strongly concave, central part with thickened margins, with basal toothed keel

**Distribution and habitat:**—Plants were found growing in a flat terrain near to the Lechemayu river a territory part of the indigenous Leco community of Santo Domingo. This area is located in the Madidi region to northwestern of Bolivia, specifically east of the town of Apolo on the outside and between the protected areas of Madidi to the north and Apolobamba to the south (Fig. 3). The species grows in a Yungenian (Rivas-Martínez *et al.* 2011) mixed forest-palm grove formation of the upper basimontane altitudinal belt with hyperhumid pluvial bioclimate, characterized mainly by the presence of the Andean palm *Dictyocaryum lamarckianum* (Martius 1838: 188) Wendland (1863: 161).



**FIGURE 3.** Distribution of *Ponthieva boliviensis* (star), *Ponthieva pilosissima* (circle), and *Ponthieva hermiliae* (square). Map prepared with ArcGIS (Esri).

**Notes:**—The new species is similar to Ecuadorian *P. pilosissima* (Senghas 1989: 47) Dodson (1996: 110) and Peruvian *P. hermiliae* Valenzuela Gamarra (2012: 161) but their differences are summarized in Table 1 and Fig. 3. All these species are characterized by pilose leaves and free lateral sepals. In most representatives of *Ponthieva* with hirsute/pilose leaves the lateral sepals are more or less connate.

From *P. pilosissima* (Fig. 2) the new species can be easily distinguished by the shallowly (vs. deeply) concave lip, ovate-triangular (vs. ligulate) basal lip auricles, which are differently oriented (more or less parallel to the claw vs. widely spreading) and ovate lip disc (vs. triangular in outline). Moreover, in *P. pilosissima* the lip is brownish-yellow, noticeably constricted in the apical part and here it is distinctly thickened. These characters are absent in *P. boliviensis*. In *P. hermiliae* the lip is yellowish-green to greenish-white, lanceolate-triangular, lacking basal lobes, concave on the proximal half, with a 6-toothed callus placed horizontally in front of the basal cavity.

In *P. vasquezii* Dodson (1989: 287) which is also characterized by villose leaves and free lateral sepals the sepals are dissimilar, lateral sepals are broadly ovate, dorsal sepal is oblong-elliptic, petals are distinctly unguiculate, obliquely ovate above the claw and the lip lacks basal lobes.

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