

## Two new species of *Pachyphyllum* (Orchidaceae, Vandoideae) from Colombia

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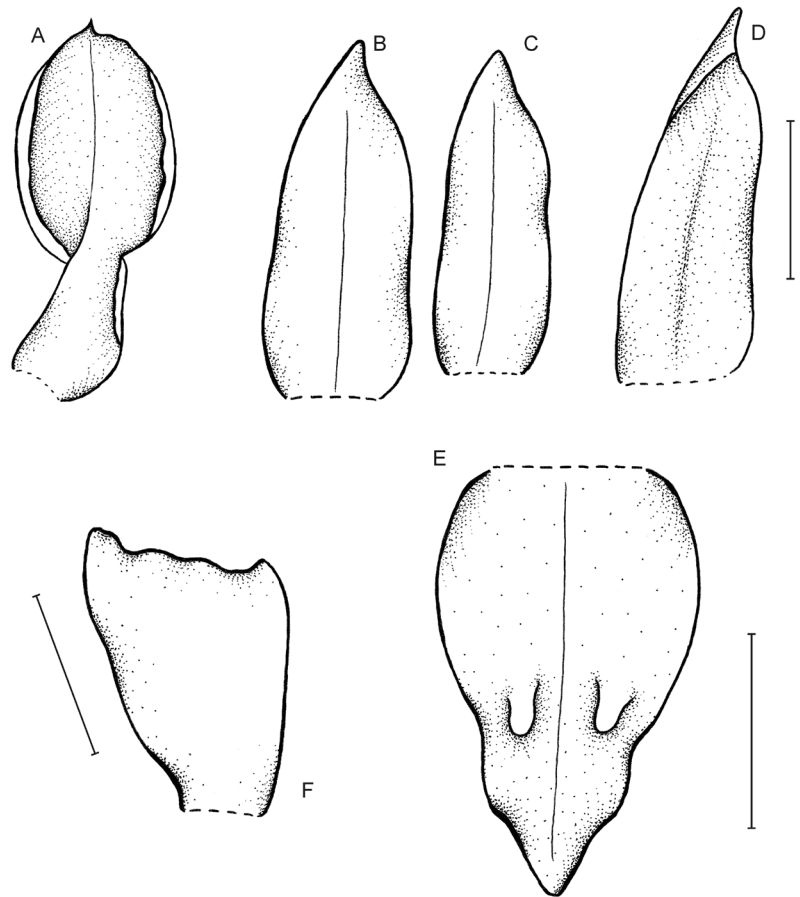
*Pachyphyllum putumayoensis* Szlach., Kolan. & N. Olędrzyńska *sp. nova* and *P. longipedicellatum* Szlach., Kolan. & N. Olędrzyńska *sp. nova* (Orchidaceae) are described and illustrated based on Colombian material. They were found growing sympatrically in páramo de San Antonio del Bordoncillo. Their taxonomic affinities are briefly discussed.

Various authors have proposed different approaches to the taxonomic composition of the subtribe Pachyphyllinae in the Orchidaceae. Most orchidologists accept only two genera within the subtribe: *Pachyphyllum* (including *Orchidotypus*) and *Fernandezia* (e.g. Schweinfurth 1961, Atwood & Mora de Retana 1997, Dressler 2003). *Orchidotypus* and *Pachyphyllum* were treated as separate taxa by Senghas (1995) and Szlachetko *et al.* (2007). Those genera are morphologically easily separable from each other. While the tepals of *Orchidotypus* are connate in the lower part and forming a distinctive tube, *Pachyphyllum* is characterized by sepals and petals remaining free to the base (Senghas 1995). Recently Chase and Whitten (2011) suggested that, due to the similar habit and lack of monophyly, *Pachyphyllum*, together with *Orchidotypus* and *Raycadenco*, should be included in *Fernandezia*.

Based on pollinaria form and plant habit, Dressler (1993) placed *Pachyphyllum*, together with *Fernandezia*, *Lockhartia* and *Raycadenco* in the subtribe Oncidiinae. A different approach

was presented by Szlachetko and Mytnik-Ejsmont (2009), who classified *Pachyphyllum*, *Fernandezia* and *Orchidotypus* within subtribe Pachyphyllinae of the tribe Dichaeae.

The genus *Pachyphyllum* was described by K. S. Kunth in 1816. In the narrow concept (excluding *Orchidotypus*) it comprises about 30 species of monopodial, usually sparingly branched plants. Their stems are erect, ascending or creeping, and covered by leaf sheaths. The leaves are chartaceous, distichous, articulate, coriaceous or fleshy, usually elliptic to oblong. There are no pseudobulbs. The lateral inflorescence is short, one- or few-flowered, and racemose. The small flowers are usually white to green. The free sepals are almost equal to each other, and the petals are nearly similar to the sepals. The lip is simple or 3-lobed, with a pair of calli, and concave (Atwood & Mora de Retana 1999). The gynostemium is elongate and gently arched. The broadly winged column part is ca. 3 times longer than the anther, and the thin wings are closely spaced or even touching each other in front of



**Fig. 1.** *Pachyphyllum putumayoensis* (from the holotype). — **A:** Leaf form. — **B:** Dorsal sepal. — **C:** Petal. — **D:** Lateral sepal. — **E:** Lip. — **F:** Clinandrium form. Scale bars = 1 mm.

the anther. The column foot is obscure. The ventral, obscurely 2-chambered anther is incumbent, operculate, slightly dorsiventrally compressed, and ellipsoid to obovoid. The two, gently dorsiventrally compressed, pollinia are obliquely obovoid. The caudicle is sticky and amorphous. The apical clinandrium is well-developed and forms a high collar surrounding the anther. The concave stigma is elliptic to transversely elliptic. The short rostellum is triangular, usually fleshy and blunt. The small, single viscidium is elliptic to obovate, and lamellate. The single, thin, lamellate tegula is oblong, and the rostellum remnant is shortly digitate and obscurely bilobed at the apex (Szlachetko & Mytnik-Ejsmont 2009).

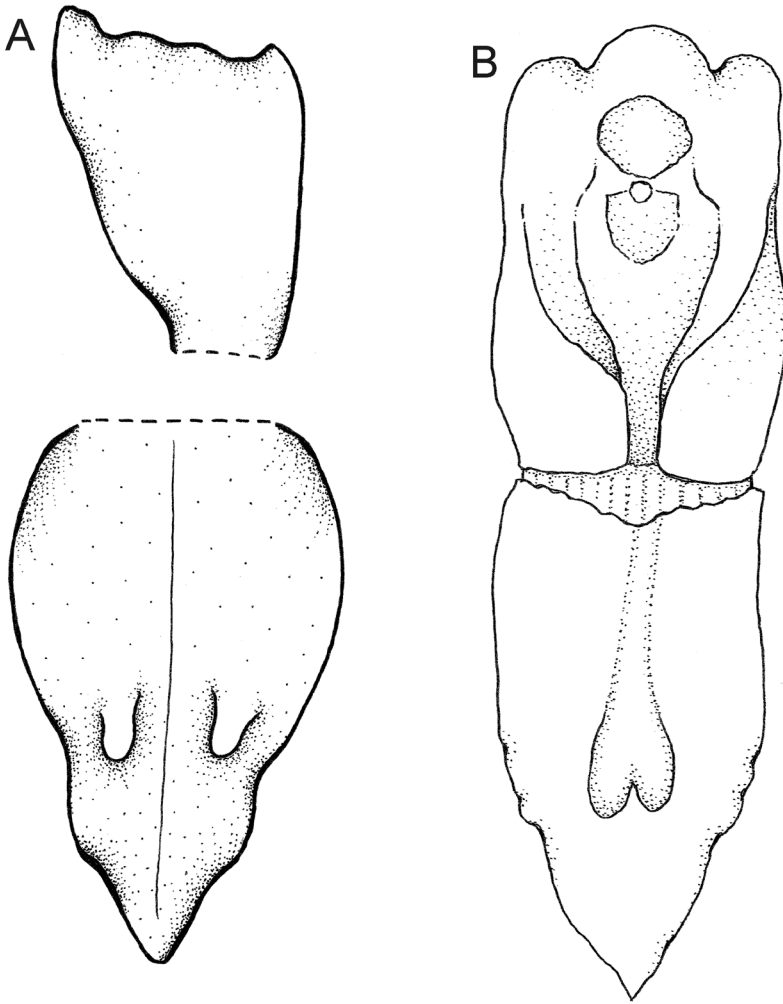
Species of *Pachyphyllum* are found in central and northern South America, from Costa Rica and Panama to Bolivia. They have been reported from the altitudes of about 2500–3600 m a.s.l.

(Senghas 1995). In the Colombian flora 11 representatives of *Pachyphyllum s. stricto* have been found so far (Ortiz-Valdivieso & Uribe-Vélez 2007), but our recent studies on Colombian orchids yielded two distinctive species which are described here as new. Both were found growing sympatrically in the Andean páramo in southern Colombia at the altitude of about 3250 m a.s.l. and both flower in January.

***Pachyphyllum putumayoensis* Szlach., Kolan. & N. Olędrzyńska, sp. nova (Fig. 1)**

TYPE: Colombia. Putumayo. Alta Cuenca del Rio Putumayo, filo de la Cordillera entre El Encano y Sibundoy, páramo de San Antonio del Bordoncillo. Alt. 3250 m a.s.l., 4 Jan. 1941 *Cuatrecasas 11698a* (holotype COL).

ETYMOLOGY: In reference to the provenance of the type material.

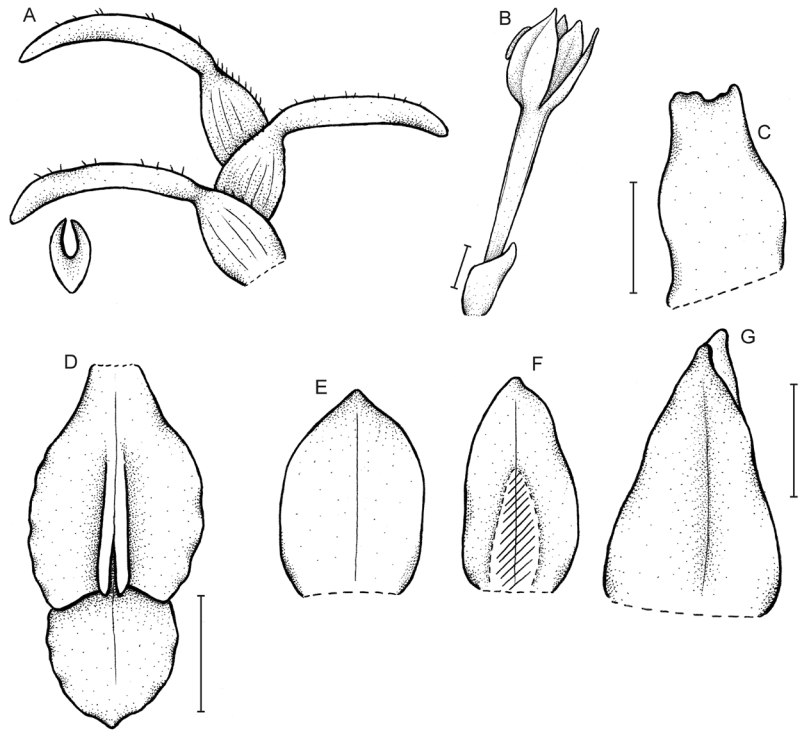


**Fig. 2.** Comparison of the clinandrium and lip form of *Pachyphyllum putumayensis* (A from the holotype) and *P. squarrosum* (B, from the type specimen).

Plants up to 20 cm tall, erect, somewhat fractiflex, occasionally branching in lower part, leafy. Leaves up to 1 cm long and 0.7 cm wide, elliptic to elliptic-orbicular, rounded at apex, shortly apiculate, margins irregularly erose, rolled-up, conduplicate, thick, leathery. Leaf sheath rounded at apex, erose on margins, rolled-up. Inflorescence shorter than leaves, up to 5-flowered. Flowers inconspicuous. Floral bracts 1.2 mm long, ovate-triangular, acute, margins entire. Pedicellate ovary up to 4.8 mm long, more or less triangular. Tepals thin. Dorsal sepal 2.3 mm long, 0.7 mm wide, oblong-lanceolate, acute at apex, somewhat 1-nerved. Petals 2.3 mm long, 0.6 mm wide, oblong-elliptic, apex obliquely subacute, subacute, 1-nerved. Lateral sepals 2.8 mm long,

0.8 mm wide, oblong-lanceolate, somewhat falcate, acuminate, apically mucronate, 1-nerved. Lip 2.3 mm long in total, 1.3 mm wide when spread, ovate-lanceolate, unconstricted, widest below middle, apically very obscurely 3-lobed, more or less triangular, attenuate towards a subacute apex, margins entire; callus consisting of two parallel, well-separated oblong-clavate projections. Gynostemium 1.8 mm long, solid, apically truncate, clinandrium obtriangular when spread.

Due to the entire, unlobed lip *P. putumayensis* resembles *P. squarrosum*, from which it differs by having well-separated, oblong-clavate lip calli and an unlobed clinandrium (cf. Fig. 2).



**Fig. 3.** *Pachyphyllum longipedicellatum* (from the holotype). — **A:** Leaf arrangement and leaf cross-section. — **B:** Flower and floral bract. — **C:** Clinandrium. — **D:** Lip. — **E:** Dorsal sepal. — **F:** Petal. — **G:** Lateral sepal. Scale bars = 1 mm.

***Pachyphyllum longipedicellatum*** Szlach., Kolan. & N. Olędrzyńska, *sp. nova* (Fig. 3)

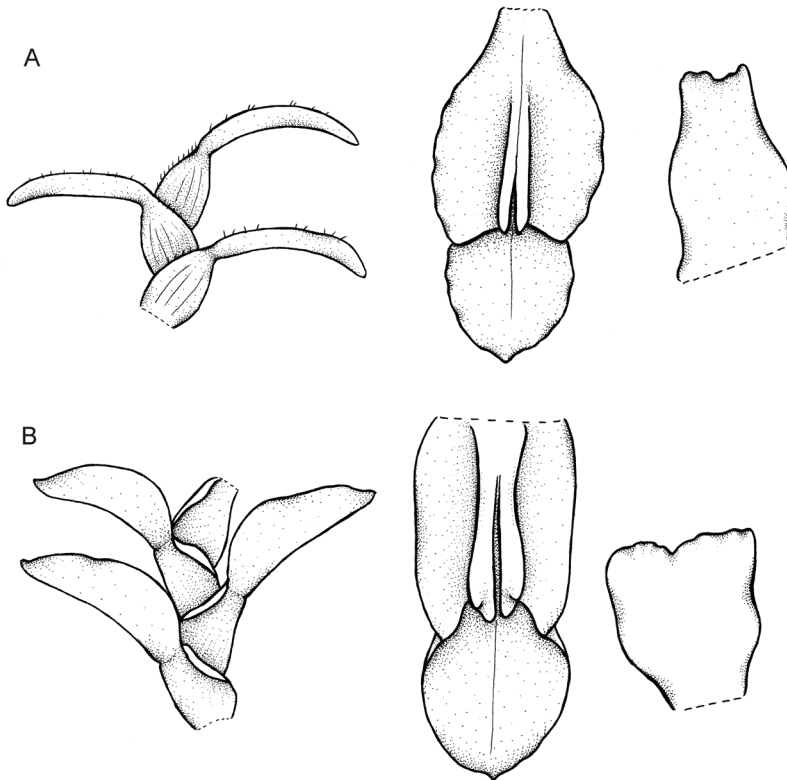
TYPE: Colombia. Putumayo. Alta Cuenca del río Putumayo, filo de la Cordillera entre El Encano y Sibundoy, páramo de San Antonio del Bordoncillo. Alt. 3250 m. a.s.l., 4 Jan. 1941 *Cuatrecasas 11698b* (COL).

ETYMOLOGY: An allusion to the long-pedicellate flowers.

Plants up to 15 cm tall, erect, somewhat fractiflex, delicate, branching in lower part, rather distantly leaved. Leaves up to 1 cm long and 0.2 cm wide, oblong, obtuse at apex, conduplicate, canaliculate, thick, leathery, margins ciliate. Leaf sheaths rounded at apex, densely ciliate along margins. Inflorescence longer than leaves, few-flowered. Flowers inconspicuous. Floral bracts 1.7 mm long, ovate-triangular, acute, margins entire. Pedicel 3.5 mm long, slender, erect, ovary 2 mm long, somewhat triangular. Dorsal sepal 2 mm long, 1.4 mm wide, elliptic-suborbicular, triangular at apex, 1-nerved. Petals 2 mm long, 1.2 mm wide, oblong-ovate, obtuse, subacute, somewhat oblique, 1-nerved. Lateral sepals 2.6 mm long, 1.5 mm wide, ovate-trian-

gular, somewhat oblique, acute, keeled outside, 1-nerved. Lip 3 mm long in total, 1.2 mm wide when spread, constricted above middle, margins somewhat erose; hypochile 2 mm long, elliptic in general outline above a short claw, lobes obliquely obtuse; callus consisting of two parallel, convergent oblong-clavate calli; epichile 1 mm long and wide, almost orbicular, obtuse, shortly acuminate, bent forward. Gynostemium 2 mm long, solid, more or less conical-ovoid in general outline, apically truncate, clinandrium shallowly and distantly 3-lobed.

This species resembles *P. hagsateri* from which it may be distinguished by the 3–4 times longer pedicel, the shortly clawed lip with erose margins, the elliptic-suborbicular dorsal sepal, the conical-ovoid clinandrium, the narrow leaves with ciliate margins, and by the ciliate margins of the leaf sheaths. In *P. hagsateri* the lip is sessile and its margins are entire, the dorsal sepal is oblong-ovate, the clinandrium is triangular and its leaves are ovate-elliptic, with entire, recurved margins of the leaf sheaths (cf. Fig. 4).



**Fig. 4.** Comparison of leaves, lip and clinandrium of *Pachyphyllum longipedicellatum* (A from the holotype) and *P. hagsateri* (B, from the type specimen).

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