

## Two new species of *Monophyllorchis* (Orchidaceae, Vanilloideae) from Colombia

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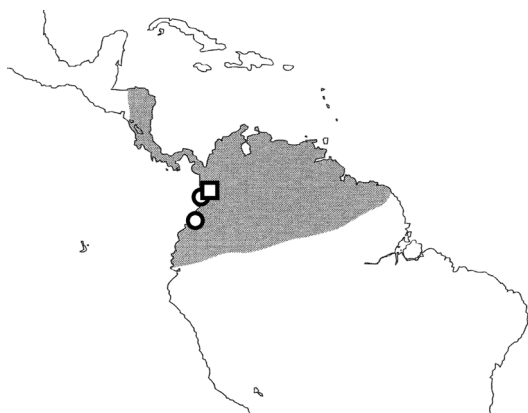
*Monophyllorchis idroboi* Szlach., S. Nowak & Baranow *sp. nova* and *M. chocoensis* Szlach., S. Nowak & Baranow *sp. nova* (Orchidaceae, Vanilloideae) from Colombia are described and illustrated on the basis of collections deposited at the National Colombian Herbarium in Bogotá. Diagnostic characters of the new taxa are compared with their supposedly closest relatives. A key to the Colombian species of *Monophyllorchis* and a map showing the distribution of the new species and of the whole genus are presented.

### Introduction

The name *Monophyllorchis* derives from the Greek words *monos* and *phyllon*, meaning single and leaf, which is a characteristic feature of the genus. The genus consists of two or three species: *M. maculata* (type), *M. microstyloides* and *M. colombiana*. The last name is often treated as a synonym of *M. microstyloides* (Sweet 1969, Garay 1978). It has been suggested that the genus should be treated as monotypic, the other species being just variations (Pridgeon *et al.* 2006). It is noteworthy that Misas Urreta (2005) illustrated as *M. microstyloides* a plant which differs essentially from the figure published by Garay (1978: 46). The plants have different proportions of the lip and the lengths of the lip calli. Additionally, according to Misas Urreta (2005) the ventral surface of the gynostemium of his “*M. microstyloides*” is hispidulous. Garay (1978) did not mention any hairs on the gynostemium,

which agrees with our observation. It is possible that the illustration provided by Misas Urreta (2005) represents an undescribed species.

*Monophyllorchis* is morphologically closely related to *Psilochilus* and *Triphora* and it is classified with them within the tribe Triphoreae, although Schlechter (1926) moved these three genera to Vanilleae. Some other authors classified *Monophyllorchis* and allied genera in Pogoniinae (Dressler & Dodson 1960), however Ames (1922) had earlier rejected such a classification. Baldwin and Speese (1957) discovered that Triphoreae have 44 chromosomes while Pogoniinae only 18, and that seems to support Ames' (1922) opinion. Pogoniinae have a clearly incumbent anther, sinuous epidermal cell walls, and an abscission layer between the ovary and perianth, which are not present in *Monophyllorchis*, *Psilochilus* or *Triphora*. That is why Dressler (1979) decided to place these genera in Triphoreae (Rothacker 2007). Szlachetko (1995)



**Fig. 1.** General distribution of the genus *Monophyllorchis* (grey area; from Pridgeon *et al.* 2006), *M. idroboi* (circles) and *M. chocoensis* (square).

proposed a monotypic subtribe Monophyllorchidinae for *Monophyllorchis* based on its single leaf and gynostemium structure.

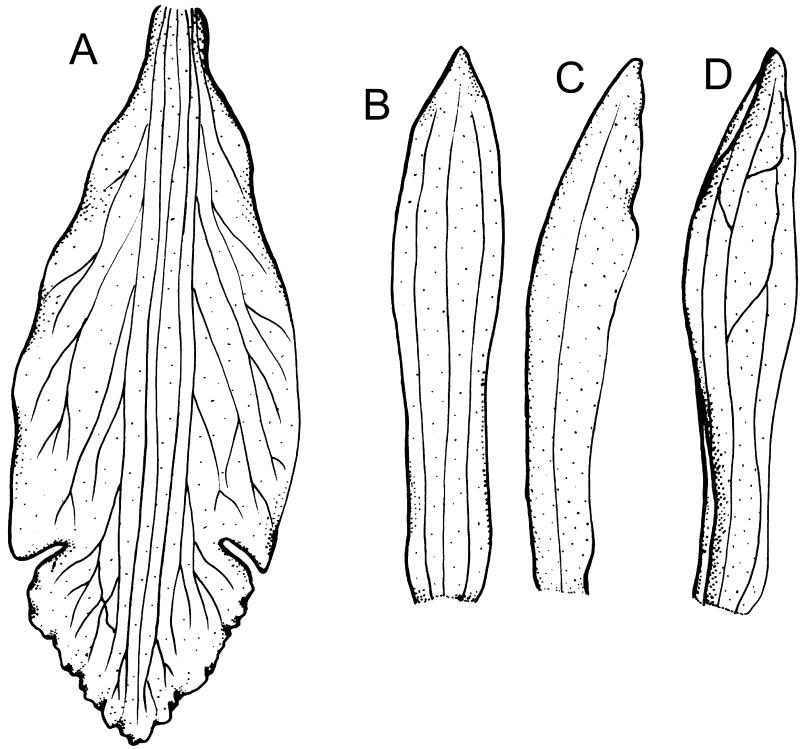
The species of *Monophyllorchis* are terrestrial, herbaceous and rhizomatous plants. The stem is purple and glabrous, with infundibular sheaths towards the middle. The single leaf is cordate, ovate or obovate, plicate and sharply acute. The upper surface of the leaf is deep green or green-purple, occasionally with white or silver streaks, and the lower surface is green. The inflorescence is terminal, erect, racemose, and subtended by a sheathing leaf, and the flowers are cleistogamous. The sepals are obtuse or subacute, and green or white. The trilobed lip tapers towards the base, clasping the gynostemium. The middle lip lobe is semi-circular, crenulate, but sometimes the undulate and acute lateral lobes of the basal part of the lip are wing-like. The gynostemium is elongated and erect, slender in the lower half, but slightly swollen in the upper. A column foot is absent and the column part is much longer than the anther, which is incumbent, ellipsoid-ovoid to ovoid-conical, motile, with two basally parallel or divergent chambers. There are four powdery pollinia, which are narrowly oblong-ovoid, but slightly unequal in size. Caudiculae are absent. The staminodes are winging the column part, forming a shallow, irregularly dentate apical clinandrium. The ventral and 3-lobed stigma is confluent, elliptic to transversely elliptic, flat to

slightly concave at the centre, occasionally with a thickened rim around the lower margin. The viscidium is absent or single, detachable, cellular, and transversally ellipsoid. After removal of the viscidium, the rostellum is truncate (Szlachetko & Rutkowski 2000).

*Monophyllorchis* is distributed from Nicaragua to Colombia, Venezuela and Ecuador (Pridgeon *et al.* 2006), and the species described here occur in western Colombia (Fig. 1). The region is part of the Tumbes-Chocó-Magdalena biodiversity hotspot (Mittermeier *et al.* 2004), which is one of the most important places in the world from a conservation perspective (Myers *et al.* 2000, Olson & Dinerstein 2002). Davies *et al.* (1997) suggested that almost 20% of the plant species occurring in the Colombian Chocó are endemic. The flora of the region is probably the most diverse in the Neotropics. Additionally, the Chocó region could be a Pleistocene refugium, as is suggested by the active speciation among some groups of plants, most notably the epiphytes (Mittermeier *et al.* 2004). Chocó is probably the wettest terrestrial region on Earth, which means onerous conditions for exploration and collection of specimens (Lellinger & Sota 1972). As a result, the flora of Chocó is poorly understood (Davies *et al.* 1997). Unfortunately, human impact is clearly visible in the decaying diversity of the Chocó ecosystems. The main threats in this region are felling of trees, permanent agriculture, cattle breeding, mining development and its accompanying pollution, road building, and also destruction of mangroves for shrimp-farming and production of charcoal. As a result of human pressure, the current rate of deforestation stands at 600 km<sup>2</sup> per year and by 1984 over 15 000 km<sup>2</sup> of coastal forest had been destroyed (Davis *et al.* 1997, Mittermeier *et al.* 2004).

***Monophyllorchis idroboi* Szlach.,  
S. Nowak & Baranow, sp. nova (Fig. 2)**

HOLOTYPE: Colombia. Nariño: Altaquer y Junin. Cuyambe. En una colina de bosque espeso, muy humedo y musgoso. Alt. 1200 m. 1 Jan. 1957 J.M. Idrobo & Kyburz 2339 (COL). — PARATYPE: Colombia. Chocó: Mpio. del Bajo Baudó. Corregimiento de Poca de Pepe, Sivira. En bosque, muy escasa. 7 Nov. 1995. S. Suarez, J.F. Serrano & J. Arboleda 1120 (COL!, sterile).



**Fig. 2.** *Monophyllorchis idroboi* (from the holotype). — **A:** Lip. — **B:** Dorsal sepal. — **C:** Petal. — **D:** Lateral sepal.

**ETYMOLOGY:** Dedicated to the collector of the type specimen, Jesus Medardo Idrobo (1918–2010), a Colombian systematist and taxonomist, a specialist in Xyridaceae and the genus *Meliosma* of Sabiaceae.

Stem to 52 cm tall below leaf, delicate, erect, with 3 sheaths. Leaf single, 12–26.5 cm long, 8.5–17.5 cm wide, cordate, apiculate, plicate, thin, green, with light green, oblong marks on upper surface. Peduncle 3.5 cm long, with 2 cm long bracts. Rachis 4 cm long, laxly many-flowered. Flowers relatively small, rather tubular, not widely opened. Floral bracts to 10 mm long, linear-lanceolate, acute. Pedicel and ovary 10 mm long, slender. Dorsal sepal 12 mm long, 2.3–2.5 mm wide, oblong- or linear-oblancoolate, acute, concave above the middle, thin, 3-nerved. Petals 10 mm long, 2.2 mm wide, linear-lanceolate to linear-oblancoolate, subfalcate, subobtuse, 1-nerved. Lateral sepals 11 mm long, 2.5 mm wide, oblong-oblancoolate, subfalcate, subobtuse, concave, with 3 anastomosing nerves. Lip 10 mm long in total, sessile; basal part 7 mm long, 4 mm wide, oblong-ovate, widest near middle, lateral lobes triangular, subfalcate, rounded at apices; middle lobe 3 mm

long, 3.5 mm wide, ovate-obtriangular, widest at base, more or less crenulate and somewhat undulate on margins, apex blunt. Gynostemium to 10 mm long, typical for the genus.

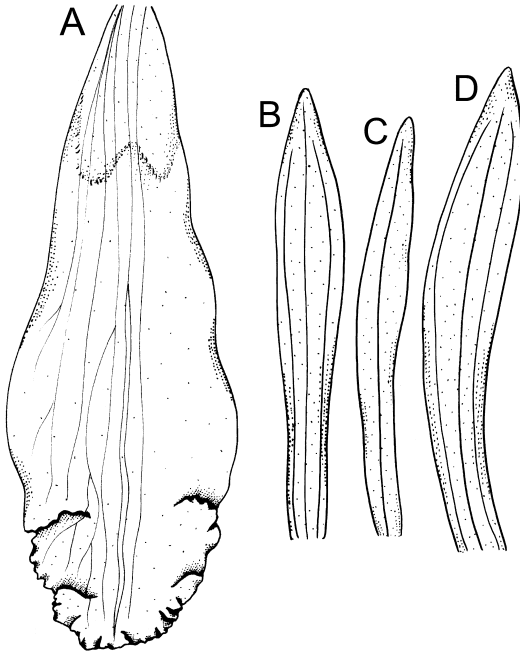
**DISTRIBUTION:** Known from the Colombian departments of Chocó and Nariño (Fig. 1).

The leaf shape and habit of this species resemble those of *M. maculata*, but the lip shape is different. The basal part of the lip of *M. idroboi* is oblong-ovate, widest near the middle, and distinctly wider than the middle lobe; in *M. maculata* the basal part of the lip is oblong-triangular, widest at the apex, and as wide as the middle lobe. The lip middle lobe of the new species is ovate-obtriangular, widest at the base, while in *M. maculata* it is suborbicular.

***Monophyllorchis chochoensis* Szlach., S. Nowak & Baranow, sp. nova (Fig. 3)**

**HOLOTYPE:** Colombia. Chocó: Bosque al lado derecho del Rio Condoto, frente a Condoto. Alt. 70 m. Terrestre. 23 Aug. 1955 *J.M. Idrobo 1840* (COL).

**ETYMOLOGY:** An allusion to the provenance, the department of Chocó, Colombia.



**Fig. 3.** *Monophyllorchis chocoensis* (from the holotype). — **A:** Lip. — **B:** Dorsal sepal. — **C:** Petal. — **D:** Lateral sepal.

Plants 8–16 cm tall, erect, rather delicate, with 3 sheaths. Leaf single, at apex of stem, sessile, 13–14 cm long, 8.5–10 cm wide, ovate-lanceolate, base cordate, apex acute, plicate, dark green with white lines along nerves on upper surface, deep purple below. Inflorescence 11 cm long, subdensely many-flowered at top. Flowers medium-sized, greenish, lip purple. Floral bracts 7 mm long, ovate-lanceolate, acute. Pedicel 5 mm long, ovary 11 mm long. Dorsal sepal 17 mm long, 2.5 mm wide, linear-oblancoate, acute, 3-nerved. Petals 16 mm long, 1.4 mm wide, linear, acuminate towards apex, subfalcate, 1-nerved. Lateral sepals 18 mm long, 2.7 mm wide, oblong-lanceolate, acute, falcate, 3-nerved. Lip 15–16 mm long in total, with a low lamella running from middle to apex; basal part 12 mm long, 4.8 mm wide, narrowly triangular-oblong, widest at 2/3, apical margins crenate, densely papillate in lower third; middle lobe 3.2 mm long, 3.8 mm wide, sessile with a cordate base and crenate-undulate margins, apex rounded. Gynostemium 13 mm long.

**DISTRIBUTION:** Known from a single collection from Chocó, Colombia (Fig. 1).

Similar to *M. microstyloides*, but the middle lobe of the lip is sessile with a cordate base and crenate margins, the basal part of the lip is narrowly triangular-oblong, the apical margins of lip are crenate-undulate, and densely papillate in the lower third.

### Key to the species of *Monophyllorchis*

1. Leaves concolorous, narrowly ovate-lanceolate, up to 7 cm wide ..... *M. microstyloides*
1. Leaves green with white or light green maculations, broadly elliptic-ovate, at least 8.5 cm wide ..... 2
2. Basal part of lip glabrous ..... *M. idroboi*
2. Basal part of lip papillose or papillate ..... 3
3. Lip papillate at base only ..... *M. chocoensis*
3. Lip papillose on both sides of keels ..... *M. maculata*

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