

## Notes on the genus *Rhetinantha* (Orchidaceae, Maxillariinae) with descriptions of new species from Colombia

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*Summary:* The genus *Rhetinantha* M.A. Blanco was segregated from *Maxillaria* s.l. in 2007. It embraces about 20 species formerly classified in *M. acuminata* alliance, section *Digammae* Christenson and its distribution ranges from Mexico to Bolivia and Brazil. Representatives of *Rhetinantha* are subcaespitose to long rhizomatous with often ridged pseudobulbs. One to four leaves occur at the apex of the pseudobulb. Flowers are campanulate in general outline with rigid, acuminate perianth parts. During the revision of the materials collected in AMES, COL and MO herbaria, we came across specimens which do not fit descriptions of any *Rhetinantha* species known so far. We propose to describe them as new species.

*Keywords:* *Maxillaria*, new species, Neotropics, taxonomy

The genus *Maxillaria* Ruiz & Pav. (Orchidaceae) is the largest and probably most controversial taxon in the subtribe Maxillariinae Benth (CHRISTENSON 2002). It is stated that *Maxillaria* covers about  $\frac{4}{5}$  of the species belonging to the subtribe (SENGHAS 2002). According to various researchers and depending on their classifications, it comprises 420 (DRESSLER 1993) to 750 species (SENGHAS 2002). The wide variation of the vegetative and floral characters, together with the lack of clearly defined generic boundaries of *Maxillaria*, resulted in proposing several taxonomic approaches of the subtribe Maxillariinae over the past 150 years. All these taxonomic changes have been criticized by SCHUITEMAN & CHASE (2015) who amalgamated all previously distinguished genera into one megagenus *Maxillaria sensu latissimo*.

Research conducted by WHITTEN et al. (2007) revealed the paraphyletic character of *Maxillaria* s.l., resulting in the necessity of further delimitations of the taxa embedded within this genus. One of the clearly distinct species groups was the alliance of *Maxillaria acuminata*. Plants of this assemblage produce oblong, two- to four-leaved, laterally flattened pseudobulbs, with inflorescence arising from bract axils between the second- and third-oldest pseudobulbs, the campanulate flowers with rigid, fibrous, acuminate to aristate tepals and the simple or obscurely three-lobed lip with a linear callus bearing a resinous or lipoidal secretion or waxy white crystals (WHITTEN et al. 2007). Three genera were segregated from this clade: *Rhetinantha* M.A. Blanco (= sect. *Digammae* Christenson), *Sauvetrea* Szlach. & Sitko (= sect. *Trigoniae* Christenson) and the monotypic *Hoehnella* Szlach. & Sitko (BLANCO et al. 2007; SZLACHETKO & ŚMISZEK 2007; SZLACHETKO et al. 2012). The first two taxa are easily distinguished by the shape and location of the lip callus. In such concept, *Sauvetrea* comprises ca 15 and *Rhetinantha* ca 20 species, all distributed from Mexico to Bolivia and Brazil (SZLACHETKO & KOLANOWSKA 2013).

In general, plants classified within *Rhetinantha* are subcaespitose to long rhizomatous. Their pseudobulbs are often ridged, usually covered by one or two subtending foliaceous sheaths. One to four leaves occur at the apex of the pseudobulb. They are usually linear, unequally bilobed at the apex, with both lobes rounded. Inflorescences are either as long as the leaves or shorter,

often arising from rhizome bracts a few shoots behind the most recent pseudobulb. Flowers are campanulate in general outline, with rigid, acuminate perianth parts with strong fibers. Sepals and petals are subsimilar or dissimilar. The lip is clawed, oblong-obovate, ligulate-lanceolate, pandurate to obscurely 3-lobed in the lower part. The callus is prominent in the basal third. Gynostemium is rather slender, arcuate with a short column foot. Margins of the clinandrium are conspicuously ciliate.

*Maxillaria acuminata*, as well as its relatives, are known for producing lipoidal secretions at the lip surface (DAVIES et al. 2003a, b). What is more, DAVIES et al. (2003a, b) predicted additional function of these secretions. A glossy surface of the lip may be involved in the process of attracting pollinators, just like the speculum in species of Mediterranean *Ophrys* L.

During the revision of the materials deposited in AMES, COL and MO, we came across specimens which do not fit the descriptions of any *Rhettinantha* species known so far. We propose to describe them as new species.

## Materials and methods

Dried herbarium specimens deposited in AMES, COL and MO were examined according to standard procedures. Each studied sheet was photographed and data from the labels were taken. Standard procedure of preparing the herbarium material to facilitate stereomicroscopic observation was applied. Particular parts of the flower were boiled, dissected, measured and drawn under a stereomicroscope. The results were then analyzed and compared with the type material, diagnoses and original illustrations.

## Taxonomic treatment

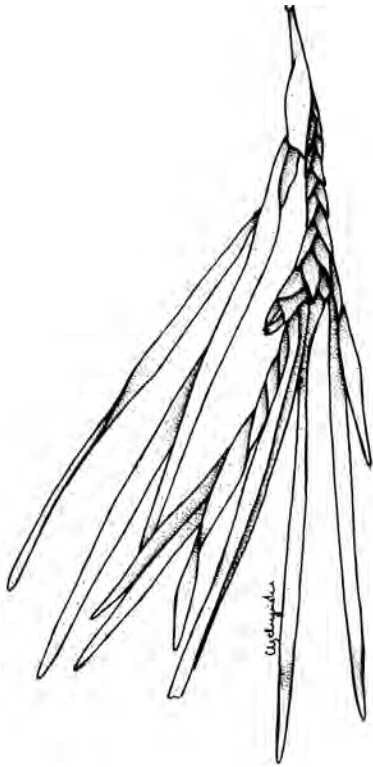
### *Rhettinantha uribei* Szlach., Olędrz. & Lipińska sp. nov. (Figs 1, 2)

**Type.** Colombia. Cundinamarca. *L. Uribe Uribe 5497* [Holotype: COL! 103045; UGDA-Szlach.! – drawing].

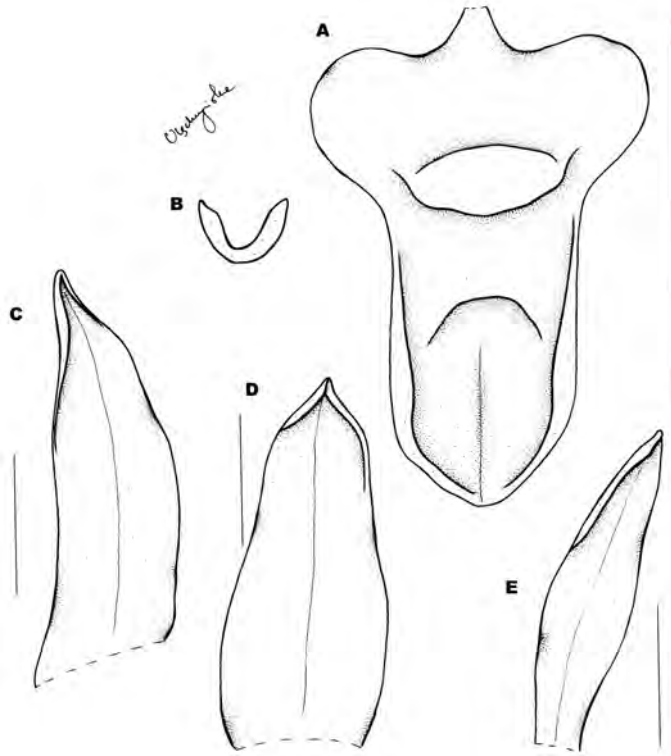
**Etymology.** Name refers to the surname of the type material collector.

**Diagnosis.** Species somewhat similar to *R. pastorellii* (D.E. Bennett & Christenson) M.A. Blanco. Can be easily distinguished by peculiar lip form (base subcordate, lamina prominently 3-lobed, lateral lobes widely spread and rounded, apical part oblong-elliptic, rounded at the apex) and very large, transversely elliptic callus produced at the apex of the lateral lobes and spread between them.

**Description.** Pseudobulbs ca 4 cm long, 0.8 cm wide, oblong, laterally compressed, distantly placed along rhizome, single- or bifoliate, enclothed basally with few sheaths. Leaves up to 21 cm long and 0.8 cm wide, linear, apically unequally and acutely bilobed. Inflorescence ca 2–3 cm long, single-flowered, erect. Flowers small, floral segments with fibrous vascular bundles. Floral bracts 8 mm long, oblong ovate, acute. Pedicellate ovary 8–9 mm long. Dorsal sepal 11 mm long, 4 mm wide, oblong ovate, somewhat concave in the center, apex triangular, with involute margins. Petals 9 mm long, ca 2.3 mm wide, narrowly lanceolate, falcate, acute. Lateral sepals 11 mm long, 3.2 mm wide, oblong lanceolate, falcate, acute, apical margins involute. Lip ca 7 mm long in total, shortly but prominently unguiculate, very thick, base subcordate, prominently 3-lobed near the base, lateral lobes rounded, 4.5 mm wide across, with very large transversely elliptic callus spread between apex of lateral lobes, then lamina oblong elliptic, ca 3.2 mm wide



**Figure 1.** *Rhetinantha uribei* Szlach., Olędz. & Lipińska, sp. nov. Habit.



**Figure 2.** *Rhetinantha uribei* Szlach., Olędz. & Lipińska, sp. nov. Desiccated flower: A – lip; B – transverse section of the lip; C – lateral sepal; D – dorsal sepal; E – petal. Scale bars = 5 mm.

across, rounded at the apex, channeled, much thickened in the apical part. Gynostemium 6 mm long.

**Distribution and ecology.** The species was collected in Colombian department Cundinamarca, from sea level up to 2700 m altitude.

**Representative specimens.** Colombia: Cundinamarca. Mpio. Tibacuy. *Sine loc.* Alt. sea level. 24 Oct 1988. *A. Chaparro de Barrera & E. Barrera Torres 253* [COL!]; Mpio. Tena. Desv. Rest. La Pala. Alt. sea level. 28 Aug 1988. *A. Chaparro de Barrera & E. Barrera Torres 126* [COL!]; Tena, al comenzar el camino hacia Pedropalo, arriba de la carretera a la Mesa. Alt. 1900 m. 24 Jan 1966. *L. Uribe Uribe 5497* [COL!]; Sasaima. San Bernardo. Quebrada La Maria y Rio Dulce. Alt. 1750–1950 m. 20–30 Nov 1962. *H. Garcia-Barriga 17590* [COL!]; Santandercito. Alt. 1900 m. 29 Sep 1962. *H. Schmidt 125* [COL!]; Rio Bogota, mas abajo del Salto de Taquendama. Alt. 2000 m. 14 Jul 1945. *Schneider 31/1* [COL!]; Facatativa. Carretera a El Dintel. Alt. 2700 m. 23 Jul 1950. *Schneider 31/2* [COL!].

**Notes.** *Rhetinantha uribei* can be easily separated from any other genus' representatives by its peculiar lip and callus form. The lip base is subcordate, lamina is prominently 3-lobed near the base, with widely spread rounded lateral lobes. The lip apical part is oblong elliptic, rounded at the apex, and here channeled, much thickened. Lip callus is very large, transversely elliptic produced at the apex of the lateral lobes and spread between them. Somewhat similar is *R. pastorellii* (D.E. Bennett & Christenson) M.A. Blanco.

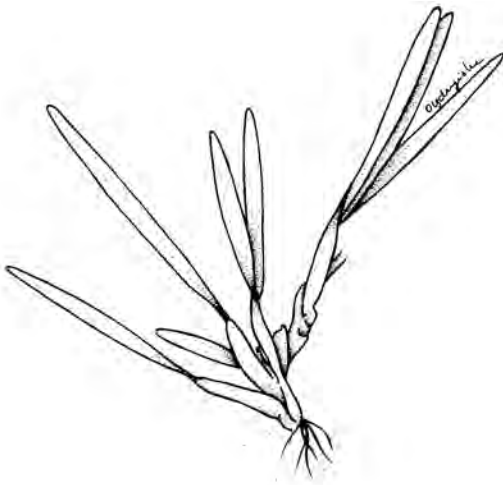


Figure 3. *Rhetinantha whittenii* Szlach., Olędrz. & Lipińska, sp. nov. Habit.

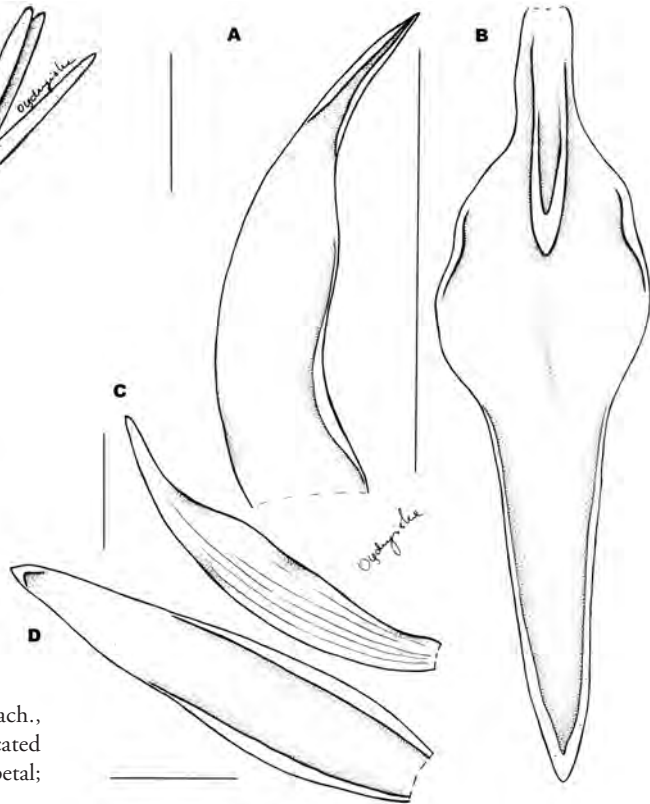


Figure 4. *Rhetinantha whittenii* Szlach., Olędrz. & Lipińska, sp. nov. Desiccated flower: A – lateral sepal; B – lip; C – petal; D – dorsal sepal. Scale bars = 5 mm.

***Rhetinantha whittenii* Szlach., Olędrz. & Lipińska sp. nov. (Figs 3, 4)**

**Type.** Colombia. Choco. *J. White & R. Warner 43* [Holotype: AMES!; UGDA-Szlach.! – drawing].

**Etymology.** Dedicated to Dr Mark Whitten, an eminent orchidologist who passed away prematurely in 2019.

**Diagnosis.** Species most similar to *R. friedrichsthalii* (Rchb.f.) M.A. Blanco, from which it can be easily separated by having an obscurely 3-lobed lip with prominently attenuate apical half and sulcate callus on the dorsal surface.

**Description.** Pseudobulbs ca 4.5 cm long, 0.7 cm wide, relatively approximate, oblong, laterally compressed, sulcate, bi- or trifoliate, enclathed basally with few bladeless sheaths. Leaves 12–13 cm long and up to 0.9 cm wide, linear, apically roundly and subequally bilobed. Inflorescence 1.5 cm long, single-flowered, erect, enclathed in ca 4 sheaths. Flowers medium-sized, floral segments with fibrous vascular bundles. Floral bracts 16 mm long, oblong ovate, acute. Pedicellate ovary 14 mm long. Dorsal sepal 20 mm long, 5.5 mm wide, oblong lanceolate, concave in the centre, apex obtuse. Petals 18–18.5 mm long, ca 2.5 mm wide, oblong elliptic, falcate, apical third subulate, obtuse. Lateral sepals 20 mm long, 3.5 mm wide, ligulate-lanceolate, falcate, apical margins involute, hence appearing subulate. Lip ca 13 mm long in total, shortly but prominently unguiculate, thick, fleshy, sticky, base cuneate, ligulate-oblancheolate in outline, obscurely 3-lobed, somewhat expanded in the lower half, then attenuate, margins involute, callus oblong, rounded at the apex, sulcate on the dorsal surface, apical third apex triangular, obtuse. Gynostemium 11 mm long, column foot 1.5 mm long, clinandrium fimbriate.

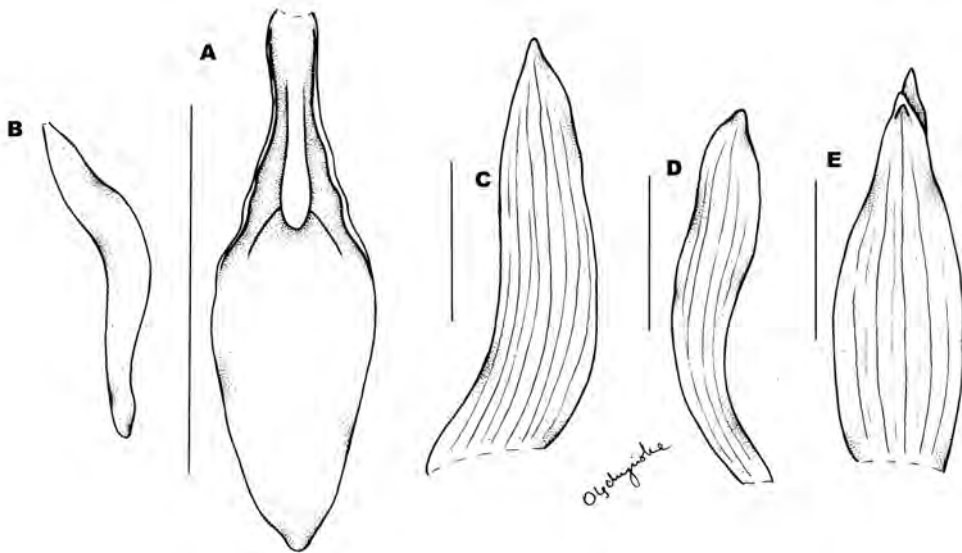


Figure 5. *Rhetinantha friedrichsthalii* (Rchb.f.) M.A. Blanco. Drawing from the type: A – lip; B – transverse section of the lip; C – lateral sepal; D – petal; E – dorsal sepal. Scale bars = 5 mm.

**Distribution and ecology.** The species was collected in Colombian departments Choco, Cundinamarca and Valle del Cauca, from sea level up to 950 m altitude.

**Representative specimens.** Colombia: Choco. Mangroves S of Virudo. 24 Jul 1973. *J.W. White & R. Warner 43* [COL!]. Cundinamarca. Mpio. Sasaima. Namay. Alt. Sea level. 20 May 1989. *A. Chaparro de Barrera & E. Barrera Torres 99* [COL!]. Valle del Cauca. Mpio. Zarzal. Hacienda El Medio. Carretera Panamericana entre La Paila y Zarzal, parte plana del Valle del Rio Cauca. Alt. 950 m. 23 Nov 1991. *Silverstone-Sopkin 6466* [MO!].

**Notes.** *Rhetinantha whittenii* appears to be similar to *R. friedrichsthalii* (Rchb.f.) M.A. Blanco (Fig. 5), from which it can be easily separated by having obscurely 3-lobed lip (vs lip unlobed), with prominently attenuate apical half. The lip callus of the new species is sulcate on the dorsal surface (vs callus oblong with convex upper surface) and flowers of *R. whittenii* are distinctly larger than those of *R. friedrichsthalii*. The other species similar to our discovery is *R. encycloides* (J.T. Atwood & Dodson) M.A. Blanco, which, however, has an obscure lip callus seen only in the lip center.

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